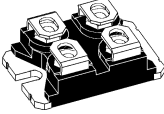
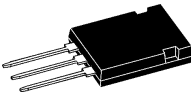


Contents

V_{DSS} max V	I_{D25} $T_c = 25^\circ\text{C}$ A	$R_{DS(on)}$ m Ω	miniBLOC 	ISOPLUS247™ 	Page
600	40	70	IXKN 40N60C		C5-2
	40	70		IXKR 40N60	C5-4
	75	35	IXKN 75N60		C5-6

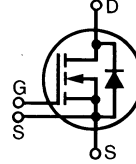
CoolMOS is a trademark of Infineon Technologies AG.

CoolMOS Power MOSFET

IXKN 40N60C

V_{DSS}	I_{D25}	$R_{DS(on)}$
600 V	40 A	70 mΩ

N-Channel Enhancement Mode
Low $R_{DS(on)}$, High V_{DSS} MOSFET

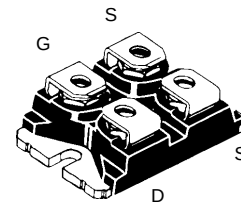


COOLMOS
Power Semiconductors

Symbol	Conditions	Maximum Ratings
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	600 V
V_{GS}		± 20 V
I_{D25}	$T_C = 25^\circ\text{C}$	40 A
I_{D90}	$T_C = 90^\circ\text{C}$	27 A
E_{AR}	$I_D = 20$ A, $L = 5$ μH , $T_{VJ} = 25^\circ\text{C}$, repetitive	1 mJ
E_{AS}	$I_D = 10$ A, $L = 36$ mH, $T_{VJ} = 25^\circ\text{C}$, non repetitive	1.8 J
dv/dt	$V_{DS} \leq V_{DSS}$, $I_S = 47$ A, $di_S/dt = 100$ A/ μs , $T_J = T_{JM}$	6 V/ns
P_D	$T_C = 25^\circ\text{C}$	290 W
T_J		$-40 \dots +150^\circ\text{C}$
T_{JM}		150 $^\circ\text{C}$
T_{stg}		$-40 \dots +150^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1$ mA	2500 V~
M_d	Mounting torque Terminal connection torque (M4)	1.5/13 Nm/lb.in. 1.5/13 Nm/lb.in.

miniBLOC, SOT-227 B

E72873



G = Gate
S = Source
D = Drain

Either source terminal at miniBLOC can be used as main or kelvin source

Features

- miniBLOC package
 - Electrically isolated copper base
 - Low coupling capacitance to the heatsink for reduced EMI
 - High power dissipation due to AlN ceramic substrate
 - International standard package SOT-227
 - Easy screw assembly
- Fast CoolMOS power MOSFET
 - High blocking capability
 - Low on resistance
 - Avalanche rated for unclamped inductive switching (UIS)
 - Low thermal resistance due to reduced chip thickness
- Enhanced total power density

Applications

- Switched mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)
- Power factor correction (PFC)
- Welding
- Inductive heating

MOSFET

Symbol	Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)
		min. typ. max.
V_{DSS}	$V_{GS} = 0$ V, $I_D = 1$ mA	600 V
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0$ V	$T_J = 25^\circ\text{C}$ 0.5 25 μA $T_J = 125^\circ\text{C}$ 50 μA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 0.5 \cdot I_{D25}$	70 mΩ
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 2.5$ mA	3.5 5.5 V
I_{GSS}	$V_{GS} = \pm 20$ V _{DC} , $V_{DS} = 0$	± 100 nA

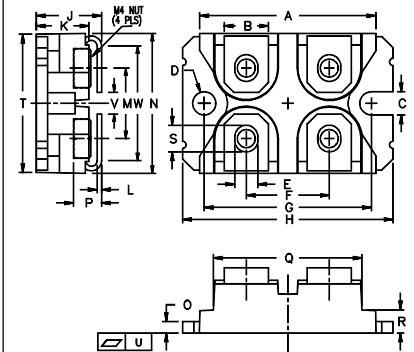
CoolMOS is a trademark of
Infineon Technologies AG.

Symbol	Conditions	Characteristic Values		
		(T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	V _{DS} = 10 V; I _D = 0.5 • I _{D25}		30	S
C_{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		8.8	nF
C_{oss}			3.15	nF
C_{rss}			36	pF
Q_{g(on)}	V _{GS} = 10 V, V _{DS} = 350 V, I _D = I _{D25}		220	nC
Q_{gs}			56	nC
Q_{gd}			123	nC
t_{d(on)}	V _{GS} = 10 V, V _{DS} = 350 V, I _D = 0.5 • I _{D25} R _G = 1.8 Ω (External)		28	ns
t_r			95	ns
t_{d(off)}			100	ns
t_f			10	ns
R_{thJC}			0.43	K/W
R_{thCK}		0.05		K/W

Source-Drain Diode		Characteristic Values		
		(T _J = 25°C, unless otherwise specified)		
Symbol	Conditions	min.	typ.	max.
V_{SD}	I _F = 0.5 • I _{D25} , V _{GS} = 0 V		0.9	1.1 V
t_{rr}	I _F = 47 A, -di/dt = 100 A/μs, V _R = 350 V, T _J = 125°C		650	ns
I_{RM}			110	A

Package		Characteristic Values		
Symbol	Conditions	min.	typ.	max.
Weight			30	g

miniBLOC, SOT-227 B



M4 screws (4x) supplied

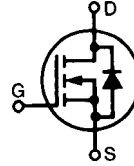
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.20	1.489	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	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	0.031	0.033

CoolMOS Power MOSFET in ISOPLUS247™ Package

IXKR 40N60

V_{DSS}	I_{D25}	$R_{DS(on)}$
600 V	40 A	70 mΩ

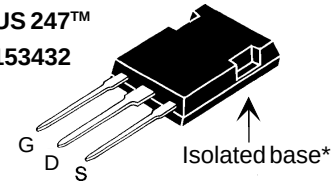
N-Channel Enhancement Mode
Low $R_{DS(on)}$, High V_{DSS} MOSFET
Package with Electrically Isolated Base



COOLMOS
Power Semiconductors

Symbol	Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	600	V
V_{GS}		± 20	V
I_{D25}	$T_C = 25^\circ\text{C}$	40	A
I_{D90}	$T_C = 90^\circ\text{C}$	25	A
I_{DM}	$T_C = 25^\circ\text{C}$, Pulse width limited by T_{JM}	160	A
I_{AR}	$T_C = 25^\circ\text{C}$, $L = 1.6$ mH, single pulse	45	A
E_{AS}		1.8	J
dv/dt	$V_{DS} \leq V_{DSS}$, $I_S = 40$ A, $di_S/dt = 100$ A/ μs , $T_J = T_{JM}$	6	V/ns
P_D	$T_C = 25^\circ\text{C}$	300	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1$ mA	2500	V~

ISOPLUS 247™
E153432



G = Gate D = Drain S = Source
* Patent pending

Features

- ISOPLUS247 package with DCB Base
 - Electrical isolation towards the heatsink
 - Low coupling capacitance to the heatsink for reduced EMI
 - High power dissipation
 - High temperature cycling capability of chip on DCB
 - JEDEC TO247AD compatible
 - Easy clip assembly
- CoolMOS power MOSFET
 - High blocking capability
 - Low on resistance
 - Avalanche rated for unclamped inductive switching (UIS)
 - Low thermal resistance due to reduced chip thickness
- Enhanced total power density

Applications

- Switched mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)
- Power factor correction (PFC)
- Welding
- Inductive heating

MOSFET

Symbol	Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0$ V, $I_D = 250$ μA	600		V
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0$ V		0.5 5	50 μA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 0.5 \cdot I_{D25}$			70 mΩ
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 3$ mA	3.5		5.5 V
I_{GSS}	$V_{GS} = \pm 20$ V _{DC} , $V_{DS} = 0$			± 100 nA

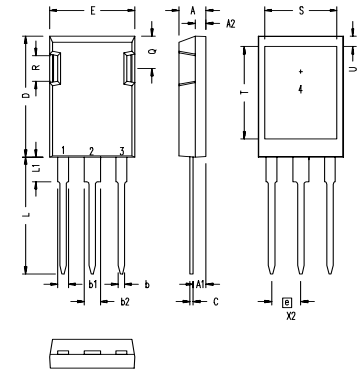
CoolMOS is a trademark of
Infineon Technologies AG.

Symbol	Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$		30	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		7.8	nF
C_{oss}			5	nF
C_{rss}			260	pF
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 400\text{ V}, I_D = I_{D25}$		260	nC
Q_{gs}			50	nC
Q_{gd}			130	nC
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1.5\ \Omega$ (External)		50	ns
t_r			40	ns
$t_{d(off)}$			100	ns
t_f			20	ns
R_{thJC}			0.42	K/W
R_{thCK}		0.15		K/W

Source-Drain Diode		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
Symbol	Conditions	min.	typ.	max.
V_{SD}	$I_F = 0.5 \cdot I_{D25}, V_{GS} = 0\text{ V}$			1.2 V
t_{rr}	$I_F = I_{D25}, -di/dt = 250\text{ A}/\mu\text{s},$ $V_R = 350\text{ V}, T_J = 125^\circ\text{C}$		600	ns
I_{RM}			10	A

Package		Characteristic Values		
Symbol	Conditions	min.	typ.	max.
Weight			6	g

ISOPLUS 247 OUTLINE



1 Gate, 2 Drain (Collector)
3 Source (Emitter)
4 no connection

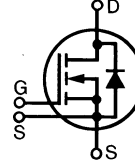
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	.190	.205
A ₁	2.29	2.54	.090	.100
A ₂	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b ₁	1.91	2.13	.075	.084
b ₂	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	.244
R	4.32	4.83	.170	.190

CoolMOS Power MOSFET

IXKN 75N60

V_{DSS}	I_{D25}	$R_{DS(on)}$
600 V	75 A	35 mΩ

N-Channel Enhancement Mode
Low $R_{DS(on)}$, High V_{DSS} MOSFET

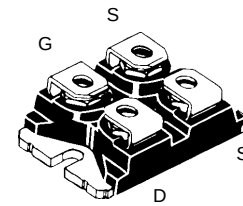


COOLMOS
Power Semiconductors

Symbol	Conditions	Maximum Ratings
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	600 V
V_{GS}		± 20 V
I_{D25}	$T_C = 25^\circ\text{C}$	75 A
I_{D90}	$T_C = 90^\circ\text{C}$	50 A
I_{DM}	$T_C = 25^\circ\text{C}$, Pulse width limited by T_{JM}	300 A
I_{AR}	$T_C = 25^\circ\text{C}$, $L = 1.6$ mH, single pulse	90 A
E_{AS}		3.6 J
dv/dt	$V_{DS} \leq V_{DSS}$, $I_S = 75$ A, $di_S/dt = 200$ A/ μs , $T_J = T_{JM}$	6 V/ns
P_D	$T_C = 25^\circ\text{C}$	520 W
T_J		$-40 \dots +150$ $^\circ\text{C}$
T_{JM}		150 $^\circ\text{C}$
T_{stg}		$-40 \dots +150$ $^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1$ mA	2500 V~
M_d	Mounting torque Terminal connection torque (M4)	1.5/13 Nm/lb.in. 1.5/13 Nm/lb.in.

miniBLOC, SOT-227 B

E72873



G = Gate
S = Source
D = Drain

Either source terminal at miniBLOC can be used as main or kelvin source

Features

- miniBLOC package
 - Electrically isolated copper base
 - Low coupling capacitance to the heatsink for reduced EMI
 - High power dissipation due to AlN ceramic substrate
 - International standard package SOT-227
 - Easy screw assembly
- CoolMOS power MOSFET
 - High blocking capability
 - Low on resistance
 - Avalanche rated for unclamped inductive switching (UIS)
 - Low thermal resistance due to reduced chip thickness
- Enhanced total power density

Applications

- Switched mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)
- Power factor correction (PFC)
- Welding
- Inductive heating

MOSFET

Symbol	Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)
		min. typ. max.
V_{DSS}	$V_{GS} = 0$ V, $I_D = 1$ mA	600 V
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0$ V	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ 1 10 μA μA
$R_{DS(on)}$	$V_{GS} = 10$ V, $I_D = 0.5 \cdot I_{D25}$	35 mΩ
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 5.5$ mA	3.5 5.5 V
I_{GSS}	$V_{GS} = \pm 20$ V _{DC} , $V_{DS} = 0$	± 200 nA

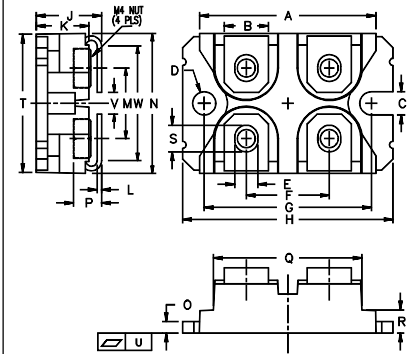
CoolMOS is a trademark of
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Symbol	Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$		60	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		15.6	nF
C_{oss}			10	nF
C_{rss}			530	pF
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 400\text{ V}, I_D = I_{D25}$		520	nC
Q_{gs}			100	nC
Q_{gd}			260	nC
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1\ \Omega$ (External)		50	ns
t_r			40	ns
$t_{d(off)}$			100	ns
t_f			20	ns
R_{thJC}			0.05	0.24 K/W
R_{thCK}				K/W

Symbol	Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{SD}	$I_F = 0.5 \cdot I_{D25}, V_{GS} = 0\text{ V}$			1.2 V
t_{rr}	$I_F = I_{D25}, -di/dt = 500\text{ A}/\mu\text{s},$ $V_R = 350\text{ V}, T_J = 125^\circ\text{C}$		600	ns
I_{RM}			20	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
Weight			30	g

miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	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	38.20	1.489	1.505
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	0.031	0.033

