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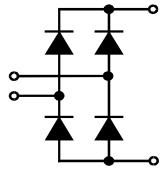
		A	06	08	12	14	16	18	20			
1 		16		●						FBO 16-..N	*new*	F4 -2
		18		●	●		●			VBO 13-..NO2/AO2		F4 -4
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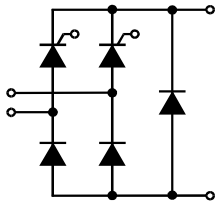
2 		21		●	●	●	●			VBO 22-..NO8		F4 -7
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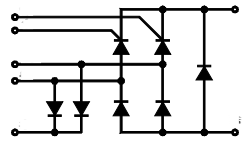
3 		45		●	●	●	●	●		VBO 45-..NO7		F4 -16
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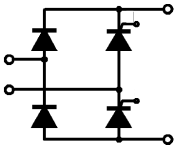
4 		65		●	●	●	●	●		VBO 65-..NO7		F4 -20
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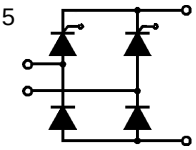
5 		122		●	●	●	●	●		VBO 130-..NO7		F4 -25
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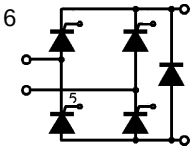
6 	2	32		●	●	●	●			VHF 28-..io5		F4 -32
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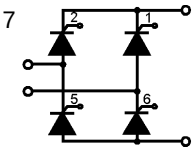
		40		●	●	●	●			VHFD 37-...io1		F4 -44
7 	2	82		●	●					VHF 85-..io7		F4 -47
		123		●	●	●	●			VHF 125-..io7		F4 -47
	4	36		●	●	●	●			VGO 36-..io7	*new*	F4 -49
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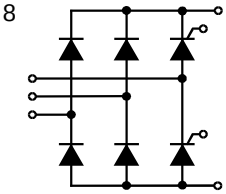
8 		43					●			VVY 40-..io1		F4 -53

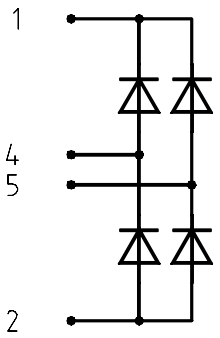
IXYS

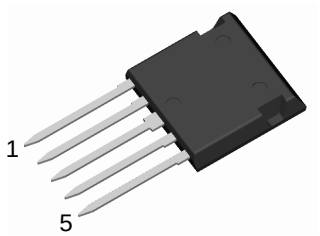
Single Phase Rectifier Bridge

in ISOPLUS i4-PAC™

FBO16-08N

V_{RRM} = 800 V
$I_{D(AV)M}$ = 22 A
I_{FSM} = 100 A





Rectifier Bridge

Symbol	Conditions	Maximum Ratings	
V_{RRM}		800	V
I_{FAV}	T_C = 90°C; sine 180° (per diode)	10	A
$I_{D(AV)M}$	T_C = 90°C	22	A
I_{FSM}	T_{VJ} = 25°C; t = 10 ms; sine 50 Hz	100	A
P_{tot}	T_C = 25°C (per diode)	30	W

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
V_F	I_F = 15 A; T_{VJ} = 25°C		1.2	1.3	V
	T_{VJ} = 125°C		1.2		V
I_R	$V_R = V_{RRM}$; T_{VJ} = 25°C			5	µA
	T_{VJ} = 125°C		0.2		mA
R_{thJC}	(per diode)			4	K/W

Features

- rectifier diodes for line frequency
- ISOPLUS i4-PAC™ package
  - isolated back surface
  - enlarged creepage towards heatsink
  - application friendly pinout
  - high reliability
  - industry standard outline

Applications

- single phase mains rectifiers
- power factor correction in conjunction with boost chopper (FID.../FMD... type)

Data according to IEC 60747 refer to a single diode unless otherwise stated

IXYS reserves the right to change limits, test conditions and dimensions.

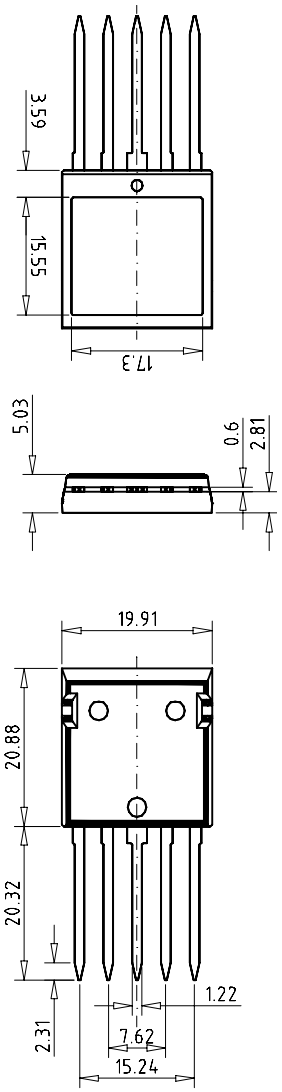
030

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-55...+150	°C
T_{stg}		-55...+125	°C
V_{ISOL}	$I_{ISOL} \leq 1$ mA; 50/60 Hz	2500	V~
F_C	mounting force with clip	20...120	N

Symbol	Conditions	Characteristic Values min.	typ.	max.	
d_S,d_A	pin - pin	1.7			mm
d_S,d_A	pin - backside metal	5.5			mm
R_{thCH}	with heatsink compound		0.15		K/W
Weight			9		g

Dimensions in mm (1 mm = 0.0394")



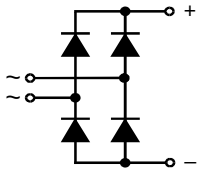
Single Phase Rectifier Bridge

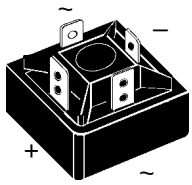
I_{dAV} = 18 A
V_{RRM} = 800-1600 V

Standard and Avalanche Types

V_{RSM} V	V_{BRmin} ① V	V_{RRM} V	Standard Types	Avalanche Types
900		800	VBO 13-08NO2	
1300	1230	1200	VBO 13-12NO2	VBO 13-12AO2
1700	1630	1600	VBO 13-16NO2	VBO 13-16AO2

① For Avalanche Types only





Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ②	T_C = 85°C, module		18	A
I_{dAVM}	module		30	A
P_{RSM}	$T_{VJ} = T_{VJM}$	t = 10 µs	2.5	kW
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	220	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	230	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	180	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	190	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	240	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	220	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	160	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	150	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	$I_{ISOL} \leq$ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	1.5-2	Nm
		(10-32 UNF)	13-18	lb.in.
Weight	typ.		15	g

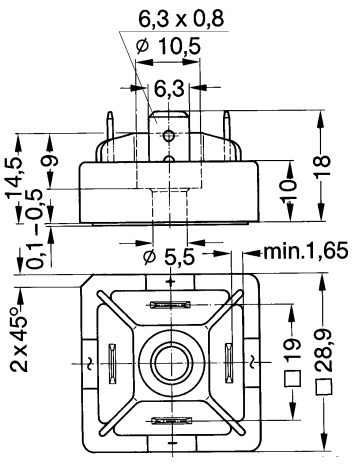
Features
- Avalanche rated parts available
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Low forward voltage drop
- ¼" fast-on terminals
- UL registered E 72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with one screw
- Space and weight savings
- Improved temperature and power cycling

Symbol	Test Conditions		Characteristic Values		
I_R	$V_R = V_{RRM}$;	T_{VJ} = 25°C	≤	0.3	mA
	$V_R = V_{RRM}$;	$T_{VJ} = T_{VJM}$	≤	5	mA
V_F	I_F = 55 A;	T_{VJ} = 25°C	≤	1.8	V
V_{T0}	For power-loss calculations only			0.85	V
r_T	$T_{VJ} = T_{VJM}$			17	mΩ
R_{thJC}	per diode; DC current			5.6	K/W
	per module			1.4	K/W
R_{thJK}	per diode, DC current			6.0	K/W
	per module			1.5	K/W
d_S	Creeping distance on surface			13	mm
d_A	Creepage distance in air ③			9.5	mm
a	Max. allowable acceleration			50	m/s^2

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 and refer to a single diode unless otherwise stated
② for resistive load at bridge output, ③ with isolated fast-on tabs
IXYS reserves the right to change limits, test conditions and dimensions.

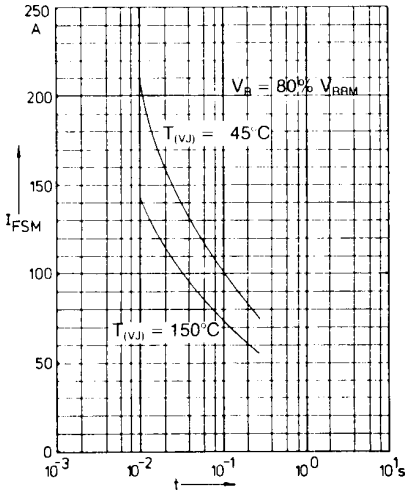


Fig. 1 Surge overload current per diode
I_{FSM}: Crest value, t: duration

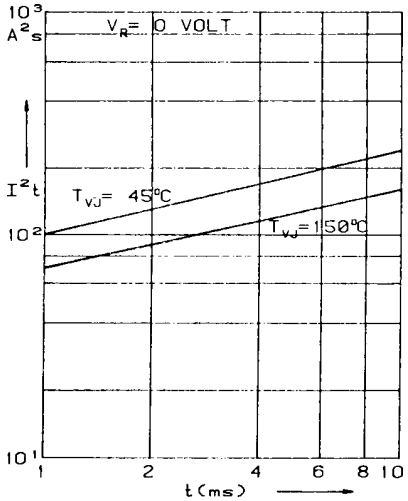


Fig. 2 I^2t versus time (1-10 ms) per diode

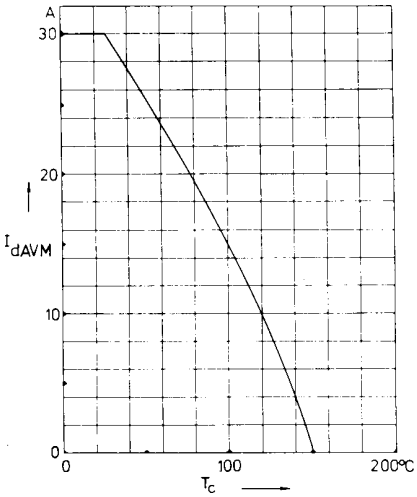


Fig. 3 Max. forward current at case temperature

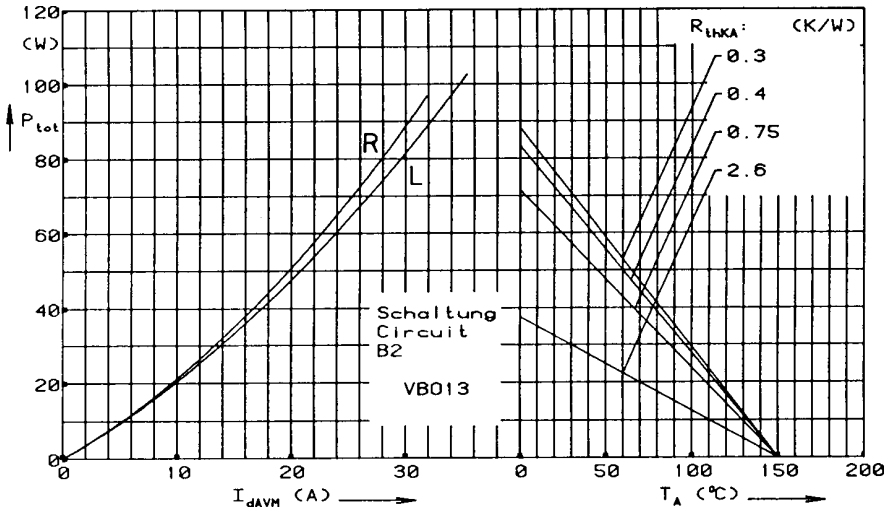


Fig. 4 Power dissipation versus direct output current and ambient temperature

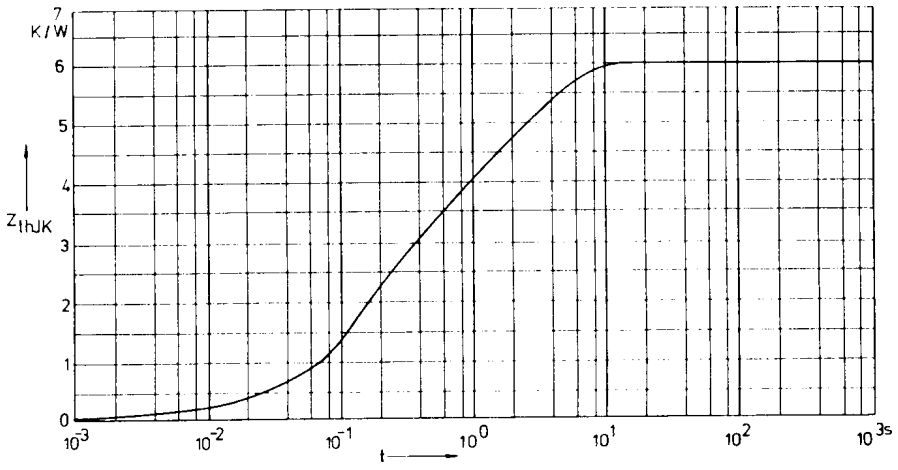


Fig. 5 Transient thermal impedance junction to heatsink per diode

Constants for Z_{thJK} calculation:

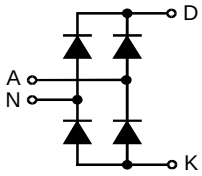
i	R_{thi} (K/W)	t_i (s)
1	0.059	0.00217
2	2.714	0.159
3	3.227	2.34

Single Phase Rectifier Bridge

I_{dAVM} = 21 A
V_{RRM} = 600-1200 V

Preliminary data

V_{RSM} V	V_{RRM} V	Type
700	600	VBO 21-06NO7
900	800	VBO 21-08NO7
1300	1200	VBO 21-12NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 100°C, module		21	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	100	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	106	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	85	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	90	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	50	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	47	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	36	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	33	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M4)	1.5 - 2	Nm
			14 - 18	lb.in.
Weight	typ.		18	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 7 A;	T_{VJ} = 25°C	≤	1.12	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				40	mΩ
R_{thJC}	per diode; DC current			2.3	K/W
	per module			0.58	K/W
R_{thJH}	per diode, DC current			2.8	K/W
	per module			0.7	K/W
d_S	Creeping distance on surface			11.2	mm
d_A	Creepage distance in air			9.7	mm
a	Max. allowable acceleration			50	m/s^2

Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output.

IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with DCB ceramic base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

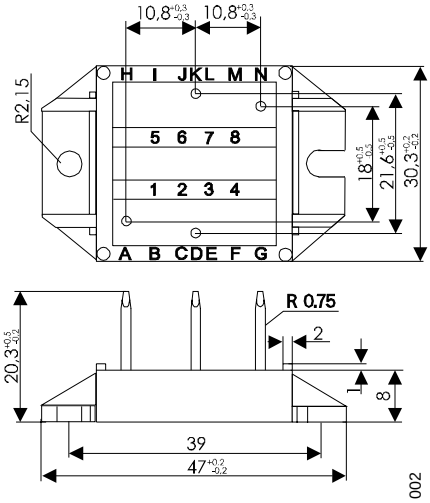
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

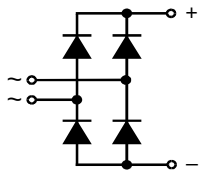
Dimensions in mm (1 mm = 0.0394")

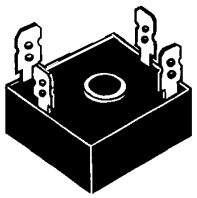


Single Phase Rectifier Bridge

I_{dAVM} = 21 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
1200	1200	VBO 22-12NO8
1400	1400	VBO 22-14NO8
1600	1600	VBO 22-16NO8
1800	1800	VBO 22-18NO8





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_C = 85°C, module		17	A
I_{dAVM}	T_C = 63°C, module		21	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	380	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	440	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	360	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	400	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	725	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	800	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	650	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	650	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	$I_{ISOL} \leq$ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M5)	2 ± 10 %	Nm
		(10-32 UNF)	18 ± 10 %	lb.in.
Weight	typ.		22	g

Symbol	Test Conditions		Characteristic Values	
I_R	T_{VJ} = 25°C;	$V_R = V_{RRM}$	≤ 0.3	mA
	$T_{VJ} = T_{VJM}$;	$V_R = V_{RRM}$	≤ 5.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤ 2.2	V
V_{T0}	For power-loss calculations only		0.85	V
r_T			12	mΩ
R_{thJC}	per diode; DC current		8.2	K/W
	per module		2.05	K/W
R_{thJK}	per diode; DC current		9.4	K/W
	per module		2.35	K/W
d_S	Creeping distance on surface		12.7	mm
d_A	Creepage distance in air		9.4	mm
a	Max. allowable acceleration		50	m/s^2

Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with ¼" fast-on terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

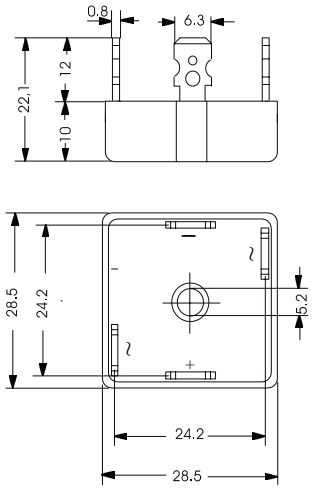
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with one screw
- Space and weight savings
- Improved temperature and power cycling

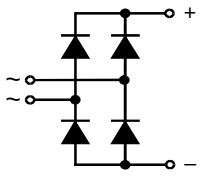
Dimensions in mm (1 mm = 0.0394")

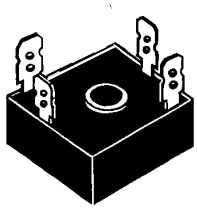


Single Phase Rectifier Bridge

I_{dAVM} = 30 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
1200	1200	VBO 36-12NO8
1400	1400	VBO 36-14NO8
1600	1600	VBO 36-16NO8
1800	1800	VBO 36-18NO8





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_C = 85°C, module		23	A
I_{dAVM}	T_C = 62°C, module		30	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	550	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	600	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	550	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1520	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1520	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1250	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1250	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M5)	2 ± 10 %	Nm
		(10-32 UNF)	18 ± 10 %	lb.in.
Weight	typ.		22	g

Symbol	Test Conditions		Characteristic Values	
I_R	T_{VJ} = 25°C;	V_R = V_{RRM}	≤ 0.3	mA
	T_{VJ} = T_{VJM};	V_R = V_{RRM}	≤ 2.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤ 1.7	V
V_{T0}	For power-loss calculations only		0.8	V
r_T			5.8	mΩ
R_{thJC}	per diode; DC current		6.2	K/W
	per module		1.55	K/W
R_{thJK}	per diode; DC current		7.4	K/W
	per module		1.85	K/W
d_S	Creeping distance on surface		12.7	mm
d_A	Creepage distance in air		9.4	mm
a	Max. allowable acceleration		50	m/s^2

Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with ¼" fast-on terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

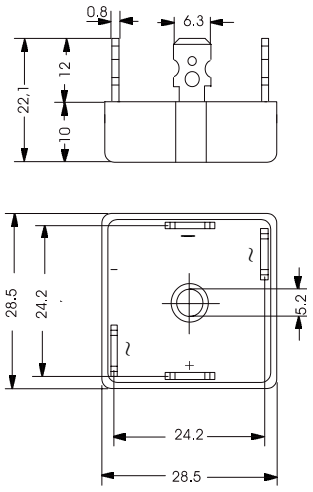
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with one screw
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



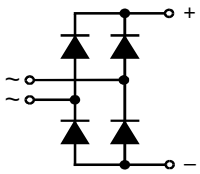
Single Phase Rectifier Bridge

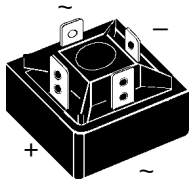
I_{dAV} = 31 A
V_{RRM} = 800-1600 V

Standard and Avalanche Types

V_{RSM} V	V_{BRmin} ① V	V_{RRM} V	Standard Type	Avalanche Type
900		800	VBO 20-08NO2	
1300	1230	1200	VBO 20-12NO2	VBO 20-12AO2
1700	1630	1600	VBO 20-16NO2	VBO 20-16AO2

① For Avalanche Types only





Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ②	T_C = 85°C, module		31	A
I_{dAVM}	module		40	A
P_{RSM}	$T_{VJ} = T_{VJM}$	t = 10 µs	3.4	kW
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	300	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	315	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	250	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	265	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	450	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	420	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	312	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	290	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	$I_{ISOL} \leq$ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	1.5-2	Nm
		(10-32 UNF)	13-18	lb.in.
Weight	typ.		15	g

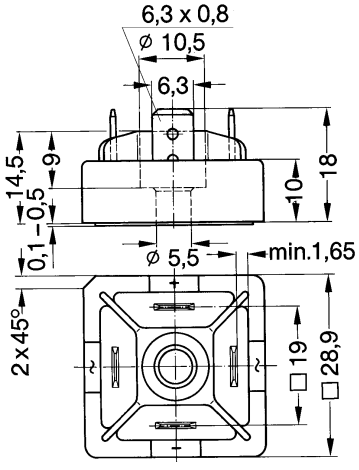
Features
- Avalanche rated parts available
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Low forward voltage drop
- ¼" fast-on terminals
- UL registered E 72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with one screw
- Space and weight savings
- Improved temperature and power cycling

Symbol	Test Conditions		Characteristic Values		
I_R	$V_R = V_{RRM}$;	T_{VJ} = 25°C	≤	0.3	mA
	$V_R = V_{RRM}$;	$T_{VJ} = T_{VJM}$	≤	5	mA
V_F	I_F = 55 A;	T_{VJ} = 25°C	≤	1.6	V
V_{T0}	For power-loss calculations only			0.85	V
r_T	$T_{VJ} = T_{VJM}$			14	mΩ
R_{thJC}	per diode, DC current			3.0	K/W
	per module			0.75	K/W
R_{thJK}	per diode, DC current			3.4	K/W
	per module			0.85	K/W
d_S	Creeping distance on surface			13	mm
d_A	Creepage distance in air ③			9.5	mm
a	Max. allowable acceleration			50	m/s^2

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 and refer to a single diode unless otherwise stated
② for resistive load at bridge output, ③ with isolated fast-on tabs
IXYS reserves the right to change limits, test conditions and dimensions.

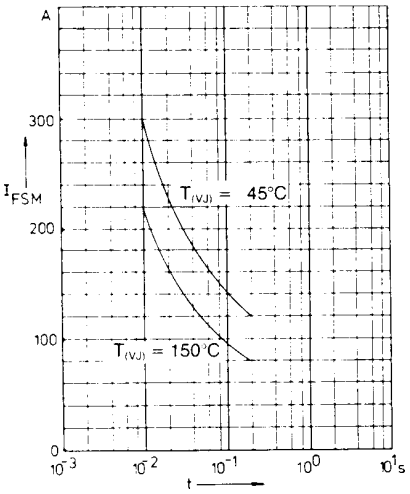


Fig. 1 Surge overload current per diode
I_{FSM}: Crest value, t: duration

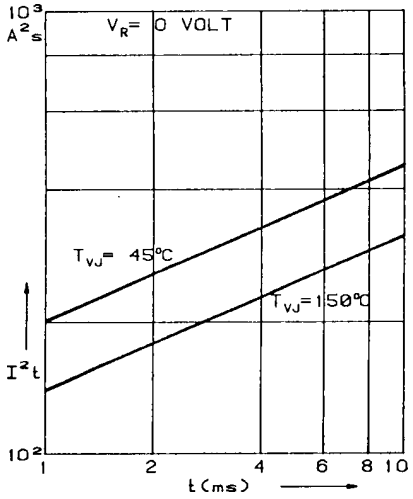


Fig. 2 I^2t versus time (1-10 ms) per diode

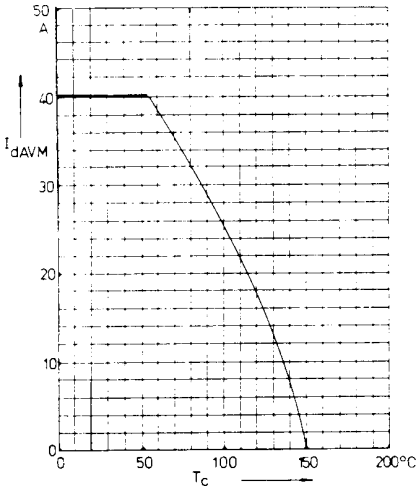


Fig. 3 Max. forward current at case temperature

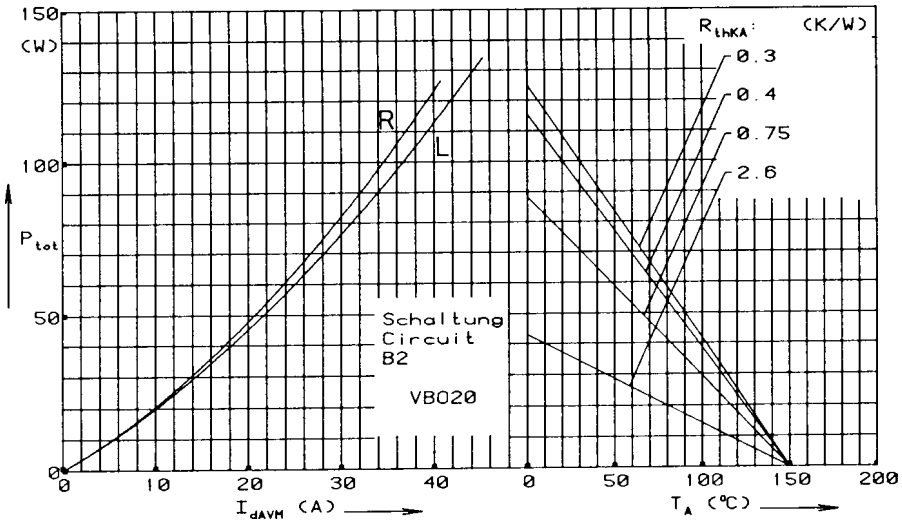


Fig. 4 Power dissipation versus direct output current and ambient temperature

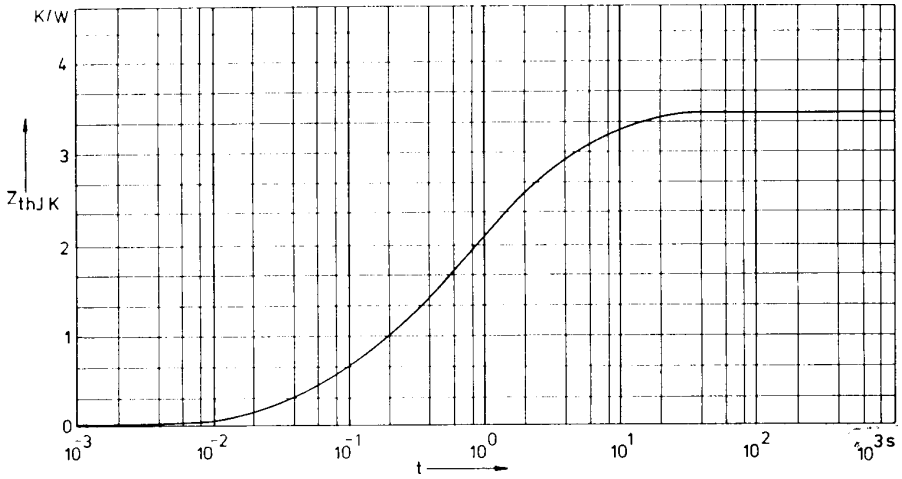


Fig. 5 Transient thermal impedance junction to heatsink per diode

Constants for Z_{thJK} calculation:

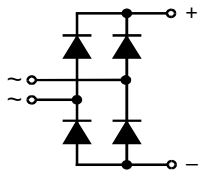
i	R_{thi} (K/W)	t_i (s)
1	0.775	0.0788
2	1.390	0.504
3	1.255	3.701

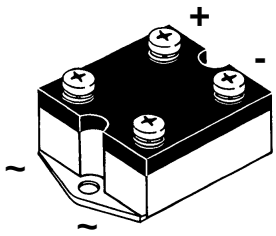
Single Phase Rectifier Bridge

I_{dAVM} = 35 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
1200	1200	VBO 30-12NO7
1400	1400	VBO 30-14NO7
1600	1600	VBO 30-16NO7
1800	1800	VBO 30-18NO7*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAVM}	T_C = 85°C, module		35	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	400	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	440	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	360	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	400	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	810	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	650	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	670	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M4)		1.5 ± 15 %	Nm
			13 ± 15 %	lb.in.
	Terminal connection torque (M4)		1.5 ± 15 %	Nm
			13 ± 15 %	lb.in.
Weight	typ.		135	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	5.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	2.2	V
V_{T0}	For power-loss calculations only			0.85	V
r_T	T_{VJ} = T_{VJM}			12	mΩ
R_{thJC}	per diode; DC current			2.8	K/W
	per module			0.7	K/W
R_{thJK}	per diode; DC current			3.4	K/W
	per module			0.85	K/W

Data according to IEC 60747 refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

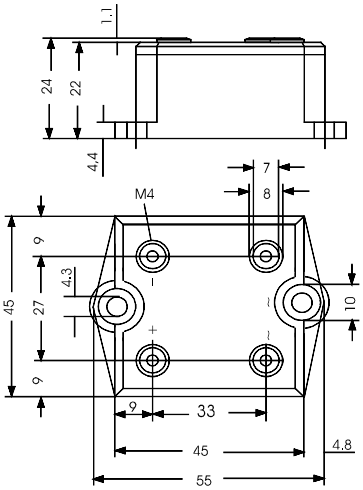
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



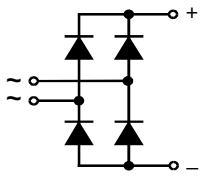
Single Phase Rectifier Bridge

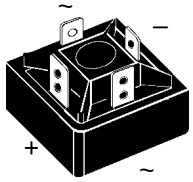
I_{dAV} = 38 A
V_{RRM} = 800-1600 V

Standard and Avalanche Types

V_{RSM} V	V_{BRmin} ① V	V_{RRM} V	Standard Types	Avalanche Types
900		800	VBO 25-08NO2	
1300	1230	1200	VBO 25-12NO2	VBO 25-12AO2
1700	1630	1600	VBO 25-16NO2	VBO 25-16AO2

① For Avalanche Types only





Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ②	T_C = 85°C, module		38	A
I_{dAVM}	module		40	A
P_{RSM}	$T_{VJ} = T_{VJM}$	t = 10 µs	3.4	kW
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	370	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	390	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	320	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	340	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	680	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	640	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	510	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	470	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	$I_{ISOL} \leq$ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	1.5-2	Nm
		(10-32 UNF)	13-18	lb.in.
Weight	typ.		15	g

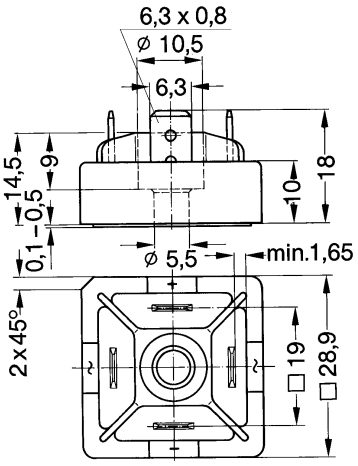
Features
- Avalanche rated parts available
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Low forward voltage drop
- 1/4" fast-on terminals
- UL registered E 72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with one screw
- Space and weight savings
- Improved temperature and power cycling

Symbol	Test Conditions		Characteristic Values		
I_R	$V_R = V_{RRM}$;	T_{VJ} = 25°C	≤	0.3	mA
	$V_R = V_{RRM}$;	$T_{VJ} = T_{VJM}$	≤	5	mA
V_F	I_F = 55 A;	T_{VJ} = 25°C	≤	1.36	V
V_{T0}	For power-loss calculations only			0.85	V
r_T	$T_{VJ} = T_{VJM}$			8	mΩ
R_{thJC}	per diode, DC current			2.8	K/W
	per module			0.7	K/W
R_{thJK}	per diode, DC current			3.2	K/W
	per module			0.8	K/W
d_S	Creeping distance on surface			13	mm
d_A	Creepage distance in air ③			9.5	mm
a	Max. allowable acceleration			50	m/s^2

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 and refer to a single diode unless otherwise stated
② for resistive load at bridge output, ③ with isolated fast-on tabs
IXYS reserves the right to change limits, test conditions and dimensions.

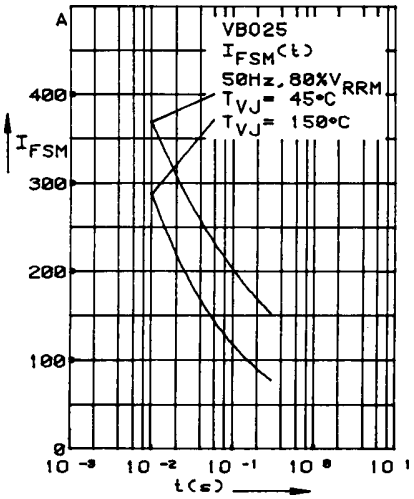


Fig. 1 Surge overload current per diode
I_{FSM}: Crest value, t: duration

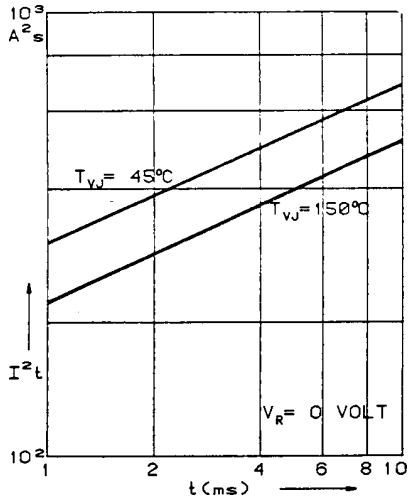


Fig. 2 I^2t versus time (1-10 ms) per diode

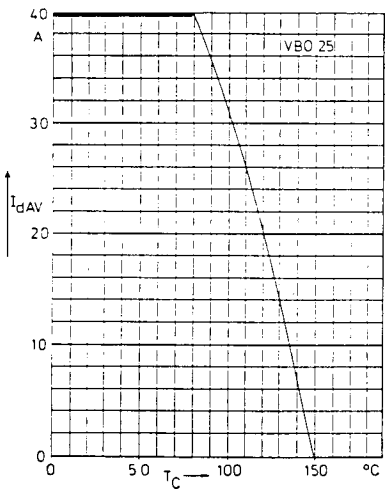


Fig. 3 Max. forward current at case temperature

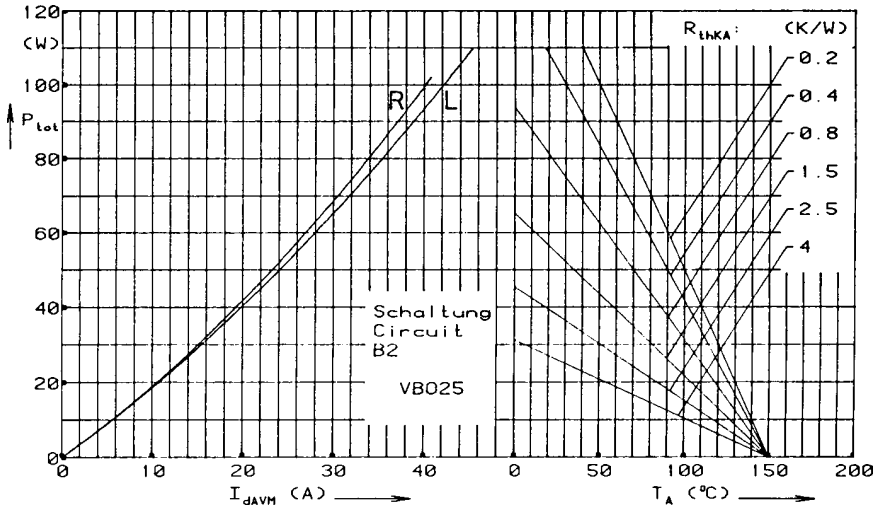


Fig. 4 Power dissipation versus direct output current and ambient temperature

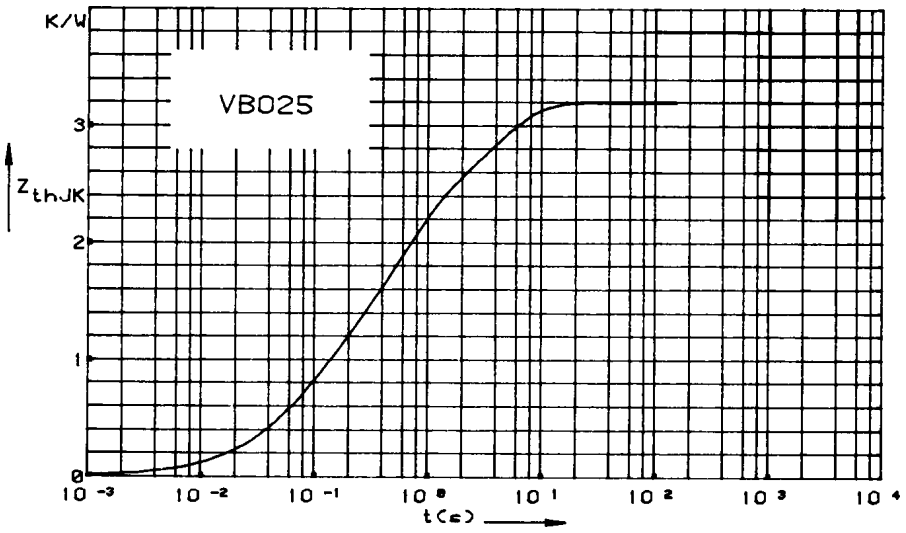


Fig. 5 Transient thermal impedance junction to heatsink per diode

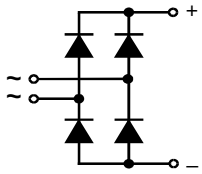
Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.775	0.0788
2	1.390	0.504
3	1.055	3.701

Single Phase Rectifier Bridge

I_{dAV} = 40 A
V_{RRM} = 800-1600 V

V_{RSM} V	V_{RRM} V	Standard Types
900	800	VBO 40-08NO6
1300	1200	VBO 40-12NO6
1700	1600	VBO 40-16NO6



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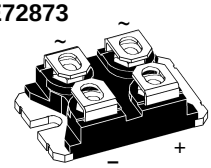


Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_C = 100°C	(diode)	20	A
I_{dAV} ①		(module)	40	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	300	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	320	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	260	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	280	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	450	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	430	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	340	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	330	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	$I_{ISOL} \leq$ 1 mA	2500	V~
M_d	Mounting torque (M4)		1.5/13	Nm/lb.in.
	Terminal connection torque (M4)		1.5/13	Nm/lb.in.
Weight	typ.		30	g

Features
- Isolation voltage 2500 V~
- Planar passivated chips
- Low forward voltage drop

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount
- Space and weight savings

M4 screws (4x) supplied

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 20 A;	T_{VJ} = 25°C	≤	1.15	V
V_{T0}	For power-loss calculations only			0.80	V
r_T	T_{VJ} = T_{VJM}			13	mΩ
R_{thJC}	per diode; DC current			1.7	K/W
	per module			0.42	K/W
R_{thCH}	per diode, DC current		typ.	0.3	K/W
	per module		typ.	0.08	K/W
d_S	Creeping distance on surface			8	mm
d_A	Creepage distance in air ③			4	mm
a	Max. allowable acceleration			50	m/s^2

Data according to IEC 60747 and refer to a single diode unless otherwise stated
① for resistive load at bridge output

Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.30	1.489	1.509
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004
V	3.30	4.57	0.130	0.180
W	0.780	0.830	19.81	21.08

800

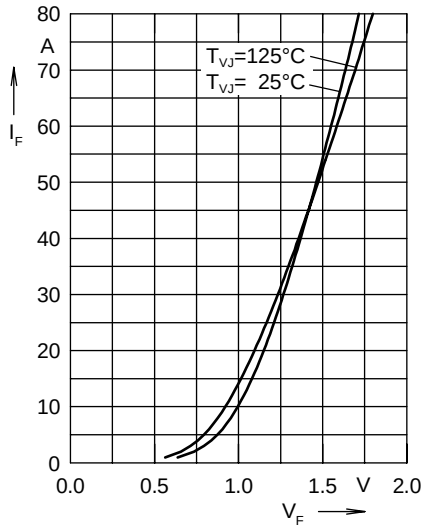


Fig. 1 Forward current versus voltage drop per diode

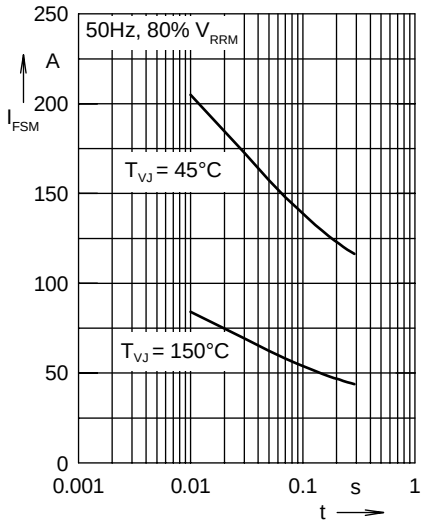


Fig. 2 Surge overload current

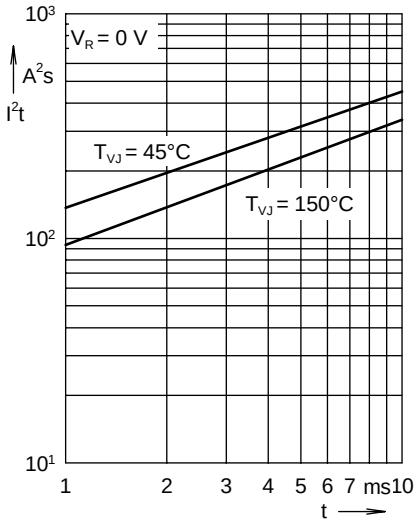


Fig. 3 I^2t versus time per diode

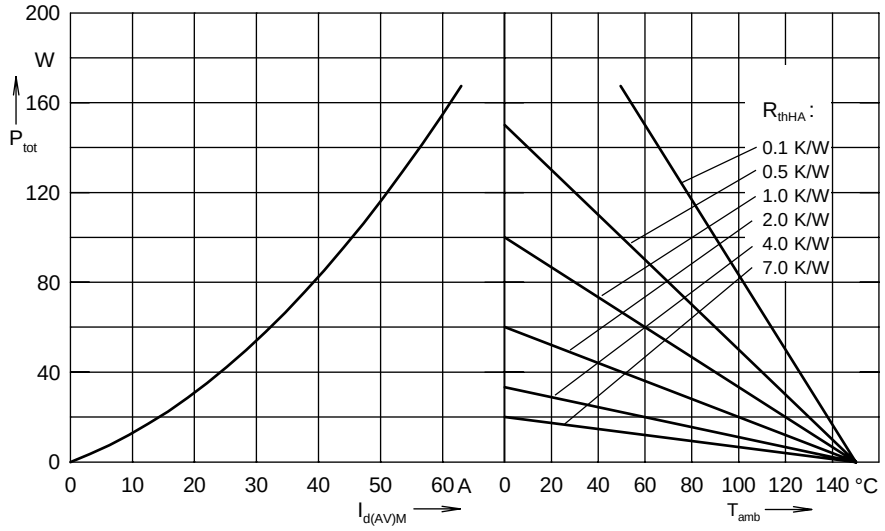


Fig. 4 Power dissipation versus direct output current and ambient temperature

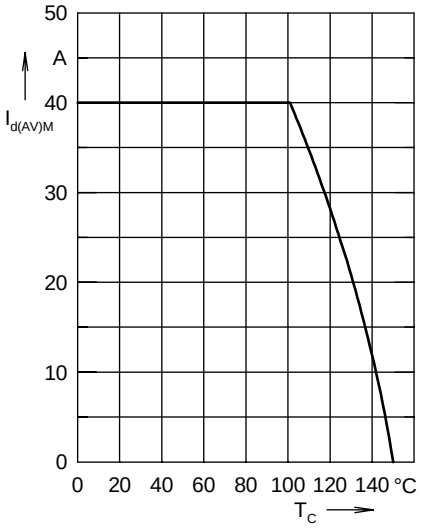


Fig. 5 Max. forward current versus case temperature

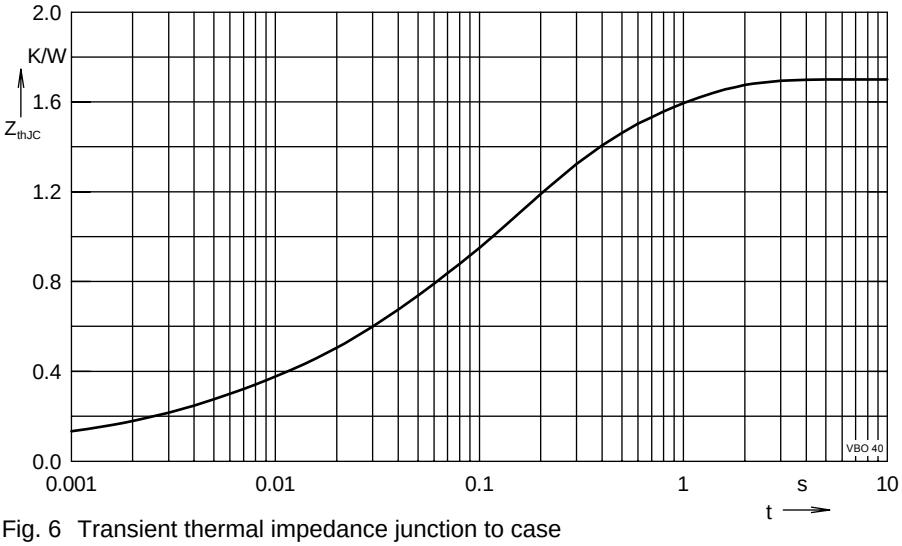


Fig. 6 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

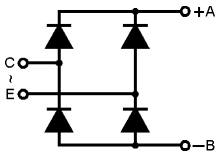
i	R_{thi} (K/W)	t_i (s)
1	0.081	0.00024
2	0.1449	0.0036
3	0.2982	0.0235
4	0.735	0.142
5	0.441	0.7

Single Phase Rectifier Bridge

I_{dAV} = 45 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V	V_{RRM} V	Types
900	800	VBO 45-08NO7
1300	1200	VBO 45-12NO7
1500	1400	VBO 45-14NO7
1700	1600	VBO 45-16NO7
1900	1800	VBO 45-16NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 100°C, module		45	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	550	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	600	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	550	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1520	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1520	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1250	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1250	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M5)	5 ± 15 %	Nm
		(10-32 UNF)	44 ± 15 %	lb.in.
Weight	typ.		110	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.5	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	10	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.7	V
V_{T0}	For power-loss calculations only			0.8	V
r_T	T_{VJ} = T_{VJM}			8	mΩ
R_{thJC}	per diode; DC current			1.45	K/W
	per module			0.363	K/W
R_{thJK}	per diode, DC current			1.9	K/W
	per module			0.475	K/W
d_S	Creeping distance on surface			16.1	mm
d_A	Creepage distance in air			7.5	mm
a	Max. allowable acceleration			50	m/s^2

Features

- Package with copper base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- 1/4" fast-on power terminals

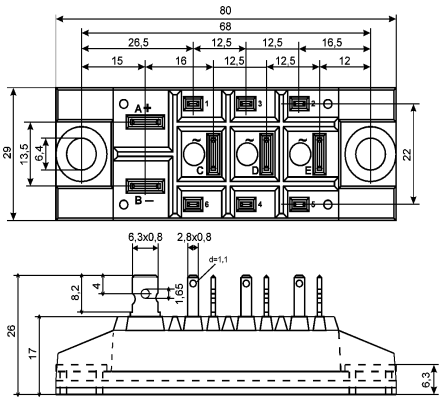
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output. IXYS reserves the right to change limits, test conditions and dimensions.

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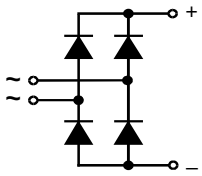
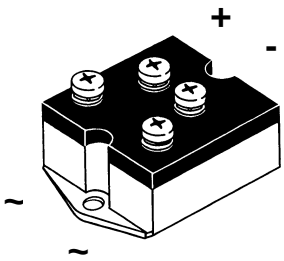
Single Phase Rectifier Bridge

I_{dAVM} = 50 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
1200	1200	VBO 50-12NO7
1400	1400	VBO 50-14NO7
1600	1600	VBO 50-16NO7
1800	1800	VBO 50-18NO7*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAVM}	T_C = 64°C, module		50	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	750	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	820	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	670	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	740	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	2800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	2820	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	2250	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	2300	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M5)		5 ± 15 %	Nm
			44 ± 15 %	lb.in.
	Terminal connection torque (M5)		3 ± 15 %	Nm
			26 ± 15 %	lb.in.
Weight	typ.		260	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	10.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.6	V
V_{T0}	For power-loss calculations only			0.85	V
r_T	T_{VJ} = T_{VJM}			8	mΩ
R_{thJC}	per diode; DC current			2.6	K/W
	per module			0.65	K/W
R_{thJK}	per diode; DC current			2.84	K/W
	per module			0.71	K/W

Data according to IEC 60747 refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

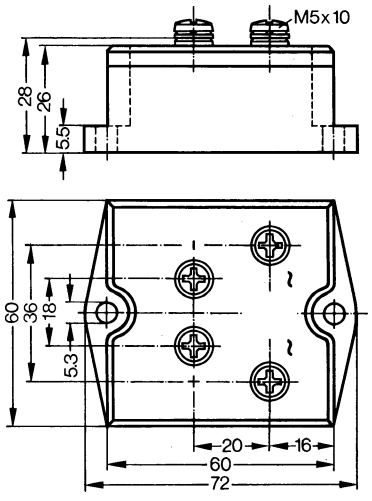
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")

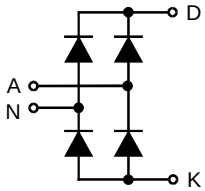


Single Phase Rectifier Bridge

I_{dAVM} = 54 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V	V_{RRM} V	Type
900	800	VUO 54-08NO7
1300	1200	VUO 54-12NO7
1500	1400	VUO 54-14NO7
1700	1600	VUO 54-16NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 100°C, module		54	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	300	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	320	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	260	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	280	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	450	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	425	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	340	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	325	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M4)		1.5 - 2	Nm
			14 - 18	lb.in.
Weight	typ.		18	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.5	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	3	mA
V_F	I_F = 55 A;	T_{VJ} = 25°C	≤	1.46	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				13	mΩ
R_{thJC}	per diode; DC current			1.1	K/W
	per module			0.28	K/W
R_{thJH}	per diode, DC current			1.6	K/W
	per module			0.4	K/W
d_S	Creeping distance on surface			11.2	mm
d_A	Creepage distance in air			9.7	mm
a	Max. allowable acceleration			50	m/s^2

Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output.

IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with DCB ceramic base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

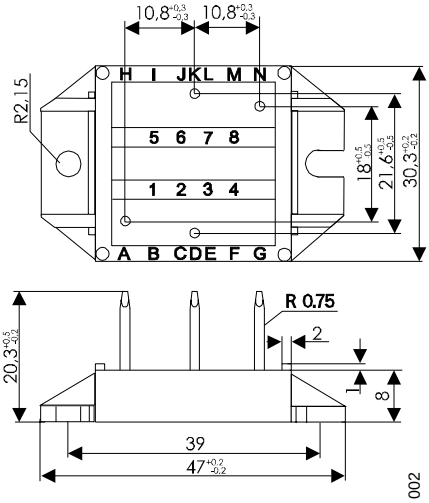
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Dimensions in mm (1 mm = 0.0394")

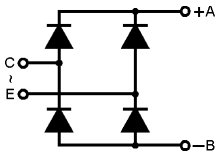


Single Phase Rectifier Bridge

I_{dAV} = 55 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V	V_{RRM} V	Types
900	800	VBO 55-08NO7
1300	1200	VBO 55-12NO7
1500	1400	VBO 55-14NO7
1700	1600	VBO 55-16NO7
1900	1800	VBO 55-18NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 100°C, module		55	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	750	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	820	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	600	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	700	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	2800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	2820	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	2200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	2250	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M5)	5 ± 15 %	Nm
		(10-32 UNF)	44 ± 15 %	lb.in.
Weight	typ.		110	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.5	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	10	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.6	V
V_{T0}	For power-loss calculations only			0.8	V
r_T	T_{VJ} = T_{VJM}			6	mΩ
R_{thJC}	per diode; DC current			1.3	K/W
	per module			0.325	K/W
R_{thJK}	per diode, DC current			1.6	K/W
	per module			0.4	K/W
d_S	Creeping distance on surface			16.1	mm
d_A	Creepage distance in air			7.5	mm
a	Max. allowable acceleration			50	m/s^2

Features

- Package with copper base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- 1/4" fast-on power terminals

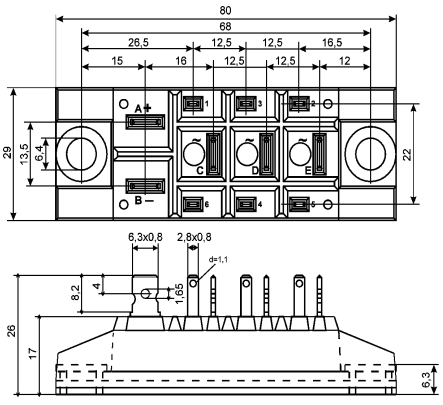
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output. IXYS reserves the right to change limits, test conditions and dimensions.

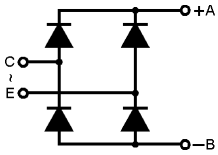
024

Single Phase Rectifier Bridge

I_{dAV} = 65 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V	V_{RRM} V	Types
900	800	VBO 65-08NO7
1300	1200	VBO 65-12NO7
1500	1400	VBO 65-14NO7
1700	1600	VBO 65-16NO7
1900	1800	VBO 65-18NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 100°C, module		65	A
I_{FSM}	T_{VJ} = 45°C; V_R = 0	t = 10 ms (50 Hz), sine	1000	A
		t = 8.3 ms (60 Hz), sine	1100	A
	T_{VJ} = T_{VJM} V_R = 0	t = 10 ms (50 Hz), sine	700	A
		t = 8.3 ms (60 Hz), sine	750	A
I^2t	T_{VJ} = 45°C V_R = 0	t = 10 ms (50 Hz), sine	5000	A^2s
		t = 8.3 ms (60 Hz), sine	5000	A^2s
	T_{VJ} = T_{VJM} V_R = 0	t = 10 ms (50 Hz), sine	2450	A^2s
		t = 8.3 ms (60 Hz), sine	2330	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq$ 1 mA	t = 1 min	2500	V~
		t = 1 s	3000	V~
M_d	Mounting torque	(M5)	5 ± 15 %	Nm
		(10-32 UNF)	44 ± 15 %	lb.in.
Weight	typ.		110	g

Features

- Package with copper base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- 1/4" fast-on power terminals

Applications

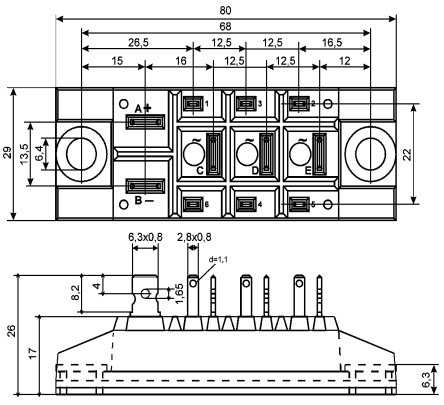
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.5	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	10	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.4	V
V_{T0}	For power-loss calculations only			0.8	V
r_T	T_{VJ} = T_{VJM}			5	mΩ
R_{thJC}	per diode; DC current			1.12	K/W
	per module			0.28	K/W
R_{thJK}	per diode, DC current			1.5	K/W
	per module			0.375	K/W
d_S	Creeping distance on surface			16.1	mm
d_A	Creepage distance in air			7.5	mm
a	Max. allowable acceleration			50	m/s^2

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output. IXYS reserves the right to change limits, test conditions and dimensions.

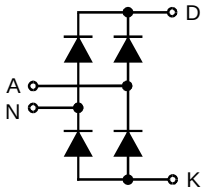
024

Single Phase Rectifier Bridge

I_{dAV} = 68 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V	V_{RRM} V	Types
900	800	VBO 68-08NO7
1300	1200	VBO 68-12NO7
1500	1400	VBO 68-14NO7
1700	1600	VBO 68-16NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 90°C, module		68	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	530	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	570	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	480	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	520	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1400	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1360	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1150	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1140	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M4)	1.5 - 2	Nm
			14 - 18	lb.in.
Weight	typ.		18	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.5	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	3	mA
V_F	I_F = 80 A;	T_{VJ} = 25°C	≤	1.5	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				7.5	mΩ
R_{thJC}	per diode; DC current			1.2	K/W
	per module			0.3	K/W
R_{thJH}	per diode, DC current			1.5	K/W
	per module			0.38	K/W
d_S	Creeping distance on surface			11.2	mm
d_A	Creepage distance in air			9.7	mm
a	Max. allowable acceleration			50	m/s^2

Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output.

IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with DCB ceramic base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

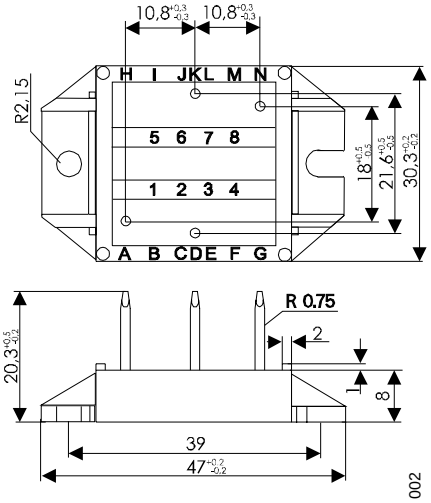
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

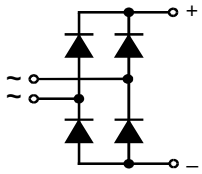
Dimensions in mm (1 mm = 0.0394")

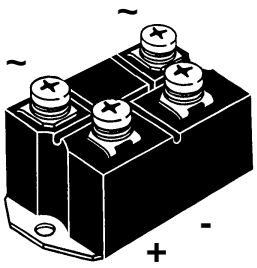


Single Phase Rectifier Bridge

I_{dAV} = 52/72 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type	
800	800	VBO 52-08NO7	VBO 72-08NO7
1200	1200	VBO 52-12NO7	VBO 72-12NO7
1400	1400	VBO 52-14NO7	VBO 72-14NO7
1600	1600	VBO 52-16NO7	VBO 72-16NO7
1800	1800	VBO 52-18NO7	VBO 72-18NO7





Symbol	Test Conditions		Maximum Ratings VBO 52	VBO 72	
I_{dAV}	T_C = 100°C, module		52	72	A
I_{dAV}	T_A = 45°C (R_{thCA} = 0.6 K/W), module		41	49	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	550	750	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	600	820	A
	T_{VJ} = T_{VJM} t = 10 ms	(50 Hz), sine	500	670	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	550	740	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1520	2800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1520	2800	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1250	2250	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1250	2250	A^2s
T_{VJ}			-40...+150		°C
T_{VJM}			150		°C
T_{stg}			-40...+125		°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500		V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000		V~
M_d	Mounting torque (M5)		5 ± 15 %		Nm
	Terminal connection torque (M5)		5 ± 15 %		Nm
Weight	typ.		160		g

Symbol	Test Conditions		Characteristic Values VBO 52	VBO 72	
I_R	V_R = V_{RRM}; T_{VJ} = 25°C	≤	0.3	0.3	mA
	V_R = V_{RRM}; T_{VJ} = T_{VJM}	≤	5	5	mA
V_F	I_F = 150 A; T_{VJ} = 25°C	≤	1.8	1.6	V
V_{T0}	For power-loss calculations only		0.8	0.8	V
r_T	T_{VJ} = T_{VJM}		8	5	mΩ
R_{thJC}	per diode		1.45	1.1	K/W
	per module		0.36	0.28	K/W
R_{thJK}	per diode		1.87	1.52	K/W
	per module		0.47	0.38	K/W
d_S	Creeping distance on surface			10	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

Data according to IEC 60747 refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL applied

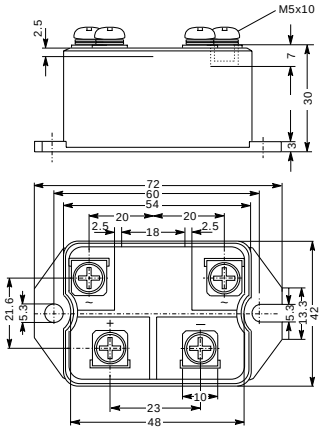
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")

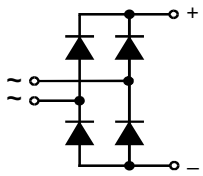


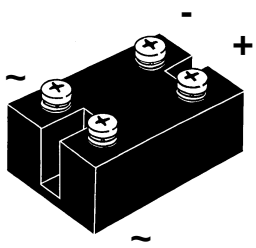
008

Single Phase Rectifier Bridge

I_{dAVM} = 107 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
900	800	VBO 105-08NO7
1200	1200	VBO 105-12NO7
1400	1400	VBO 105-14NO7
1600	1600	VBO 105-16NO7
1800	1800	VBO 105-18NO7*





* delivery time on request

Symbol	Test Conditions		Maximum Ratings	
I_{dAVM}	T_C = 85°C, module		107	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1650	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1350	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1500	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	11250	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	11300	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	9120	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	9350	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M5)		5 ± 15 %	Nm
			44 ± 15 %	lb.in.
	Terminal connection torque (M5)		5 ± 15 %	Nm
			44 ± 15 %	lb.in.
Weight	typ.		225	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	8.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.6	V
V_{T0}	For power-loss calculations only			0.8	V
r_T	T_{VJ} = T_{VJM}			5	mΩ
R_{thJC}	per diode; 180°			0.83	K/W
	per module; 180°			0.138	K/W
R_{thJK}	per diode ; 180°			1.13	K/W
	per module; 180°			0.188	K/W

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

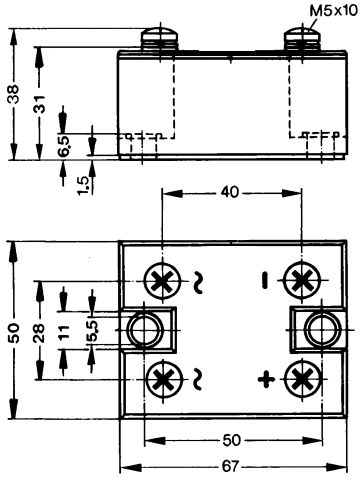
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



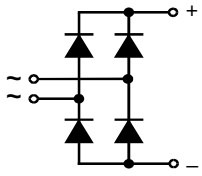
Data according to IEC 60747 refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

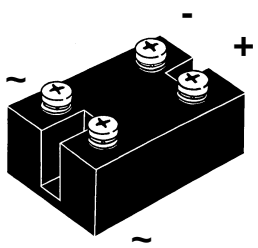
024

Single Phase Rectifier Bridge

I_{dAVM} = 124 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
900	800	VBO 125-08NO7
1200	1200	VBO 125-12NO7
1400	1400	VBO 125-14NO7
1600	1600	VBO 125-16NO7
1800	1800	VBO 125-18NO7





Symbol	Test Conditions		Maximum Ratings	
I_{dAVM}	T_C = 85°C, module		124	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1800	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1950	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1600	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1800	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	16200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	16000	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	12800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	13600	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M5)		5 ± 15 %	Nm
			44 ± 15 %	lb.in.
	Terminal connection torque (M5)		5 ± 15 %	Nm
			44 ± 15 %	lb.in.
Weight	typ.		225	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	8.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.3	V
V_{T0}	For power-loss calculations only			0.8	V
r_T	T_{VJ} = T_{VJM}			3	mΩ
R_{thJC}	per diode ; 180°			0.83	K/W
	per module; 180°			0.138	K/W
R_{thJK}	per diode ; 180°			1.13	K/W
	per module; 180°			0.188	K/W

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

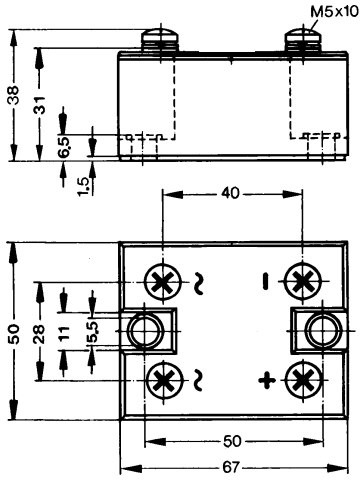
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



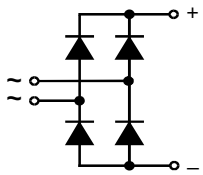
Data according to IEC 60747 refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

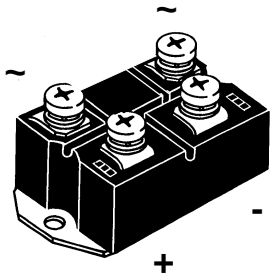
024

Single Phase Rectifier Bridge

I_{dAV} = 122 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
800	800	VBO 130-08NO7
1200	1200	VBO 130-12NO7
1400	1400	VBO 130-14NO7
1600	1600	VBO 130-16NO7
1800	1800	VBO 130-18NO7





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_C = 100°C, module		122	A
I_{dAV}	T_A = 35°C (R_{thCA} = 0.2 K/W), module		115	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1800	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1950	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1600	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1800	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	16 200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	16 200	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	12 800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	13 400	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M6)		5 ± 15 %	Nm
	Terminal connection torque (M6)		5 ± 15 %	Nm
Weight	typ.		270	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 300 A;	T_{VJ} = 25°C	≤	1.65	V
V_{T0}	For power-loss calculations only			0.8	V
r_T	T_{VJ} = T_{VJM}			3	mΩ
R_{thJC}	per diode, 180°			0.65	K/W
	per module			0.108	K/W
R_{thJK}	per diode; 180°			0.83	K/W
	per module			0.138	K/W
d_S	Creeping distance on surface			10	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL applied

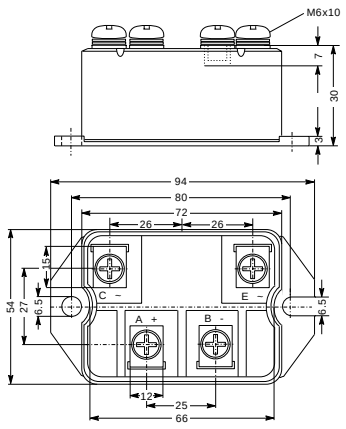
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



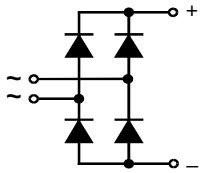
Data according to IEC 60747 refer to a single diode unless otherwise stated
IXYS reserves the right to change limits, test conditions and dimensions.

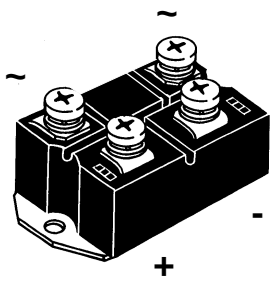
008

Single Phase Rectifier Bridge

I_{dAV} = 174 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
800	800	VBO 160-08NO7
1200	1200	VBO 160-12NO7
1400	1400	VBO 160-14NO7
1600	1600	VBO 160-16NO7
1800	1800	VBO 160-18NO7





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_C = 100°C, module		174	A
I_{dAV}	T_A = 35°C (R_{thCA} = 0.2 K/W), module		139	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	2800	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	3300	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	2500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	2750	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	39 200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	45 000	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	31 200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	31 300	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M6)		5 ± 15 %	Nm
	Terminal connection torque (M6)		5 ± 15 %	Nm
Weight	typ.		270	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 300 A;	T_{VJ} = 25°C	≤	1.43	V
V_{T0}	For power-loss calculations only			0.8	V
r_T	T_{VJ} = T_{VJM}			2.2	mΩ
R_{thJC}	per diode, 180°			0.45	K/W
	per module			0.11	K/W
R_{thJK}	per diode, 180°			0.6	K/W
	per module			0.15	K/W
d_S	Creeping distance on surface			10	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL applied

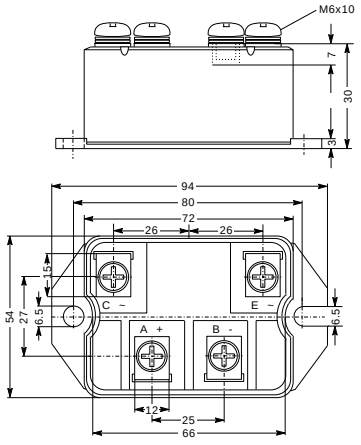
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



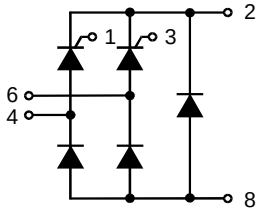
Data according to IEC 60747 refer to a single diode unless otherwise stated
IXYS reserves the right to change limits, test conditions and dimensions.

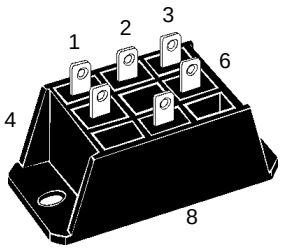
Half Controlled Single Phase Rectifier Bridge

with Freewheeling Diode

I_{dAVM} = 21 A
V_{RRM} = 800-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
900	800	VHF 15-08io5
1300	1200	VHF 15-12io5
1500	1400	VHF 15-14io5
1700	1600	VHF 15-16io5





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 85°C, module		15	A
I_{dAVM} ①	module		21	A
I_{FRMS}, I_{TRMS}	per leg		15	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	190	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	210	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	170	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	190	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	160	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	180	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	140	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	145	A^2s
$(di/dt)_{cr}$	T_{VJ} = 125°C f =50 Hz, t_P =200 µs V_D = 2/3 V_{DRM}	repetitive, I_T = 50 A	150	A/µs
	I_G = 0.3 A, di_G/dt = 0.3 A/µs	non repetitive, I_T = 1/2 • I_{dAV}	500	A/µs
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM} R_{GK} = ∞; method 1 (linear voltage rise)		1000	V/µs
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight			50	g

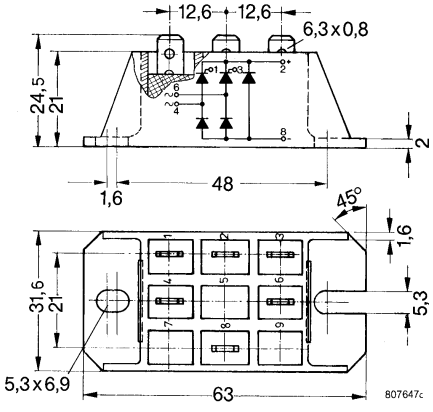
Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
① for resistive load
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- 1/4" fast-on terminals
- UL registered E 72873

Applications
- Supply for DC power equipment
- DC motor control

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Symbol	Test Conditions			Characteristic Values	
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		$T_{VJ} = 25°C$	≤	0.3	mA
V_T, V_F	I_T, I_F = 45 A; $T_{VJ} = 25°C$		≤	2.8	V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125°C$)			1.0	V
r_T				40	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.0	V
		$T_{VJ} = -40°C$	≤	1.2	V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	65	mA
		$T_{VJ} = -40°C$	≤	80	mA
		$T_{VJ} = 125°C$	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	5	mA
I_L	I_G = 0.3 A; t_G = 30 µs;	$T_{VJ} = 25°C$	≤	150	mA
	di_G/dt = 0.3 A/µs;	$T_{VJ} = -40°C$	≤	200	mA
		$T_{VJ} = 125°C$	≤	100	mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	100	mA
t_{gd}	$T_{VJ} = 25°C$; V_D = 1/2 V_{DRM}		≤	2	µs
	I_G = 0.3 A; di_G/dt = 0.3 A/µs				
t_q	$T_{VJ} = 125°C$, I_T = 15 A, t_P = 300 µs, V_R = 100 V		typ.	150	µs
Q_r	di/dt = -10 A/µs, dv/dt = 20 V/µs, V_D = 2/3 V_{DRM}			75	µC
R_{thJC}	per thyristor (diode); DC current			2.4	K/W
	per module			0.6	K/W
R_{thJK}	per thyristor (diode); DC current			3.0	K/W
	per module			0.75	K/W
d_S	Creepage distance on surface			12.6	mm
d_A	Creepage distance in air			6.3	mm
a	Max. allowable acceleration			50	m/s^2

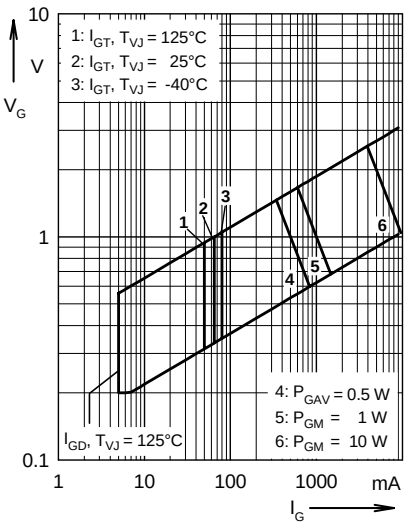


Fig. 1 Gate trigger range

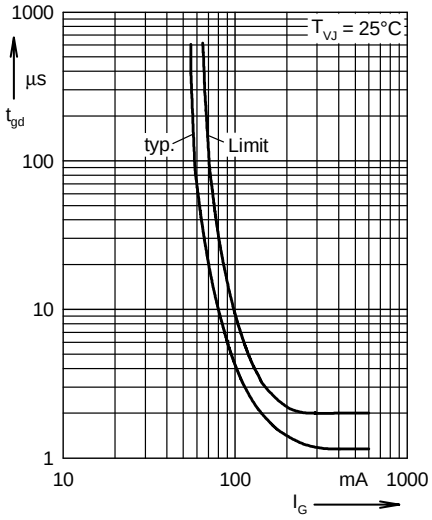


Fig. 2 Gate controlled delay time t_{gd}

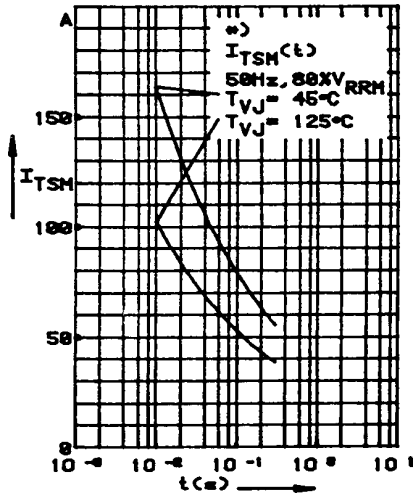


Fig. 3 Surge overload current per chip
I_{FSM}: Crest value, t: duration

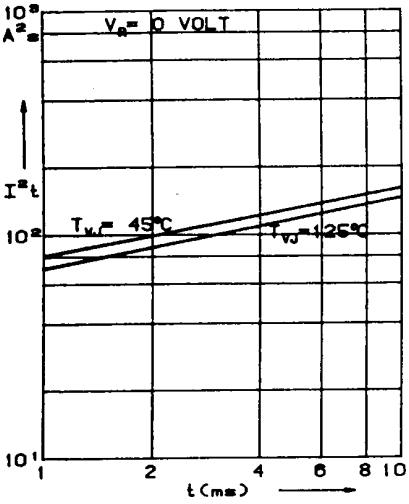


Fig. 4 I^2t versus time (1-10 ms) per chip

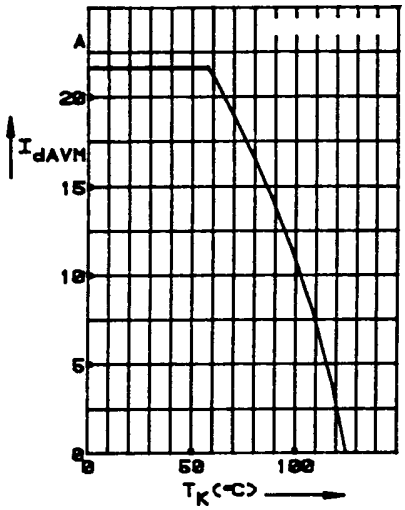


Fig. 5 Max. forward current at heatsink temperature

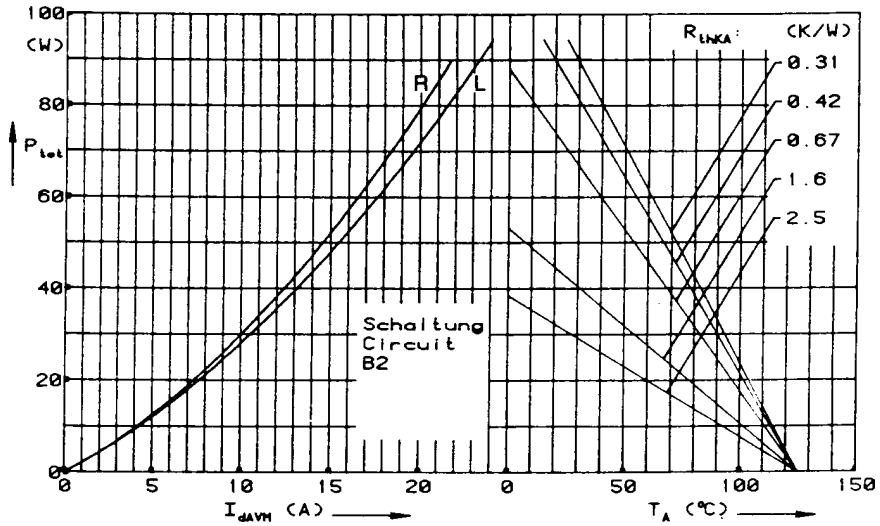


Fig. 6 Power dissipation versus direct output current and ambient temperature

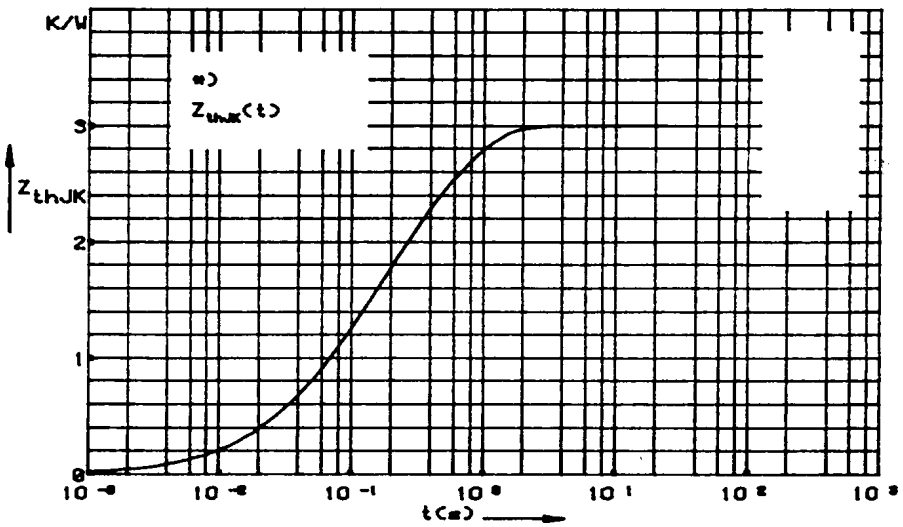


Fig. 7 Transient thermal impedance junction to heatsink per chip

Constants for Z_{thJK} calculation:

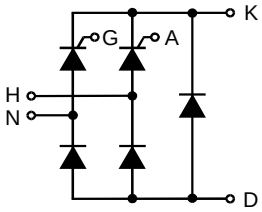
i	R_{thi} (K/W)	t_i (s)
1	0.34	0.0344
2	1.16	0.12
3	1.5	0.5

Single Phase Rectifier Bridge

I_{dAV} = 32 A
V_{RRM} = 600-1200 V

Preliminary data

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
700	600	VHF 25-06io7
900	800	VHF 25-08io7
1300	1200	VHF 25-12io7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 85°C, module		32	A
I_{TAVM}/I_{FAVM}	T_C = 85°C; (180° sine ; per thyristor)		16	A
I_{TSM}/I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	200	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	210	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	180	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	190	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	150	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	160	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	150	A^2s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$	repetitive, I_T = 20 A	100	A/µs
	f =50 Hz, t_P =200 µs			
	V_D = 2/3 V_{DRM}			
	I_G = 0.15 A	non repetitive, $I_T = I_{TAVM}$	500	A/µs
	di_G/dt = 0.15 A/µs			
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$;	V_{DR} = 2/3 V_{DRM}	500	V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)			
V_{RGM}			10	V
P_{GM}	$T_{VJ} = T_{VJM}$	t_p = 30 µs	≤ 5	W
	$I_T = I_{TAVM}$	t_p = 300 µs	≤ 2.5	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M4)		1.5 - 2	Nm
			14 - 18	lb.in.
Weight	typ.		18	g

Data according to IEC 60747 refer to a single diode/thyristor unless otherwise stated
① for resistive load at bridge output. IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with DCB ceramic base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

Applications

- Supply for DC power equipment
- DC motor control

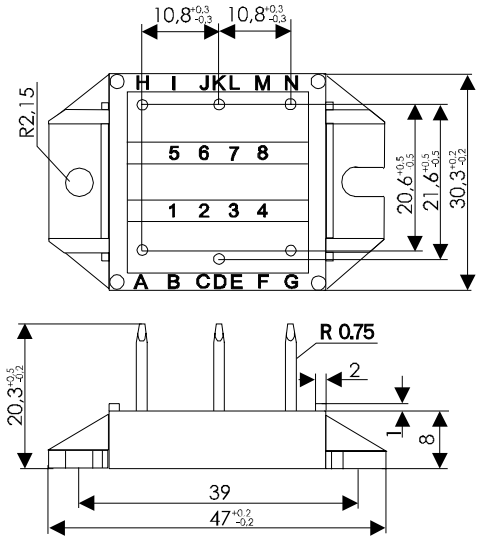
Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

002

Symbol	Test Conditions		Characteristic Values		
I_D, I_R	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$		≤	5	mA
V_T	I_T = 20 A; T_{VJ} = 25°C		≤	1.6	V
V_{T0}	For power-loss calculations only (T_{VJ} = 125°C)			0.85	V
r_T				27	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	1.5	V
		T_{VJ} = -40°C	≤	2.5	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	25	mA
		T_{VJ} = -40°C	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	0.2	V
I_{GD}			≤	3	mA
I_L	T_{VJ} = 25°C; t_P = 10 µs I_G = 0.1 A; di_G/dt = 0.1 A/µs		≤	75	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; R_{GK} = ∞		≤	50	mA
t_{gd}	T_{VJ} = 25°C; V_D = 1/2 V_{DRM} I_G = 0.1 A; di_G/dt = 0.1 A/µs		≤	2	µs
R_{thJC}	per thyristor; DC			1.3	K/W
	per module			0.22	K/W
R_{thJK}	per thyristor; DC			1.8	K/W
	per module			0.3	K/W
d_S	Creeping distance on surface			11.2	mm
d_A	Creepage distance in air			9.5	mm
a	Max. allowable acceleration			50	m/s^2

Dimensions in mm (1 mm = 0.0394")



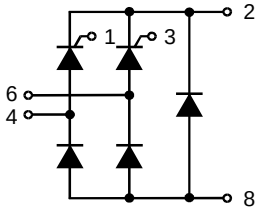
002

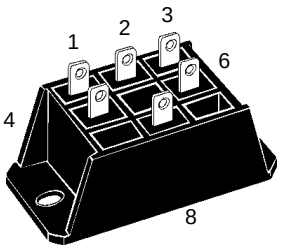
Half Controlled Single Phase Rectifier Bridge

with Freewheeling Diode

I_{dAVM} = 32 A
V_{RRM} = 800-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
900	800	VHF 28-08io5
1300	1200	VHF 28-12io5
1500	1400	VHF 28-14io5
1700	1600	VHF 28-16io5





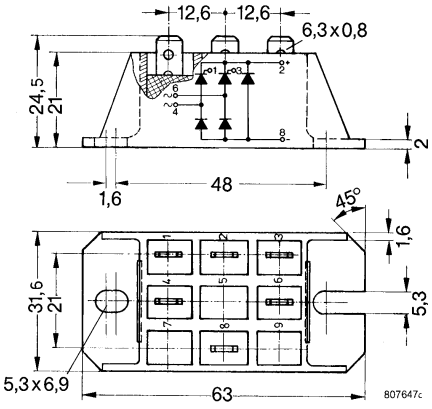
Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 85°C, module		28	A
I_{dAVM} ①	module		32	A
I_{FRMS}, I_{TRMS}	per leg		23	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	300	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	330	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	270	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	300	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	440	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	455	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	365	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	370	A^2s
$(di/dt)_{cr}$	T_{VJ} = 125°C	repetitive, I_T = 50 A	150	A/µs
	f =50 Hz, t_P =200 µs			
	V_D = 2/3 V_{DRM}			
	I_G = 0.3 A,	non repetitive, I_T = 1/2 • I_{dAV}	500	A/µs
	di_G/dt = 0.3 A/µs			
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM}		1000	V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)			
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight			50	g

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- ¼" fast-on terminals
- UL registered E 72873

Applications
- Supply for DC power equipment
- DC motor control

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
① for resistive load
IXYS reserves the right to change limits, test conditions and dimensions.

Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		$T_{VJ} = 25°C$	≤	0.3	mA
V_T, V_F	I_T, I_F = 45 A; $T_{VJ} = 25°C$		≤	1.6	V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125°C$)			0.9	V
r_T				15	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.0	V
		$T_{VJ} = -40°C$	≤	1.2	V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	65	mA
		$T_{VJ} = -40°C$	≤	80	mA
		$T_{VJ} = 125°C$	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	5	mA
I_L	I_G = 0.3 A; t_G = 30 µs;	$T_{VJ} = 25°C$	≤	150	mA
	di_G/dt = 0.3 A/µs;	$T_{VJ} = -40°C$	≤	200	mA
		$T_{VJ} = 125°C$	≤	100	mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	100	mA
t_{gd}	$T_{VJ} = 25°C$; V_D = 1/2 V_{DRM} I_G = 0.3 A; di_G/dt = 0.3 A/µs		≤	2	µs
t_q	$T_{VJ} = 125°C$, I_T = 15 A, t_P = 300 µs, V_R = 100 V		typ.	150	µs
Q_r	di/dt = -10 A/µs, dv/dt = 20 V/µs, V_D = 2/3 V_{DRM}			75	µC
R_{thJC}	per thyristor (diode); DC current			1.4	K/W
	per module			0.35	K/W
R_{thJK}	per thyristor (diode); DC current			2.0	K/W
	per module			0.5	K/W
d_S	Creepage distance on surface			12.6	mm
d_A	Creepage distance in air			6.3	mm
a	Max. allowable acceleration			50	m/s^2

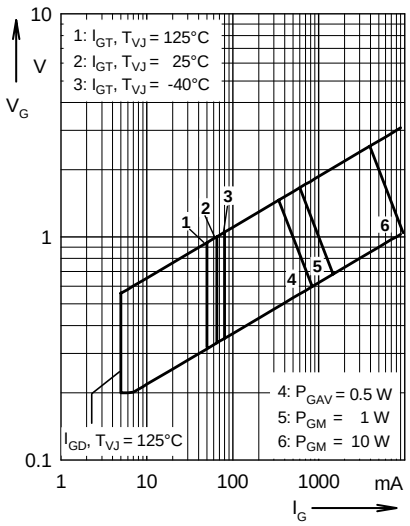


Fig. 1 Gate trigger range

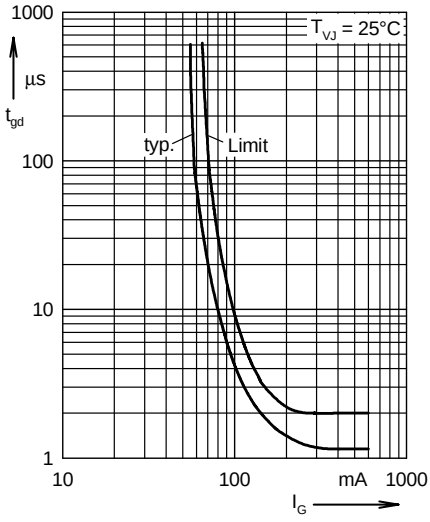


Fig. 2 Gate controlled delay time t_{gd}

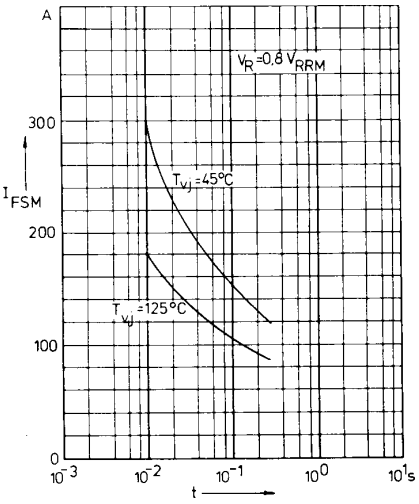


Fig. 3 Surge overload current per chip
I_{FSM}: Crest value, t: duration

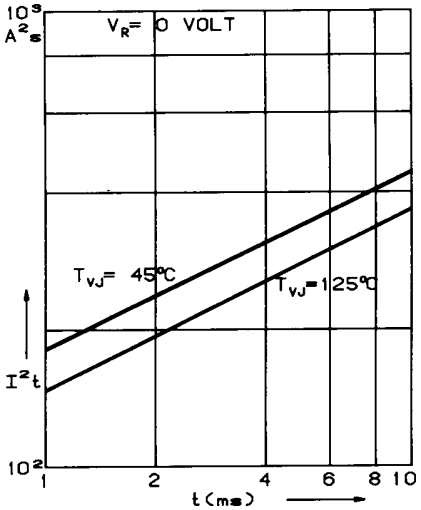


Fig. 4 I^2t versus time (1-10 ms) per chip

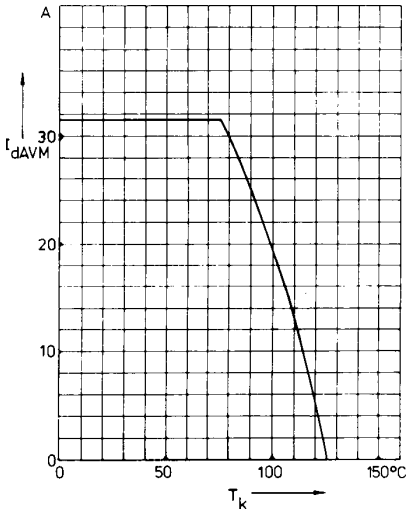


Fig. 5 Max. forward current at heatsink temperature

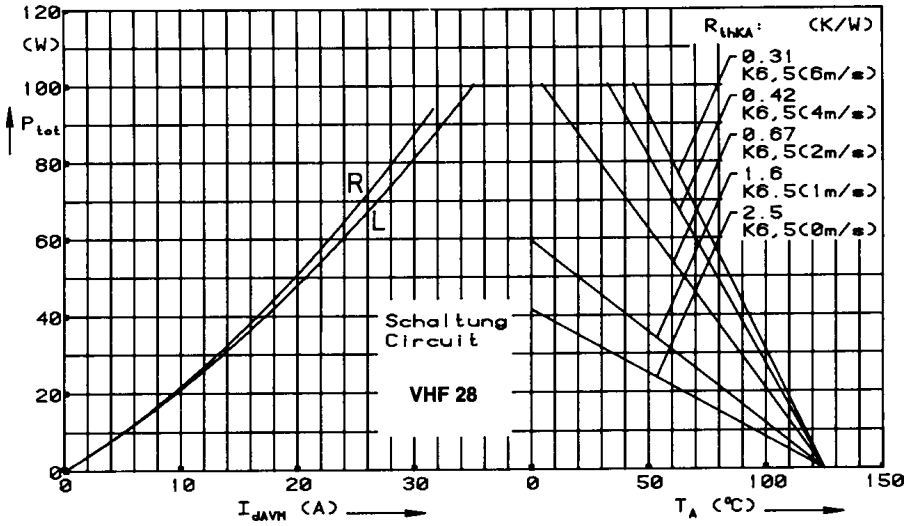


Fig. 6 Power dissipation versus direct output current and ambient temperature

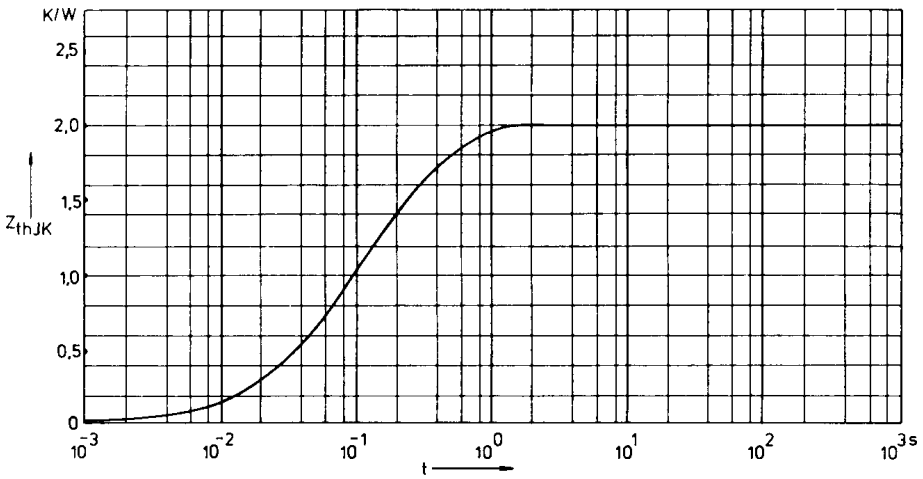


Fig. 7 Transient thermal impedance junction to heatsink per chip

Constants for Z_{thJK} calculation:

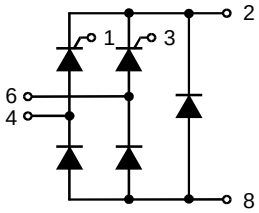
i	R_{thi} (K/W)	t_i (s)
1	0.3441	0.0344
2	1.1554	0.12
3	1.5005	0.5

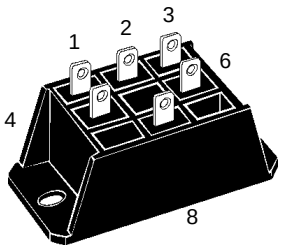
Half Controlled Single Phase Rectifier Bridge

with Freewheeling Diode

I_{dAVM} = 40 A
V_{RRM} = 800-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
900	800	VHF 36-08io5
1300	1200	VHF 36-12io5
1500	1400	VHF 36-14io5
1700	1600	VHF 36-16io5





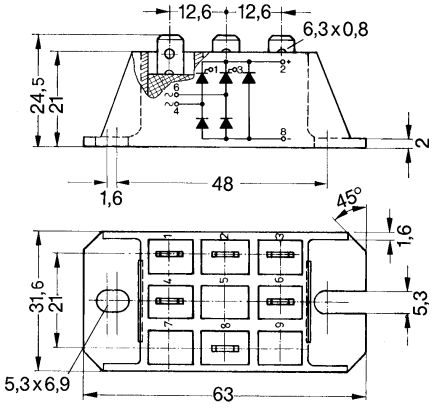
Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 85°C, module		36	A
I_{dAVM} ①	module		40	A
I_{FRMS}, I_{TRMS}	per leg		28	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	320	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	350	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	280	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	310	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	500	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	520	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	390	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	400	A^2s
$(di/dt)_{cr}$	T_{VJ} = 125°C f =50 Hz, t_P =200 µs V_D = 2/3 V_{DRM}	repetitive, I_T = 50 A	150	A/µs
	I_G = 0.3 A, di_G/dt = 0.3 A/µs	non repetitive, I_T = 1/2 • I_{dAV}	500	A/µs
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM} R_{GK} = ∞; method 1 (linear voltage rise)		1000	V/µs
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight			50	g

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- ¼" fast-on terminals
- UL registered E 72873

Applications
- Supply for DC power equipment
- DC motor control

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
① for resistive load
IXYS reserves the right to change limits, test conditions and dimensions.

Symbol	Test Conditions			Characteristic Values	
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		$T_{VJ} = 25°C$	≤	0.3	mA
V_T, V_F	I_T, I_F = 45 A; $T_{VJ} = 25°C$		≤	1.45	V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125°C$)			0.85	V
r_T				13	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.0	V
		$T_{VJ} = -40°C$	≤	1.2	V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	65	mA
		$T_{VJ} = -40°C$	≤	80	mA
		$T_{VJ} = 125°C$	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	5	mA
I_L	I_G = 0.3 A; t_G = 30 µs;	$T_{VJ} = 25°C$	≤	150	mA
	di_G/dt = 0.3 A/µs;	$T_{VJ} = -40°C$	≤	200	mA
		$T_{VJ} = 125°C$	≤	100	mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	100	mA
t_{gd}	$T_{VJ} = 25°C$; V_D = 1/2 V_{DRM} I_G = 0.3 A; di_G/dt = 0.3 A/µs		≤	2	µs
t_q	$T_{VJ} = 125°C$, I_T = 15 A, t_P = 300 µs, V_R = 100 V		typ.	150	µs
Q_r	di/dt = -10 A/µs, dv/dt = 20 V/µs, V_D = 2/3 V_{DRM}			75	µC
R_{thJC}	per thyristor (diode); DC current			1.15	K/W
	per module			0.29	K/W
R_{thJK}	per thyristor (diode); DC current			1.55	K/W
	per module			0.39	K/W
d_S	Creeping distance on surface			12.6	mm
d_A	Creepage distance in air			6.3	mm
a	Max. allowable acceleration			50	m/s^2

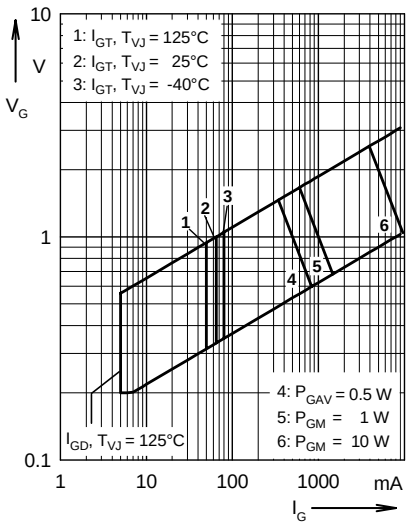


Fig. 1 Gate trigger range

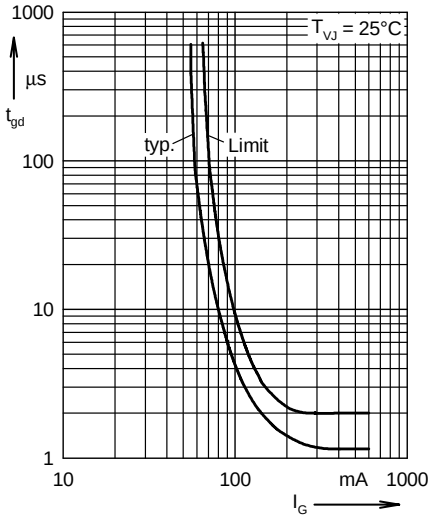


Fig. 2 Gate controlled delay time t_{gd}

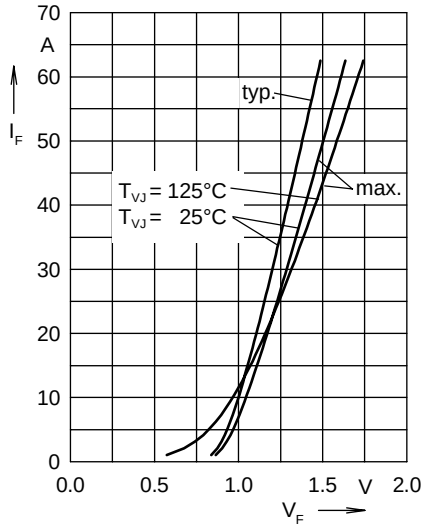


Fig. 3 Forward current versus voltage drop per diode

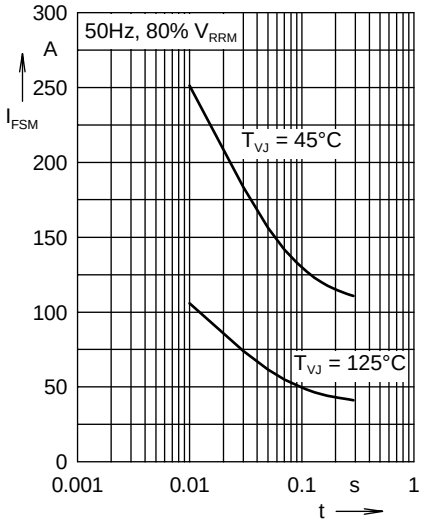


Fig. 4 Surge overload current

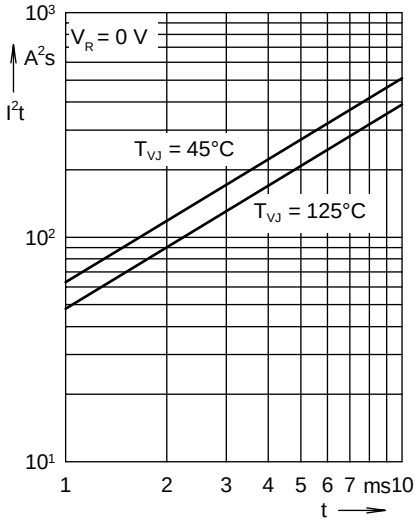


Fig. 5 I^2t versus time per diode

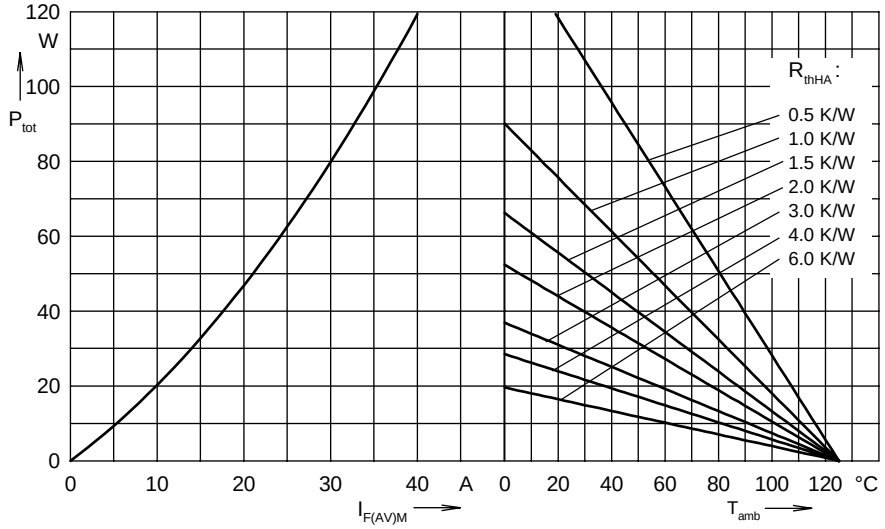


Fig. 6 Power dissipation versus direct output current and ambient temperature

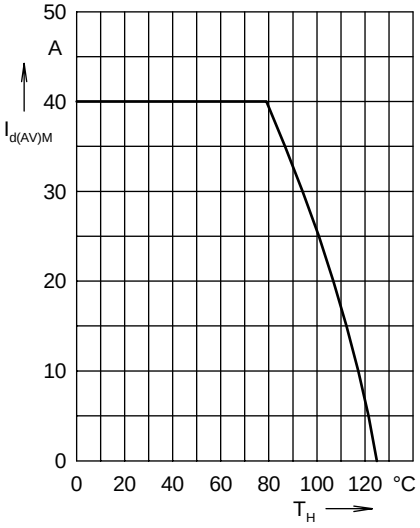


Fig. 7 Max. forward current versus heatsink temperature

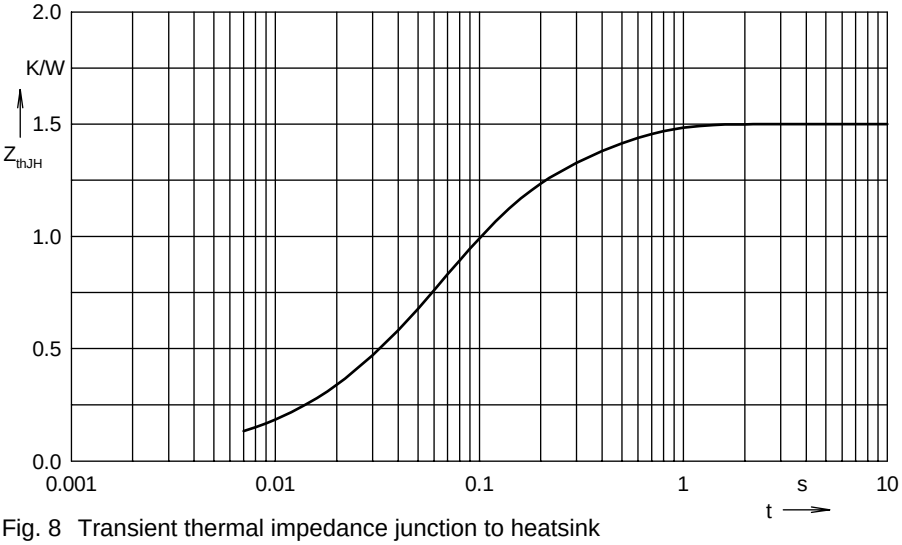


Fig. 8 Transient thermal impedance junction to heatsink

Constants for Z_{thJH} calculation:

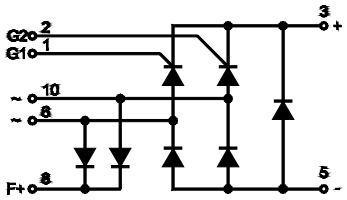
i	R_{thi} (K/W)	t_i (s)
1	0.005	0.008
2	0.2	0.05
3	0.875	0.06
4	0.47	0.25

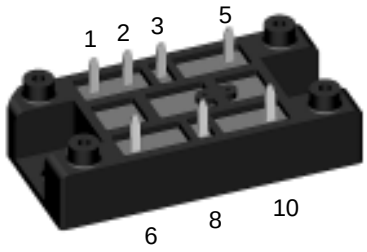
Half Controlled
Single Phase Rectifier Bridge

Including Freewheeling Diode and Field Diodes

V_{RRM} = 800-1600 V
I_{dAVM} = 21 A

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
900	800	VHFD 16-08io1
1300	1200	VHFD 16-12io1
1500	1400	VHFD 16-14io1
1700	1600	VHFD 16-16io1





Bridge and Freewheeling Diode

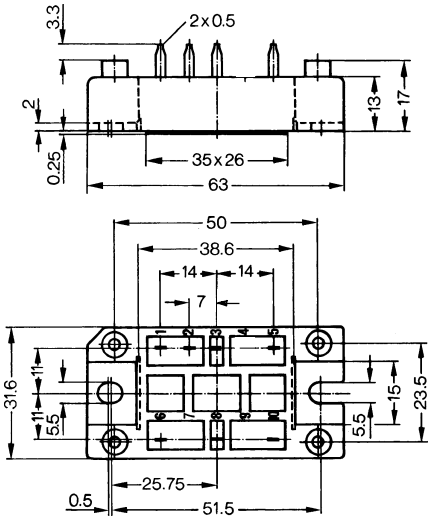
Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_H = 85°C, module		16	A
I_{dAVM} ①	module		21	A
I_{FRMS}, I_{TRMS}	per leg		15	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	150	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	170	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	130	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	140	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	110	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	120	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	85	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	80	A^2s
$(di/dt)_{cr}$	T_{VJ} = 125°C f = 50 Hz, t_P = 200 µs V_D = 2/3 V_{DRM}	repetitive, I_T = 50 A	150	A/µs
	I_G = 0.3 A, di_G/dt = 0.3 A/µs	non repetitive, I_T = 0.5 I_{dAV}	500	A/µs
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM} R_{GK} = ∞; method 1 (linear voltage rise)		1000	V/µs
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = 0.5 I_{dAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
d_S	Creep distance on surface		12.7	mm
d_A	Strike distance in air		9.4	mm
a	Max. allowable acceleration		50	m/s^2
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight			35	g

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1600 V
- Low forward voltage drop
- Leads suitable for PC board soldering
- UL registered E 72873

Applications
- Supply for DC power equipment
- DC motor control

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		T_{VJ} = 25°C	≤	0.3	mA
V_T, V_F	I_T, I_F = 45 A; T_{VJ} = 25°C		≤	2.55	V
V_{T0}	For power-loss calculations only (T_{VJ} = 125°C)			1.0	V
r_T				40	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	1.0	V
		T_{VJ} = -40°C	≤	1.2	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	65	mA
		T_{VJ} = -40°C	≤	80	mA
		T_{VJ} = 125°C	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	5	mA
I_L	I_G = 0.3 A; t_G = 30 µs;	T_{VJ} = 25°C	≤	150	mA
	di_G/dt = 0.3 A/µs;	T_{VJ} = -40°C	≤	200	mA
		T_{VJ} = 125°C	≤	100	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; R_{GK} = ∞		≤	100	mA
t_{gd}	T_{VJ} = 25°C; V_D = 0.5V_{DRM}		≤	2	µs
	I_G = 0.3 A; di_G/dt = 0.3 A/µs				
t_q	T_{VJ} = 125°C, I_T = 15 A, t_P = 300 µs, V_R = 100 V		typ.	150	µs
Q_r	di/dt = -10 A/µs, dv/dt = 20 V/µs, V_D = 2/3 V_{DRM}			75	µC
R_{thJC}	per thyristor (diode); DC current			2.4	K/W
	per module			0.6	K/W
R_{thJH}	per thyristor (diode); DC current			3.0	K/W
	per module			0.75	K/W

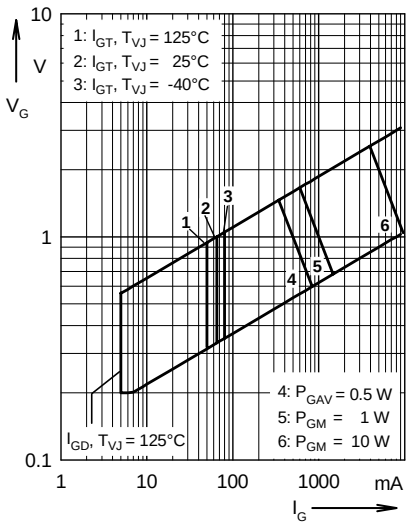


Fig. 1 Gate trigger range

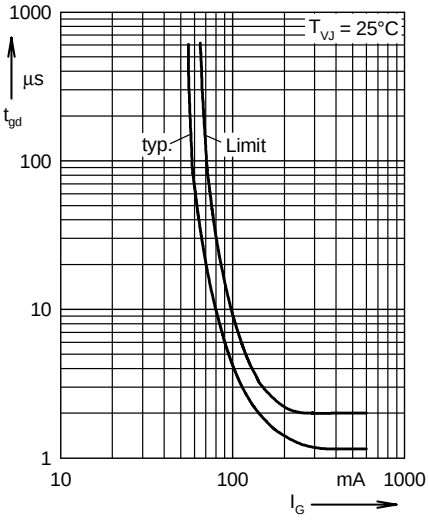


Fig. 2 Gate controlled delay time t_{gd}

Field Diodes

Symbol	Test Conditions		Maximum Ratings	
I_{FAV}	T_H = 85°C, per Diode		4	A
I_{FAVM}	per diode		4	A
I_{FRMS}	per diode		6	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	100	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	110	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	85	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	94	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	50	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	50	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	36	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	37	A^2s
I_R	$V_R = V_{RRM}$	$T_{VJ} = T_{VJM}$	1	mA
		T_{VJ} = 25°C	0.15	mA
V_F	I_F = 21 A; T_{VJ} = 25°C		1.83	V
V_{T0}	For power-loss calculations only (T_{VJ} = 125°C)		0.9	V
r_T			50	mΩ
R_{thJC}	per diode; DC current		4.4	K/W
R_{thJH}	per diode; DC current		5.2	K/W

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
① for resistive load
IXYS reserves the right to change limits, test conditions and dimensions.

750

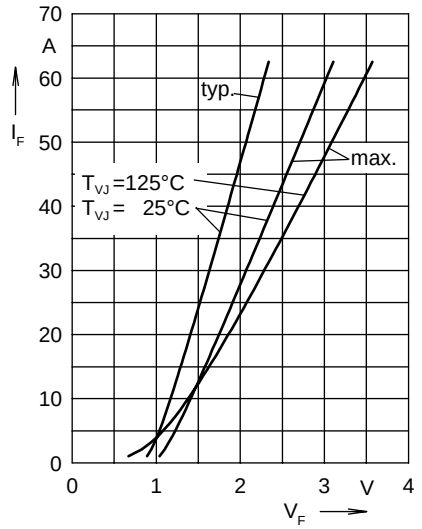


Fig. 3 Forward current versus voltage drop per diode

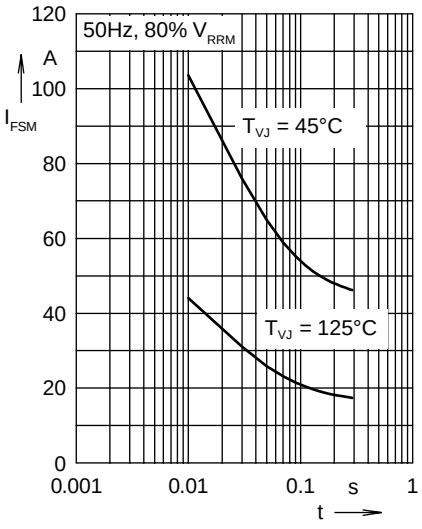


Fig. 4 Surge overload current

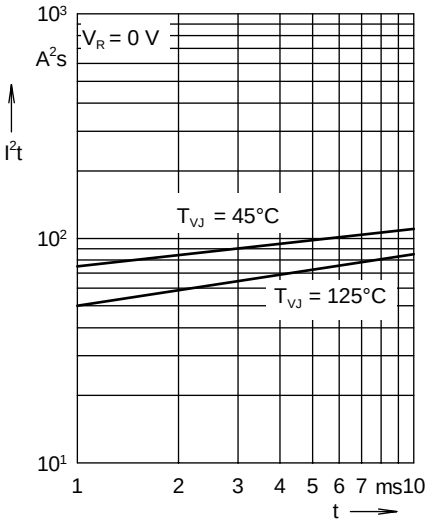


Fig. 5 I^2t versus time per diode

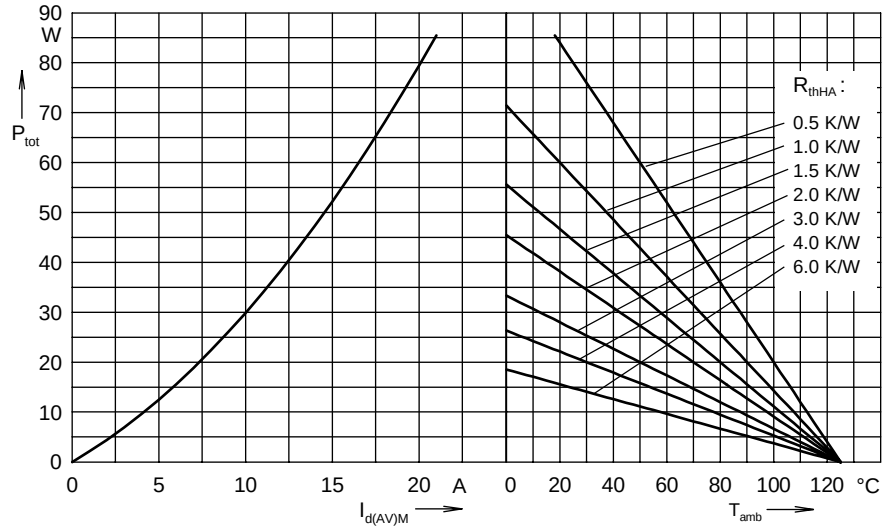


Fig. 6 Power dissipation versus direct output current and ambient temperature

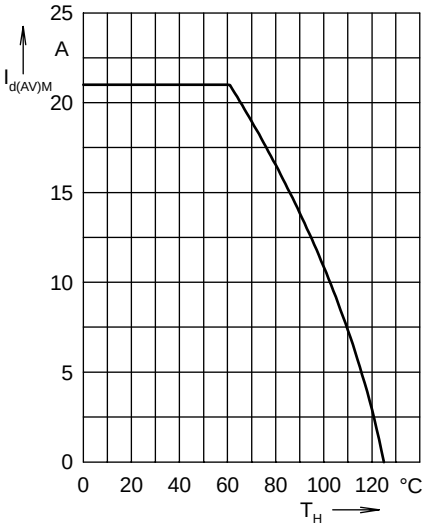


Fig. 7 Max. forward current versus heatsink temperature

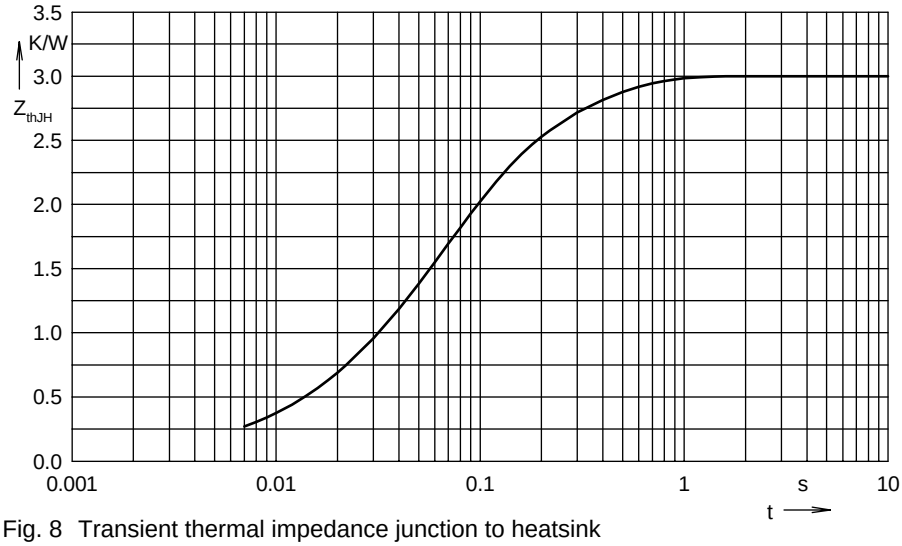


Fig. 8 Transient thermal impedance junction to heatsink

Constants for Z_{thJH} calculation:

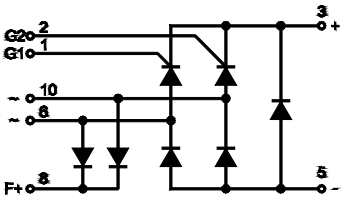
i	R_{thi} (K/W)	t_i (s)
1	0.01	0.008
2	0.4	0.05
3	1.69	0.06
4	0.9	0.25

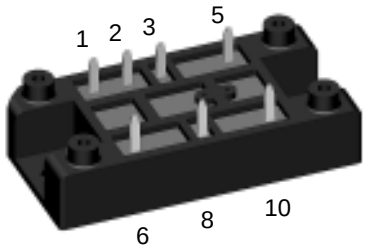
Half Controlled
Single Phase Rectifier Bridge

Including Freewheeling Diode and Field Diodes

V_{RRM} = 800-1600 V
I_{dAVM} = 32 A

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
900	800	VHFD 29-08io1
1300	1200	VHFD 29-12io1
1500	1400	VHFD 29-14io1
1700	1600	VHFD 29-16io1





Bridge and Freewheeling Diode

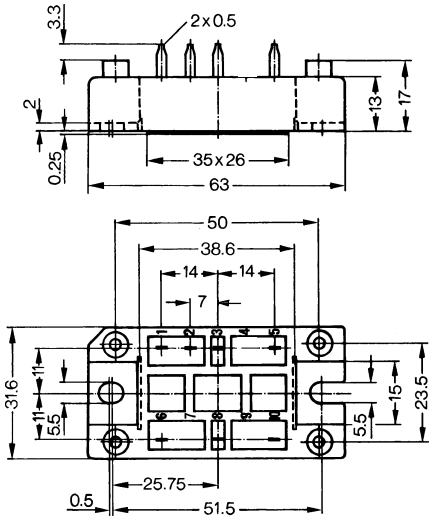
Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_H = 85°C, module		28	A
I_{dAVM} ①	module		32	A
I_{FRMS}, I_{TRMS}	per leg		25	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	300	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	330	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	270	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	300	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	440	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	455	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	365	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	370	A^2s
$(di/dt)_{cr}$	T_{VJ} = 125°C	repetitive, I_T = 50 A	150	A/µs
	f = 50 Hz, t_P = 200 µs			
	V_D = 2/3 V_{DRM}			
	I_G = 0.3 A,	non repetitive, I_T = 0.5 I_{dAV}	500	A/µs
	di_G/dt = 0.3 A/µs			
$(dv/dt)_{cr}$	T_{VJ} = $T_{(vj)m}$; V_{DR} = 2/3 V_{DRM}		1000	V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)			
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = 0.5 I_{dAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
d_S	Creep distance on surface		12.7	mm
d_A	Strike distance in air		9.4	mm
a	Max. allowable acceleration		50	m/s^2
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight			35	g

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1600 V
- Low forward voltage drop
- Leads suitable for PC board soldering
- UL registered E 72873

Applications
- Supply for DC power equipment
- DC motor control

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		$T_{VJ} = 25°C$	≤	0.3	mA
V_T, V_F	I_T, I_F = 45 A; $T_{VJ} = 25°C$		≤	1.6	V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125°C$)			0.9	V
r_T				15	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.0	V
		$T_{VJ} = -40°C$	≤	1.2	V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	65	mA
		$T_{VJ} = -40°C$	≤	80	mA
		$T_{VJ} = 125°C$	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	5	mA
I_L	I_G = 0.3 A; t_G = 30 µs;	$T_{VJ} = 25°C$	≤	150	mA
	di_G/dt = 0.3 A/µs;	$T_{VJ} = -40°C$	≤	200	mA
		$T_{VJ} = 125°C$	≤	100	mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	100	mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 0.5V_{DRM}$		≤	2	µs
	I_G = 0.3 A; di_G/dt = 0.3 A/µs				
t_q	$T_{VJ} = 125°C$, I_T = 15 A, t_P = 300 µs, V_R = 100 V		typ.	150	µs
Q_r	di/dt = -10 A/µs, dv/dt = 20 V/µs, $V_D = 2/3\ V_{DRM}$			75	µC
R_{thJC}	per thyristor (diode); DC current			1.4	K/W
	per module			0.35	K/W
R_{thJH}	per thyristor (diode); DC current			2.0	K/W
	per module			0.5	K/W

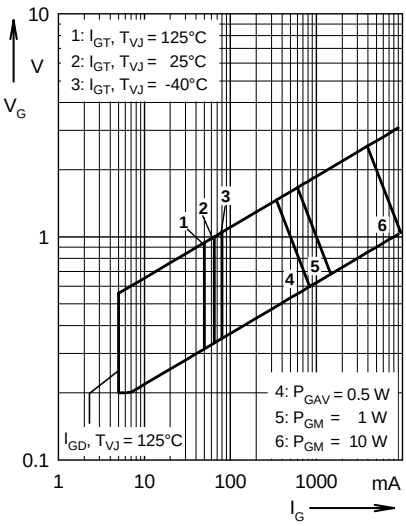


Fig. 1 Gate trigger range

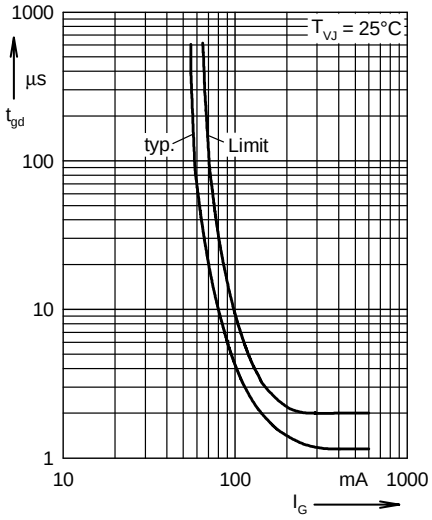


Fig. 2 Gate controlled delay time t_{gd}

Field Diodes

Symbol	Test Conditions		Maximum Ratings	
I_{FAV}	T_H = 85°C, per Diode		4	A
I_{FAVM}	per diode		4	A
I_{FRMS}	per diode		6	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	100	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	110	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	85	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	94	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	50	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	50	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	36	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	37	A^2s
I_R	$V_R = V_{RRM}$	$T_{VJ} = T_{VJM}$	1	mA
		$T_{VJ} = 25°C$	0.15	mA
V_F	I_F = 21 A; $T_{VJ} = 25°C$		1.83	V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125°C$)		0.9	V
r_T			50	mΩ
R_{thJC}	per diode; DC current		4.4	K/W
R_{thJH}	per diode; DC current		5.2	K/W

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
① for resistive load
IXYS reserves the right to change limits, test conditions and dimensions.

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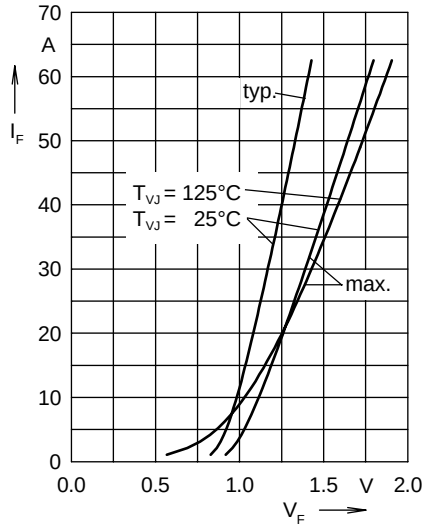


Fig. 3 Forward current versus voltage drop per diode

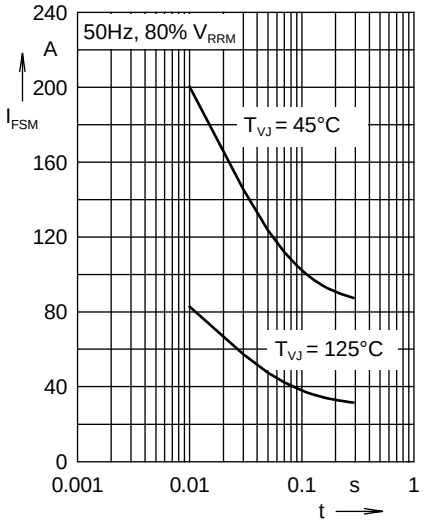


Fig. 4 Surge overload current

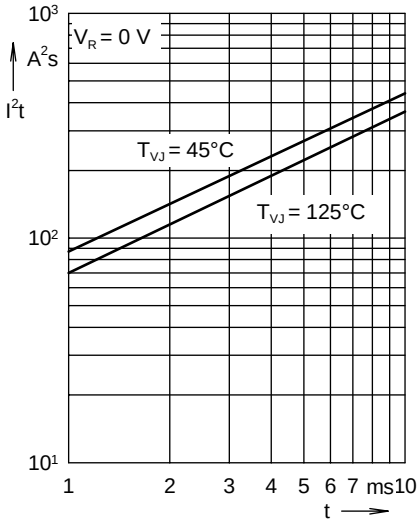


Fig. 5 I^2t versus time per diode

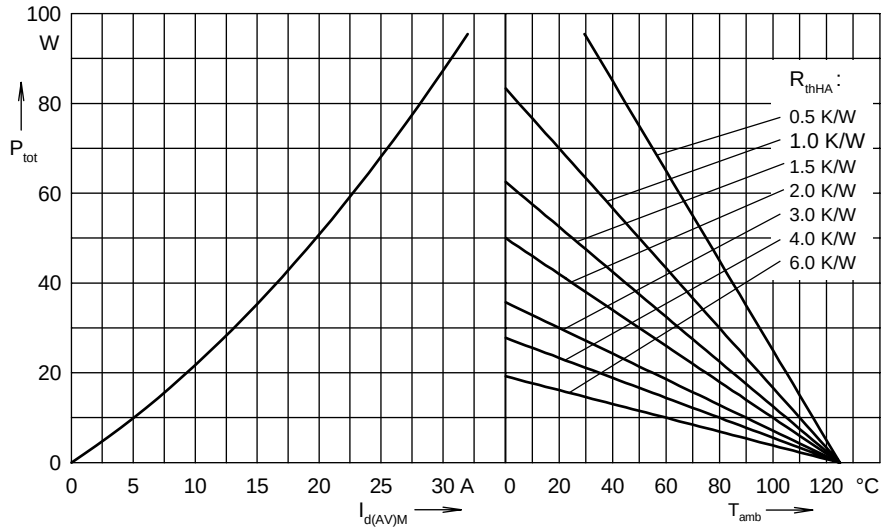


Fig. 6 Power dissipation versus direct output current and ambient temperature

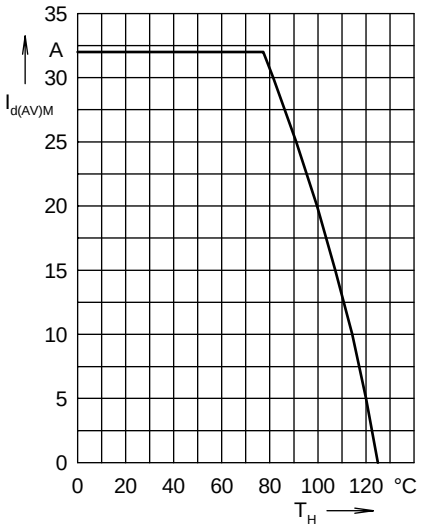


Fig. 7 Max. forward current versus heatsink temperature

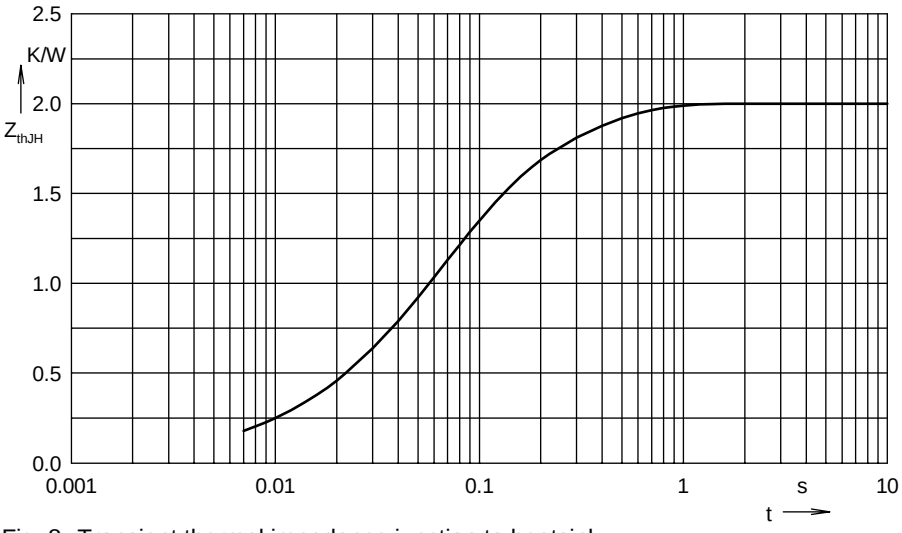


Fig. 8 Transient thermal impedance junction to heatsink

Constants for Z_{thJH} calculation:

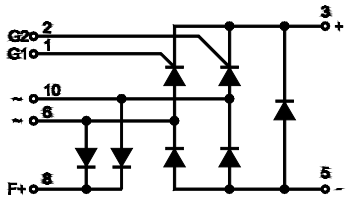
i	R_{thi} (K/W)	t_i (s)
1	0.007	0.008
2	0.266	0.05
3	1.127	0.06
4	0.6	0.25

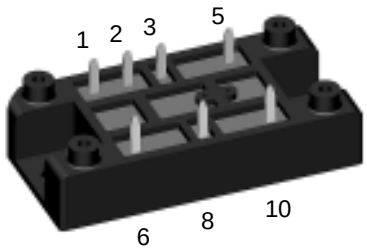
Half Controlled
Single Phase Rectifier Bridge

Including Freewheeling Diode and Field Diodes

V_{RRM} = 800-1600 V
I_{dAVM} = 40 A

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
900	800	VHFD 37-08io1
1300	1200	VHFD 37-12io1
1500	1400	VHFD 37-14io1
1700	1600	VHFD 37-16io1





Bridge and Freewheeling Diode

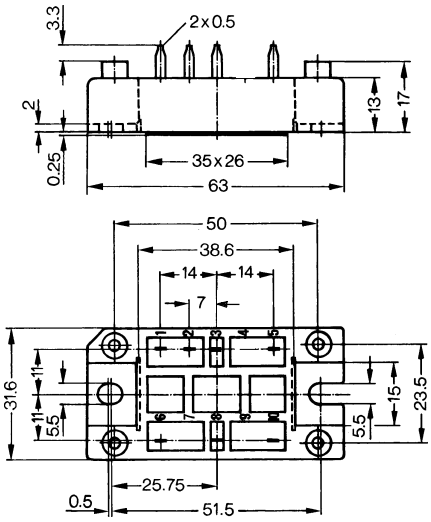
Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_H = 85°C, module		36	A
I_{dAVM} ①	module		40	A
I_{FRMS}, I_{TRMS}	per leg		31	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	320	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	350	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	280	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	310	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	500	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	520	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	390	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	400	A^2s
$(di/dt)_{cr}$	T_{VJ} = 125°C f = 50 Hz, t_P = 200 µs V_D = 2/3 V_{DRM}	repetitive, I_T = 50 A	150	A/µs
	I_G = 0.3 A, di_G/dt = 0.3 A/µs	non repetitive, I_T = 0.5 I_{dAV}	500	A/µs
$(dv/dt)_{cr}$	T_{VJ} = $T_{(vj)m}$; V_{DR} = 2/3 V_{DRM} R_{GK} = ∞; method 1 (linear voltage rise)		1000	V/µs
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = 0.5 I_{dAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
d_S	Creep distance on surface		12.7	mm
d_A	Strike distance in air		9.4	mm
a	Max. allowable acceleration		50	m/s^2
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight			35	g

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1600 V
- Low forward voltage drop
- Leads suitable for PC board soldering
- UL registered E 72873

Applications
- Supply for DC power equipment
- DC motor control

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		$T_{VJ} = 25°C$	≤	0.3	mA
V_T, V_F	I_T, I_F = 45 A; $T_{VJ} = 25°C$		≤	1.45	V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125°C$)			0.85	V
r_T				13	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.0	V
		$T_{VJ} = -40°C$	≤	1.2	V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	65	mA
		$T_{VJ} = -40°C$	≤	80	mA
		$T_{VJ} = 125°C$	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	5	mA
I_L	I_G = 0.3 A; t_G = 30 µs;	$T_{VJ} = 25°C$	≤	150	mA
	di_G/dt = 0.3 A/µs;	$T_{VJ} = -40°C$	≤	200	mA
		$T_{VJ} = 125°C$	≤	100	mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	100	mA
t_{gd}	$T_{VJ} = 25°C$; V_D = 1/2 V_{DRM}		≤	2	µs
	I_G = 0.3 A; di_G/dt = 0.3 A/µs				
t_q	$T_{VJ} = 125°C$, I_T = 15 A, t_P = 300 µs, V_R = 100 V		typ.	150	µs
Q_r	di/dt = -10 A/µs, dv/dt = 20 V/µs, V_D = 2/3 V_{DRM}			75	µC
R_{thJC}	per thyristor (diode); DC current			1.2	K/W
	per module			0.3	K/W
R_{thJH}	per thyristor (diode); DC current			1.55	K/W
	per module			0.39	K/W

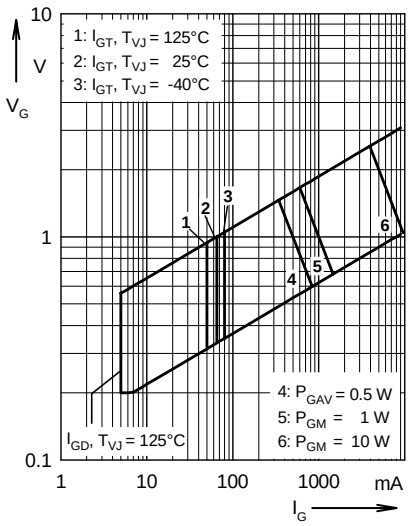


Fig. 1 Gate trigger range

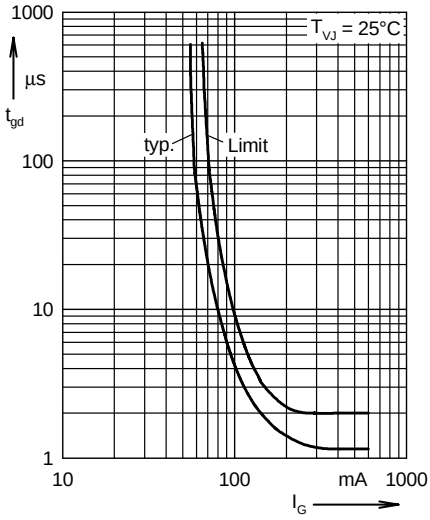


Fig. 2 Gate controlled delay time t_{gd}

Field Diodes

Symbol	Test Conditions		Maximum Ratings	
I_{FAV}	T_H = 85°C, per Diode		4	A
I_{FAVM}	per diode		4	A
I_{FRMS}	per diode		6	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	100	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	110	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	85	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	94	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	50	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	50	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	36	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	37	A^2s
I_R	$V_R = V_{RRM}$	$T_{VJ} = T_{VJM}$	1	mA
		$T_{VJ} = 25°C$	0.15	mA
V_F	I_F = 21 A; $T_{VJ} = 25°C$		1.83	V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125°C$)		0.9	V
r_T			50	mΩ
R_{thJC}	per diode; DC current		4.4	K/W
R_{thJH}	per diode; DC current		5.2	K/W

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
① for resistive load
IXYS reserves the right to change limits, test conditions and dimensions.

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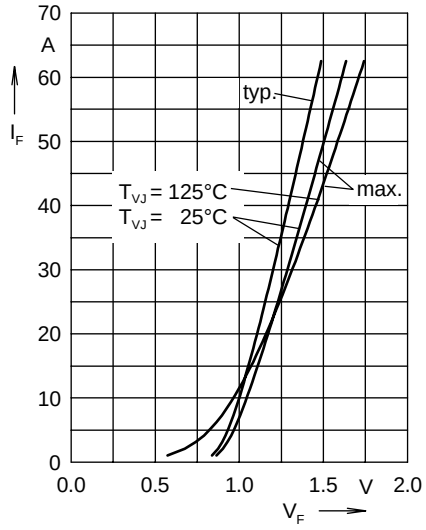


Fig. 3 Forward current versus voltage drop per diode

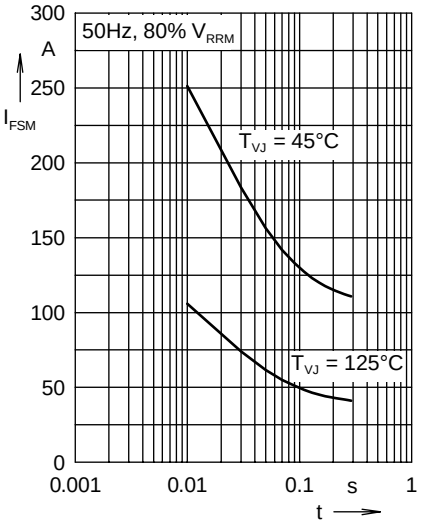


Fig. 4 Surge overload current

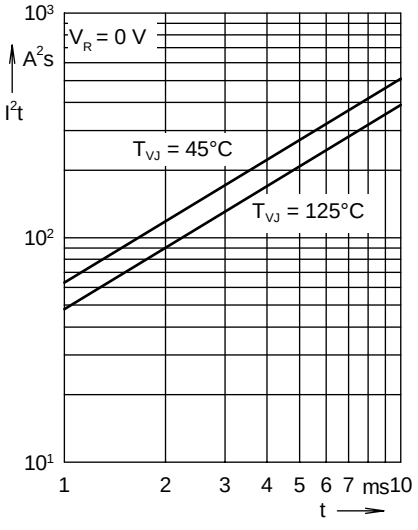


Fig. 5 I^2t versus time per diode

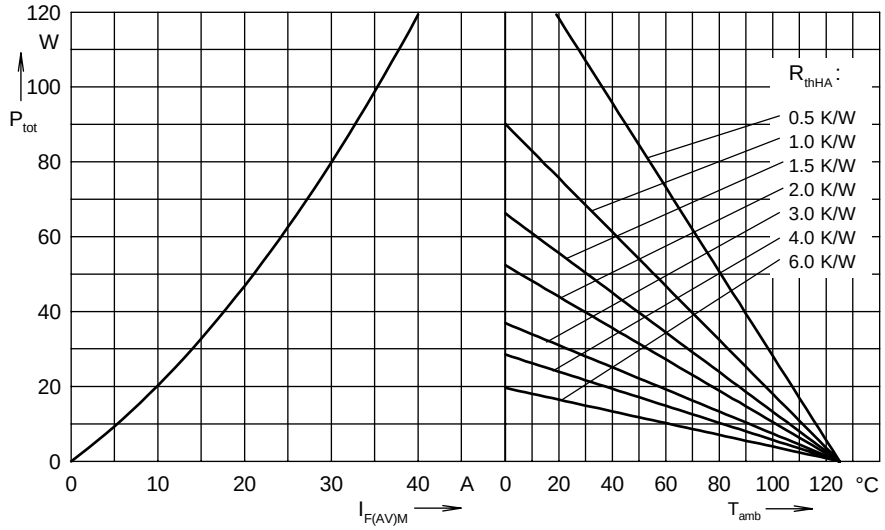


Fig. 6 Power dissipation versus direct output current and ambient temperature

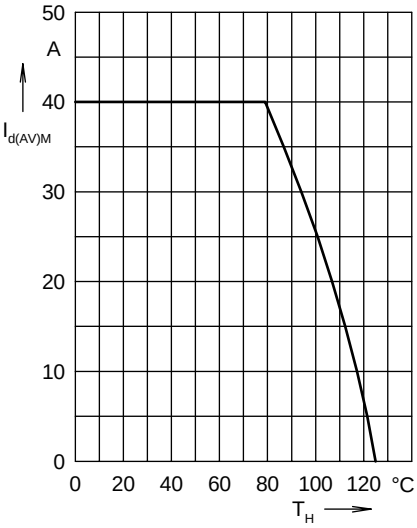


Fig. 7 Max. forward current versus heatsink temperature

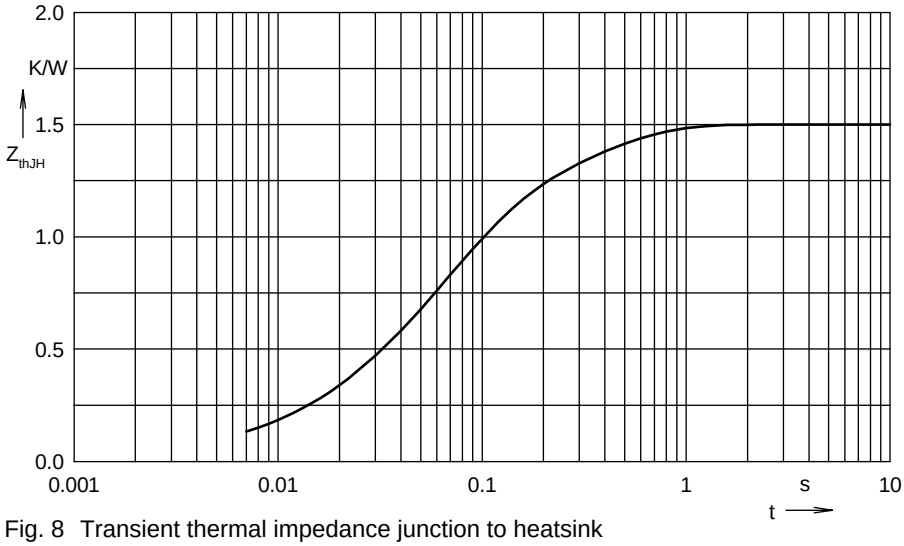


Fig. 8 Transient thermal impedance junction to heatsink

Constants for Z_{thJH} calculation:

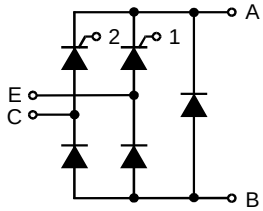
i	R_{thi} (K/W)	t_i (s)
1	0.005	0.008
2	0.2	0.05
3	0.875	0.06
4	0.47	0.25

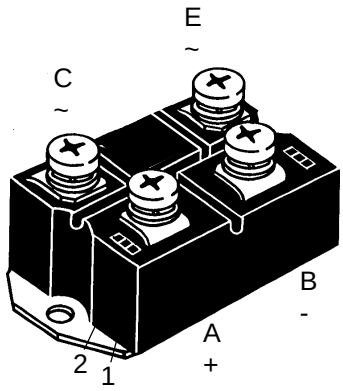
Half Controlled Single Phase Rectifier Bridge, B2HKF

with Freewheeling Diode

I_{dAV} = 82/123 A
V_{RRM} = 1200-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type	
1300	1200	VHF 85-12io7	VHF 125-12io7
1500	1400	VHF 85-14io7	VHF 125-14io7
1700	1600		VHF 125-16io7





Symbol	Test Conditions		Maximum Ratings VHF 85	VHF 125	
I_{dAV}	T_C = 85°C; module		82	123	A
I_{FRMS}, I_{TRMS}	per leg		58	89	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1150	1500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1230	1600	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1000	1350	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1070	1450	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	6600	11200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	6280	10750	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	5000	9100	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	4750	8830	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM} repetitive, I_T = 50 A			150	A/µs
	f =400 Hz, t_P =200 µs				
	V_D = 2/3 V_{DRM}				
	I_G = 0.3 A, non repetitive,			500	A/µs
	di_G/dt = 0.3 A/µs, I_T = 1/3 • I_{dAV}				
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM}			1000	V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)				
V_{RGM}				10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤	10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤	5	W
		t_p = 10 ms	≤	1	W
P_{GAVM}				0.5	W
T_{VJ}				-40...+125	°C
T_{VJM}				125	°C
T_{stg}				-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min		2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s		3000	V~
M_d	Mounting torque (M6)			5±15 %	Nm
	Terminal connection torque (M6)			5±15 %	Nm
Weight	typ.			300	g

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- UL listing applied for

Applications

- DC motor control

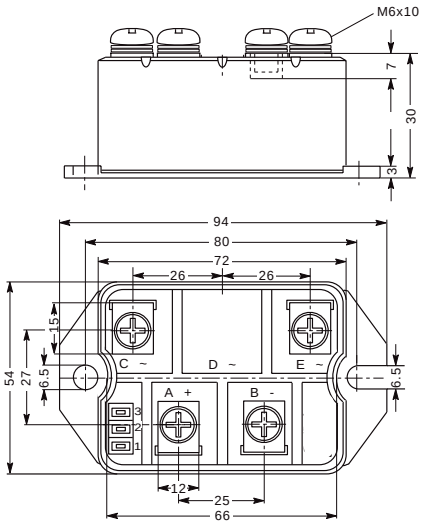
Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Symbol	Test Conditions			Characteristic Values VHF 85	VHF 125	
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5		mA
		$T_{VJ} = 25°C$	≤	0.3		mA
V_F, V_T	I_F, I_T = 200 A, $T_{VJ} = 25°C$		≤	1.75	1.57	V
V_{T0}	For power-loss calculations only			0.85	0.85	V
r_T	($T_{VJ} = 125°C$)			6	3.5	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.5		V
		$T_{VJ} = -40°C$	≤	1.6		V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	100		mA
		$T_{VJ} = -40°C$	≤	200		mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	0.2		V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	5		mA
I_L	I_G = 0.3 A; t_G = 30 µs di_G/dt = 0.3 A/µs	$T_{VJ} = 25°C$	≤	450		mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	200		mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$ I_G = 0.3 A; di_G/dt = 0.3 A/µs		≤	2		µs
R_{thJC}	per thyristor (diode); DC current			0.65	0.46	K/W
	per module			0.108	0.077	K/W
R_{thJK}	per thyristor (diode); DC current			0.8	0.55	K/W
	per module			0.133	0.092	K/W
d_S	Creeping distance on surface			10		mm
d_A	Creepage distance in air			9.4		mm
a	Max. allowable acceleration			50		m/s^2

Dimensions in mm (1 mm = 0.0394")

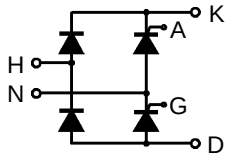


Single Phase Rectifier Bridge

I_{dAV} = 36 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
900	800	VGO 36-08io7
1300	1200	VGO 36-12io7
1500	1400	VGO 36-14io7
1700	1600	VGO 36-16io7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_H = 85°C, module		36	A
I_{dAVM} ①	module		40	A
I_{FRMS}, I_{TRMS}	per leg		31	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	320	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	350	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	280	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	310	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	500	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	520	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	390	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	400	A^2s
$(di/dt)_{cr}$	T_{VJ} = 125°C	repetitive, I_T = 50 A	150	A/µs
	f = 50 Hz, t_P = 200 µs			
	V_D = 2/3 V_{DRM}			
	I_G = 0.3 A,	non repetitive, I_T = 1/2 • I_{dAV}	500	A/µs
	di_G/dt = 0.3 A/µs			
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM}		1000	V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)			
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M4)		1.5 - 2	Nm
			14 - 18	lb.in.
Weight	typ.		18	g

Data according to IEC 60747 refer to a single diode/thyristor unless otherwise stated
① for resistive load at bridge output. IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with DCB ceramic base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

002

Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		$T_{VJ} = 25°C$	≤	0.3	mA
V_T, V_F	I_T, I_F = 45 A; $T_{VJ} = 25°C$		≤	1.45	V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125°C$)			0.85	V
r_T				13	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.0	V
		$T_{VJ} = -40°C$	≤	1.2	V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	65	mA
		$T_{VJ} = -40°C$	≤	80	mA
		$T_{VJ} = 125°C$	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	5	mA
I_L	I_G = 0.3 A; t_G = 30 µs;	$T_{VJ} = 25°C$	≤	150	mA
	di_G/dt = 0.3 A/µs;	$T_{VJ} = -40°C$	≤	200	mA
		$T_{VJ} = 125°C$	≤	100	mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	100	mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$ I_G = 0.3 A; di_G/dt = 0.3 A/µs		≤	2	µs
t_q	$T_{VJ} = 125°C$, I_T = 15 A, t_P = 300 µs, V_R = 100 V di/dt = -10 A/µs, dv/dt = 20 V/µs, $V_D = 2/3\ V_{DRM}$		typ.	150	µs
R_{thJC}	per thyristor (diode); DC current			1.4	K/W
	per module			0.35	K/W
R_{thJK}	per thyristor (diode); DC current			2.0	K/W
	per module			0.5	K/W
d_S	Creepage distance on surface			12.6	mm
d_A	Creepage distance in air			6.3	mm
a	Max. allowable acceleration			50	m/s^2

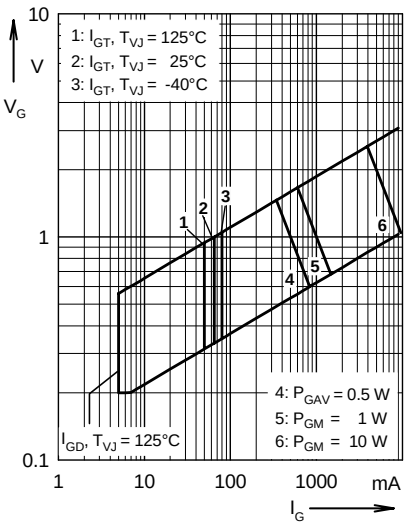


Fig. 1 Gate trigger range

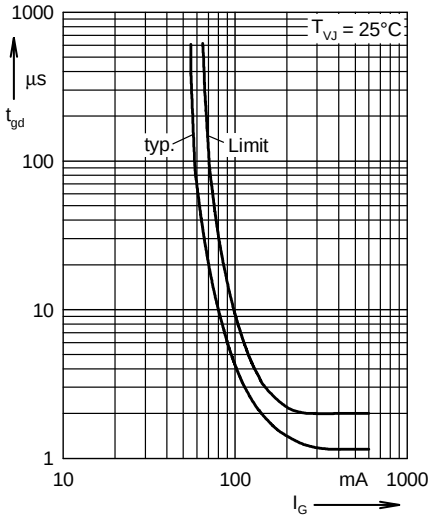
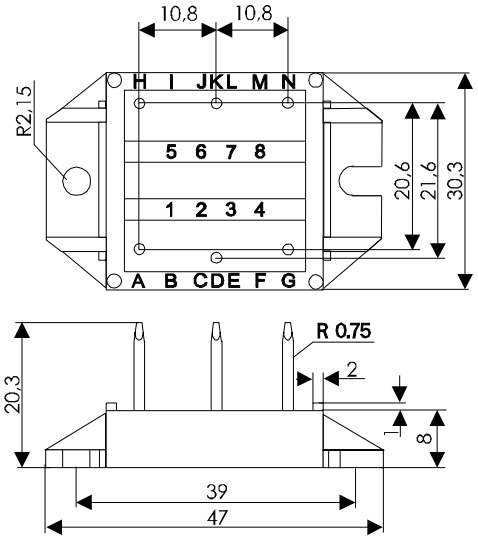


Fig. 2 Gate controlled delay time t_{gd}

Dimensions in mm (1 mm = 0.0394")



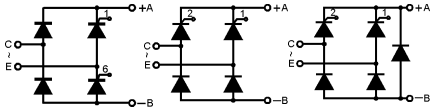
002

Single Phase Rectifier Bridge

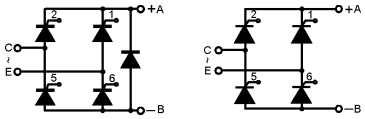
I_{dAV} = 53 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
800	800	xxx 55-08io7
1200	1200	xxx 55-12io7
1400	1400	xxx 55-14io7
1600	1600	xxx 55-16io7
		xxx = type



VGO 55 VHO 55 VHF 55



VKF 55 VKO 55

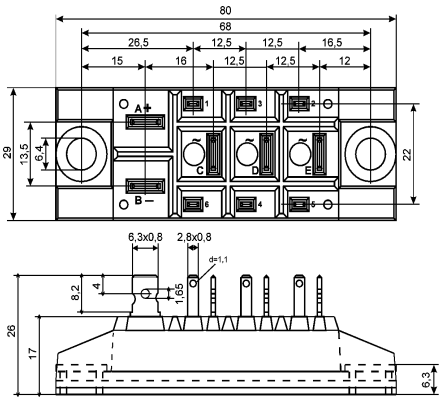
Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_K = 85°C, module		53	A
I_{dAVM} ①	module		53	A
I_{FRMS}, I_{TRMS}	per leg		41	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	550	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	600	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	500	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	550	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1520	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	1520	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1250	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	1250	A^2s
$(di/dt)_{cr}$	T_{VJ} = 125°C f = 50 Hz, t_P = 200 µs V_D = 2/3 V_{DRM}	repetitive, I_T = 50 A	150	A/µs
	I_G = 0.3 A, di_G/dt = 0.3 A/µs	non repetitive, I_T = 1/2 • I_{dAV}	500	A/µs
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM} R_{GK} = ∞; method 1 (linear voltage rise)		1000	V/µs
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M5)	5 ± 15 %	Nm
		(10-32 UNF)	44 ± 15 %	lb.in.
Weight			110	g

Features
- Package with copper base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- 1/4" fast-on power terminals

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Dimensions in mm (1 mm = 0.0394")



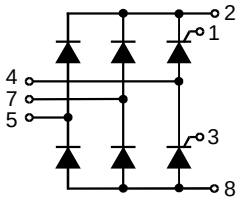
Data according to IEC 60747 refer to a single diode/thyristor unless otherwise stated
① for resistive load at bridge output. IXYS reserves the right to change limits, test conditions and dimensions.

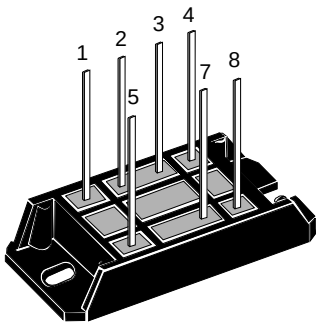
Symbol	Test Conditions		Characteristic Values		
I_D, I_R	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$		≤	5	mA
V_T	I_T = 80 A; T_{VJ} = 25°C		≤	1.64	V
V_{T0}	For power-loss calculations only			0.85	V
r_T				11	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	1.5	V
		T_{VJ} = -40°C	≤	1.6	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	100	mA
		T_{VJ} = -40°C	≤	200	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	0.2	V
I_{GD}			≤	5	mA
I_L	T_{VJ} = 25°C; t_P = 10 µs I_G = 0.45 A; di_G/dt = 0.45 A/µs		≤	450	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; R_{GK} = ∞		≤	200	mA
t_{gd}	T_{VJ} = 25°C; V_D = 1/2 V_{DRM} I_G = 0.45 A; di_G/dt = 0.45 A/µs		≤	2	µs
t_q	$T_{VJ} = T_{VJM}$; I_T = 20 A, t_P = 200 µs; di/dt = -10 A/µs V_R = 100 V; dv/dt = 15 V/µs; V_D = 2/3 V_{DRM}		typ.	250	µs
R_{thJC}	per thyristor / Diode; DC			0.9	K/W
	per module			0.18	K/W
R_{thJK}	per thyristor / Diode; DC			1.1	K/W
	per module			0.22	K/W
d_S	Creeping distance on surface			16.1	mm
d_A	Creepage distance in air			7.1	mm
a	Max. allowable acceleration			50	m/s^2

Three Phase Rectifier Bridge

V_{RRM} = 1600 V
I_{dAVM} = 43 A

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
1700	1600	VVY 40-16io1





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_H = 100°C; module		34	A
I_{dAVM}	module		43	A
I_{FRMS}, I_{TRMS}	per leg		25	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	320	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	350	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	290	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	320	A
I^2dt	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	510	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	520	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	420	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	430	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM}	repetitive, I_T = 50 A	150	A/µs
	f = 400 Hz, t_P = 200 µs			
	V_D = $^2/_3$ V_{DRM}			
	I_G = 0.3 A,	non repetitive, I_T = $^1/_3$ I_{dAV}	500	A/µs
	di_G/dt = 0.3 A/µs			
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = $^2/_3$ V_{DRM}		1000	V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)			
V_{RGM}	T_{VJ} = T_{VJM}		10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight	typ.		28	g

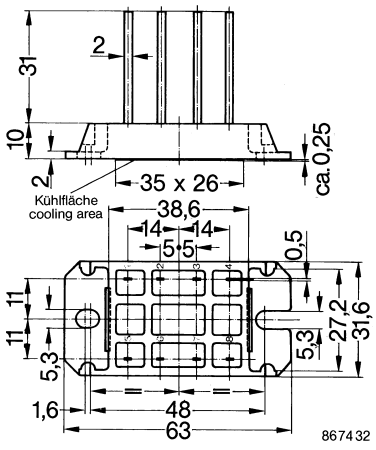
Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Soldering terminals
- Separate thyristor for softstart
- UL registered E 72873

Applications
- Input rectifier for switch mode power supplies (SMPS)
- Softstart capacitor charging
- Electric drives and auxiliaries

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



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Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		T_{VJ} = 25°C	≤	0.6	mA
V_F, V_T	I_F, I_T = 30 A, T_{VJ} = 25°C		≤	1.35	V
V_{T0}	For power-loss calculations only			0.85	V
r_T	(T_{VJ} = 125°C)			15	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	1.0	V
		T_{VJ} = -40°C	≤	1.2	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	65	mA
		T_{VJ} = -40°C	≤	80	mA
		T_{VJ} = 125°C	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = {}^2/_3\ V_{DRM}$	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = {}^2/_3\ V_{DRM}$	≤	5	mA
I_L	I_G = 0.3 A; t_G = 30 µs	T_{VJ} = 25°C	≤	150	mA
	di_G/dt = 0.3 A/µs	T_{VJ} = -40°C	≤	200	mA
		T_{VJ} = 125°C	≤	100	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; R_{GK} = ∞		≤	100	mA
t_{gd}	T_{VJ} = 25°C; V_D = ½ V_{DRM}		≤	2	µs
	I_G = 0.3 A; di_G/dt = 0.3 A/µs				
t_q	T_{VJ} = 125°C; I_T = 15 A, t_p = 300 µs, -di/dt = 10 A/µs			150	µs
Q_r	V_R = 100 V, dv/dt = 20 V/µs, $V_D = {}^2/_3\ V_{DRM}$			75	µC
R_{thJC}	per thyristor (diode); DC current			1.0	K/W
	per module			0.17	K/W
R_{thCH}	per thyristor (diode); DC current			0.6	K/W
d_S	Creeping distance on surface			7	mm
d_A	Creepage distance in air			7	mm
a	Max. allowable acceleration			50	m/s^2