

CoolMOS™ Power MOSFET IXKG 25N80C ISO264™

Electrically Isolated Back Surface

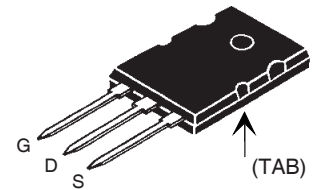
N-Channel Enhancement Mode
Low $R_{DS(on)}$, High Voltage MOSFET

$$\begin{aligned} V_{DSS} &= 800 \text{ V} \\ I_{D25} &= 25 \text{ A} \\ R_{DS(on)} &= 150 \text{ m}\Omega \end{aligned}$$



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	800	V
V_{GS}	Continuous	± 20	V
I_{D25}	$T_C = 25^\circ\text{C}$	25	A
I_{D90}	$T_C = 90^\circ\text{C}$	9	A
$I_{D(RMS)}$	Package lead current limit	45	A
E_{AS}	$I_o = 10\text{A}$, $T_C = 25^\circ\text{C}$	690	mJ
E_{AR}	$I_o = 20\text{A}$	0.5	mJ
dv/dt	$V_{DS} < V_{DSS}$, $I_F \leq 17\text{A}$, $T_{VJ} = 150^\circ\text{C}$ $dI_F/dt = 100\text{A}/\mu\text{s}$	6	V/ns
P_D	$T_C = 25^\circ\text{C}$	250	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +125	$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
V_{ISOL}	RMS leads-to-tab, 50/60 Hz, $t = 1$ minute	2500	V~
M_d	Mounting torque	0.9 / 6	Nm/lb-in
Weight		8	g

ISO264™



G = Gate, D = Drain,
S = Source

* Patent pending

Features

- Silicon chip on Direct-Copper-Bond substrate
- High power dissipation
- Isolated mounting surface
- 2500V electrical isolation
- 3RD generation CoolMOS power MOSFET
- High blocking capability
- Low on resistance
- Avalanche rated for unclamped inductive switching (UIS)
- Low thermal resistance due to reduced chip thickness
- Low drain to tab capacitance (<40pF)

Applications

- Switched Mode Power Supplies (SMPS)
- Uninterruptible Power Supplies (UPS)
- Power Factor Correction (PFC)
- Welding
- Inductive Heating

Advantages

- Easy assembly
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
$R_{DS(on)}$	$V_{GS} = 10\text{V}$, $I_D = I_{D90}$, Note 1 $V_{GS} = 10\text{V}$, $I_D = I_{D90}$, Note 1 $T_J = 125^\circ\text{C}$		126 297	150 m Ω m Ω
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 2\text{mA}$	2		4 V
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0\text{V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	10	50 μA μA
I_{GSS}	$V_{GS} = \pm 20\text{V}_{DC}$, $V_{DS} = 0$			± 200 nA

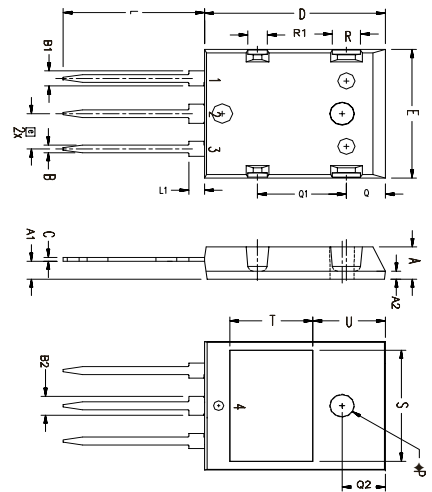
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Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
$Q_{g(\text{on})}$	$V_{GS} = 10\text{ V}, V_{DS} = 640\text{ V}, I_D = 17\text{ A}$		166	nC
Q_{gs}			18	nC
Q_{gd}			84	nC
$t_{d(\text{on})}$	$V_{GS} = 10\text{ V}, V_{DS} = 640\text{ V}$ $I_D = 35\text{ A}, R_G = 2.2\ \Omega$		25	ns
t_r			25	ns
$t_{d(\text{off})}$			75	ns
t_f			10	ns
R_{thJC}			0.5	K/W
R_{thCH}		0.30		K/W

Reverse Conduction		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
V_{SD}	$I_F = 12.5\text{ A}, V_{GS} = 0\text{ V}$ Note 1		1	1.2 V

Note: 1. Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$

ISO264 OUTLINE



- 1 - Gate
- 2 - Drain (Collector)
- 3 - Source (Emitter)
- 4 - No Connection

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.102	.118	2.59	3.00
A2	.046	.055	1.17	1.40
b	.045	.055	1.14	1.40
b1	.087	.102	2.21	2.59
b2	.111	.126	2.82	3.20
c	.020	.029	0.51	0.74
D	1.020	1.040	25.91	26.42
E	.770	.799	19.56	20.29
e	.215 BSC		5.45 BSC	
L	.780	.820	19.81	20.83
L1	.080	.102	2.03	2.59
P	.130	.145	3.30	3.68
Q	.210	.235	5.33	5.97
Q1	.490	.513	12.45	13.03
Q2	.235	.255	5.96	6.48
R	.150	.180	3.81	4.57
R1	.100	.130	2.54	3.30
S	.668	.690	16.97	17.53
T	.460	.480	11.68	12.19
U	.400	.420	10.16	10.67

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

IXYS MOSFETs and IGBTs are covered by one or more	4,835,592	4,881,106	5,017,508	5,049,961	5,187,117	5,486,715	6,306,728B1	6,259,123B1
	4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025	6,404,065B1	6,162,665