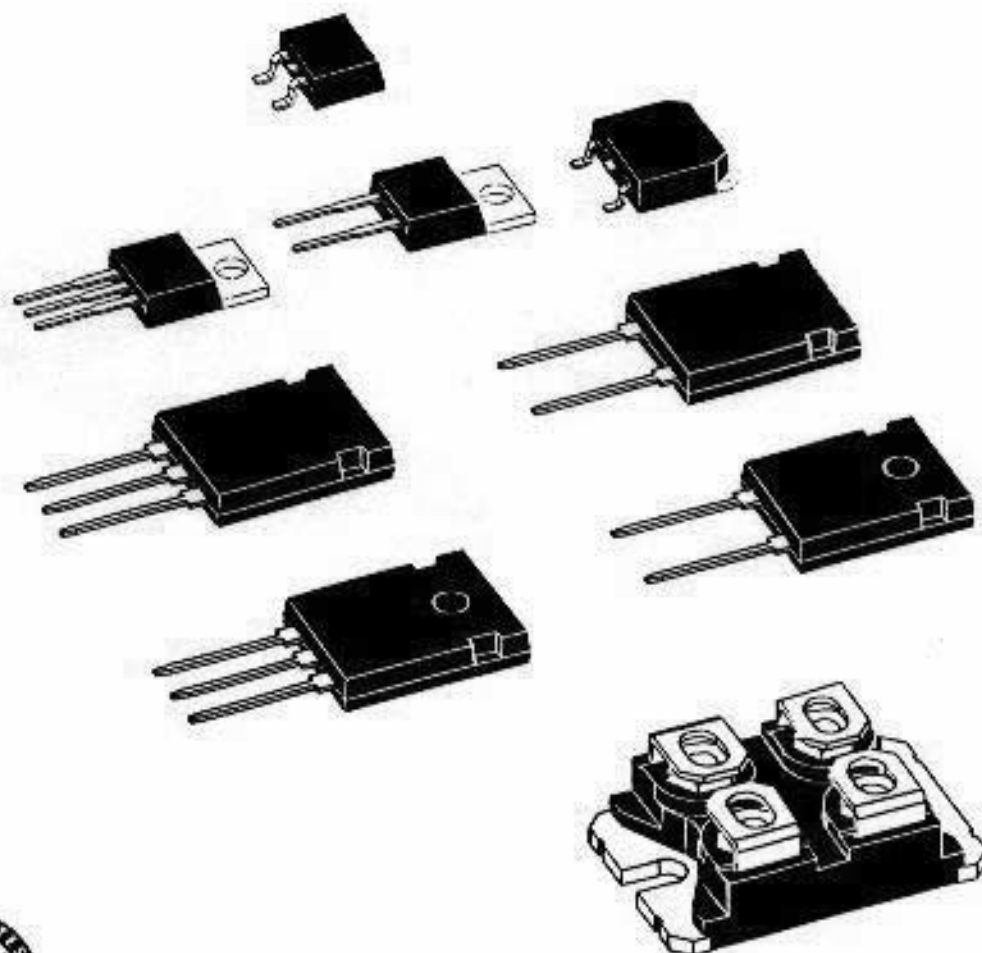
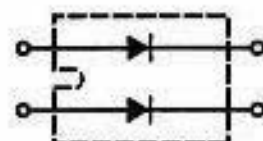
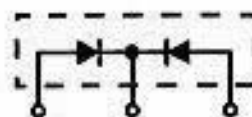


Fast Recovery

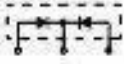
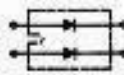
modules



Reg. Nr. 2743-02

IXYS

Contents

Package style		Voltage V_{RRM} V	Current I_{FAV} A	t_n ns	Type	Circuit Diagram	Page D2 -
1 TO-220 AC  2 TO-247 AD  2a ISOPLUS 247™  3 TO-268 AA 	1	200	8	25	DSEP 8-02A		3
	1	300	10	30	DSEP 8-03A		4
	1	300	15	30	DSEP 15-03A		5
	1	300	30	30	DSEP 29-03A		6
	2	300	30	30	DSEP 30-03A		7
	2	300	60	30	DSEP 60-03A		8
	2	400	30	30	DSEP 30-04A		9
	1	600	10	35	DSEP 8-06A		10
	1	600	15	35	DSEP 15-06A		12
	1	600	30	35/30	DSEP 29-06A/B		14
	2/2a	600	30	35/30	DSEP 30-06A/B/BR		17
	2/3	600	60	35	DSEP 60-06A/AT		20
	1	1200	10	40	DSEP 8-12A		22
	1	1200	15	40	DSEP 12-12A		24
	1	1200	30	40	DSEP 29-12A		26
	2	1200	30	40	DSEP 30-12A		28
	2	1200	60	40	DSEP 60-12A		30
4 TO-220 AB  5 TO-247 AD  5a ISOPLUS 247™ 	4	200	2x 5	25	DSEC 10-02A		32
	4	200	2x 8	25	DSEC 16-02A		33
	5	300	2x 15	30	DSEC 30-03A		34
	5/5a	300	2x 30	30	DSEC 60-03A/AR		35
	5	400	2x 30	30	DSEC 60-04A		36
	5	600	2x 10	35	DSEC 16-06A		37
	5	600	2x 15	35	DSEC 30-06A		38
	5	600	2x 30	35/30	DSEC 60-06A/B		41
	5	1200	2x 15	40	DSEC 30-12A		44
	5	1200	2x 30	40	DSEC 60-12A		46
6 SOT-227 B, miniBLOC 	6	300	2x 30	30	DSEP 2x31-03A		48
	6	300	2x 60	30	DSEP 2x61-03A		49
	6	300	2x 90	30	DSEP 2x91-03A		50
	6	400	2x 30	30	DSEP 2x31-04A		51
	6	600	2x 30	35/30	DSEP 2x31-06A/B		52
	6	600	2x 60	35	DSEP 2x61-06A		55
	6	600	2x 90	35	DSEP 2x91-06A		57
	6	1200	2x 30	40	DSEP 2x31-12A		58
	6	1200	2x 60	40	DSEP 2x61-12A		61

Dimensions

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For further Fast Recovery Epitaxial Diodes see Chapter D 1

For Fast Recovery Epitaxial Diode Modules see Chapter D 3

HiPerFRED™ Epitaxial Diode with soft recovery

Preliminary Data

V_{RSV} V	V_{RRM} V	Type
1200	1200	DSEP 12-12A



TO-220 AC



A = Anode, C = Cathode, TAB = Cathode

Symbol	Test Conditions	Maximum Ratings	
I_{FRVS}		35	A
I_{FAVM}	$T_C = 120^\circ\text{C}$; rectangular, $d = 0.5$	15	A
I_{FRV}	$t_r < 10 \mu\text{s}$; rep. rating pulse width limited by T_{VM}	tbd	A
I_{FSV}	$T_{VJ} = 45^\circ\text{C}$; $t_b = 10 \text{ ms}$ (50 Hz), sine	90	A
E_{AS}	$T_{VJ} = 25^\circ\text{C}$; non-repetitive $I_{AS} = 9 \text{ A}$; $L = 160 \mu\text{H}$	8.7	mJ
I_{AR}	$V_A = 1.25 \cdot V_R$ typ.; $f = 10 \text{ kHz}$; repetitive	0.9	A
T_{VJ}		-55...+175	$^\circ\text{C}$
T_{VJV}		175	$^\circ\text{C}$
T_{slg}		-55...+150	$^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	95	W
M_c	mounting torque	0.45...0.55 4...5	Nm lb in.
Weight	typical	2	g

Symbol	Test Conditions	Characteristic Values	
		typ.	max.
I_s ①	$T_{VJ} = 25^\circ\text{C}$ $V_A = V_{RRM}$ $T_{VJ} = 150^\circ\text{C}$ $V_A = V_{RRM}$	100 0.5	μA mA
V_f ②	$I_f = 15 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$	1.79 2.75	V V
R_{thJC} R_{thCH}		0.5	1.6 K/W K/W
t_{rr}	$I_f = 1 \text{ A}$; $-di/dt = 100 \text{ A}/\mu\text{s}$; $V_A = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	40	ns
I_{RM}	$V_R = 100 \text{ V}$; $I_f = 25 \text{ A}$; $-di/dt = 100 \text{ A}/\mu\text{s}$ $T_{VJ} = 100^\circ\text{C}$	4.5	A

Pulse test: ① Pulse Width = 5 ms, Duty Cycle < 2.0 %

② Pulse Width = 300 μs , Duty Cycle < 2.0 %

Data according to IEC 60747 and per diode unless otherwise specified

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

$$I_{FAV} = 15 \text{ A}$$

$$V_{RRM} = 1200 \text{ V}$$

$$t_{rr} = 40 \text{ ns}$$

Features

- International standard package
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low I_{AS} -values
- Soft recovery behaviour
- Epoxy meets UL 94V-0

Applications

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

Advantages

- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{RM} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Dimensions see pages 63 - 64

Preliminary Data

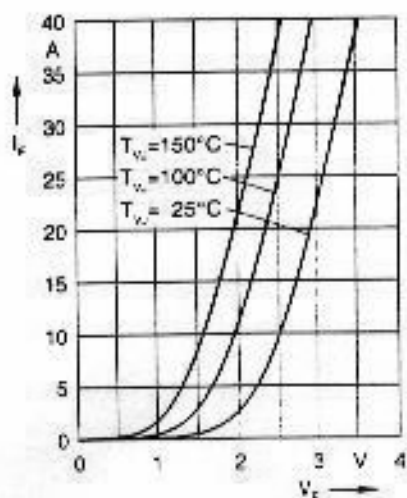
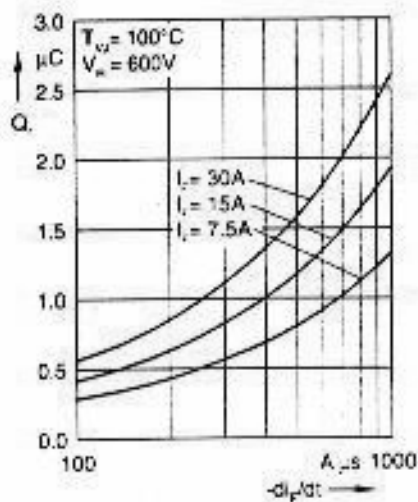
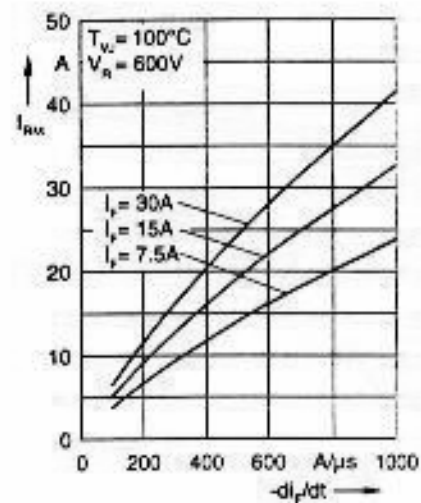
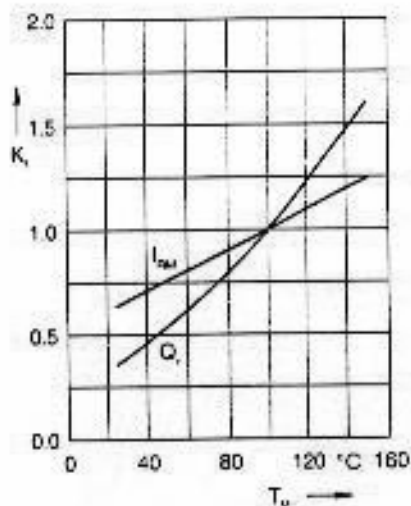
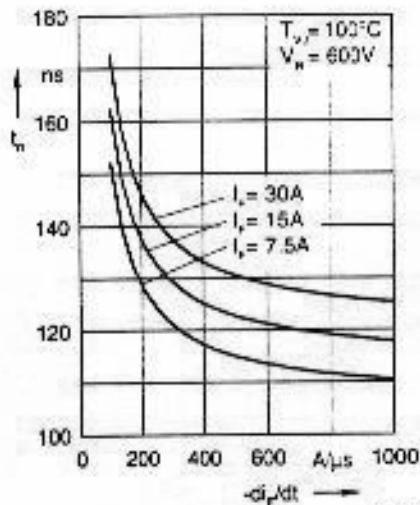
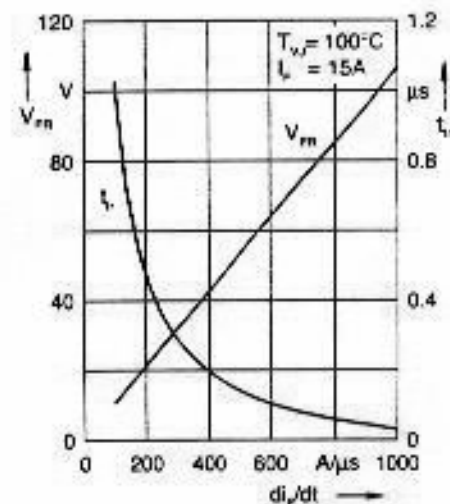
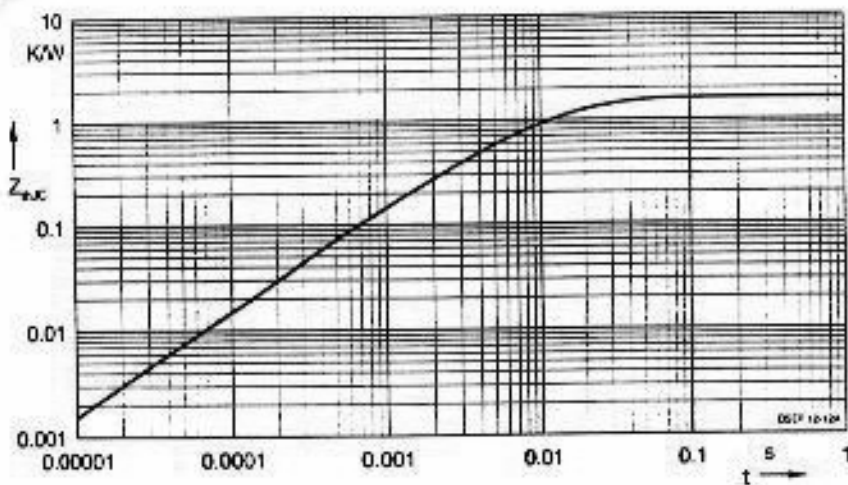
Fig. 1 Forward current I_F versus V_F Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$ Fig. 3 Peak reverse current I_{RRM} versus $-di_F/dt$ Fig. 4 Dynamic parameters Q_r , I_{RRM} versus T_{vj} Fig. 5 Recovery time t_r versus $-di_F/dt$ Fig. 6 Peak forward voltage V_{Fm} and t_r versus di_F/dt 

Fig. 7 Transient thermal resistance junction to case

Constants for $Z_{\theta JC}$ calculation:

i	$R_{\theta i}$ (K/W)	t_i (s)
1	0.9084	0.0052
2	0.3497	0.0003
3	0.3419	0.0165

NOTE: Fig. 2 to Fig. 6 shows typical values.

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