IXYS

Advance Technical Information

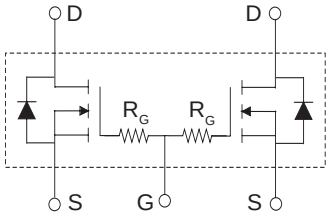
TrenchMV™ Power MOSFETs Common-Gate Pair

(Electrically Isolated Back Surface)

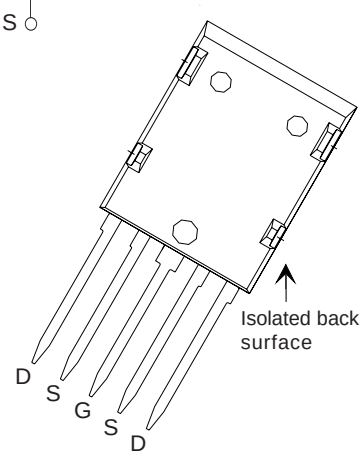
N-Channel Enhancement Mode
Avalanche Rated

IXTL2x220N075T

V_{DSS} = 75 V
I_{D25} = 2x120 A
$R_{DS(on)}$ ≤ 5.5 mΩ



ISOPLUS i5-Pak™ (IXTL)



G = Gate D = Drain
S = Source

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 175°C	75	V
V_{DGR}	T_J = 25°C to 175°C; R_{GS} = 1 MΩ	75	V
V_{GSM}	Transient	± 20	V
I_{D25}	T_C = 25°C (Combined die total = 240 A)	120	A
I_{LRMS}	Package Current Limit, RMS (Combined die total = 150 A)	75	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	600	A
I_{AR}	T_C = 25°C	25	A
E_{AS}	T_C = 25°C	1.0	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \le V_{DSS}$ $T_J \le 175°C$, R_G = 3.3 Ω	3	V/ns
P_D	T_C = 25°C	150	W
T_J		-55 ... +175	°C
T_{JM}		175	°C
T_{stg}		-55 ... +175	°C
T_L	1.6 mm (0.062 in.) from case for 10 s	300	°C
T_{SOLD}	Plastic body for 10 seconds	260	°C
V_{ISOL}	50/60 Hz, t = 1 minute, I_{ISOL} < 1 mA, RMS	2500	V
F_C	Mounting force	20..120/4.5..25	N/lb.
Weight		9	g

Test Conditions (T_J = 25°C unless otherwise specified)		Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0 V, I_D = 250 µA	75			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250 µA	2.0		4.0	V
I_{GSS}	V_{GS} = ± 20 V, V_{DS} = 0 V			± 200	nA
I_{DSS}	$V_{DS} = V_{DSS}$ V_{GS} = 0 V			5	µA
	T_J = 150°C			250	µA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 50 A, Notes 1, 2			5.5	mΩ

All ratings and parametric values are per each MOSFET die unless otherwise specified.

Features

- Ultra-low On Resistance
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
  - easy to drive and to protect
- 175 °C Operating Temperature

Advantages

- Easy to mount
- Space savings
- High power density

Applications

- Automotive
  - Motor Drives
  - 42V Power Bus
  - ABS Systems
- DC/DC Converters and Off-line UPS
- Primary Switch for 24V and 48V Systems
- High Current Switching Applications

Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) Min.	Typ.	Max.	
g_{fs}	V_{DS}= 10 V; I_D = 60 A, Note 1	75	120		S
R_G			3		Ω
C_{iss}			7700		pF
C_{oss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		1100		pF
C_{rss}			230		pF
$t_{d(on)}$			29		ns
t_r	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 25 A		65		ns
$t_{d(off)}$	R_G = 3.3 Ω (External)		55		ns
t_f			47		ns
$Q_{g(on)}$			165		nC
Q_{gs}	V_{GS}= 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 25 A		40		nC
Q_{gd}			50		nC
R_{thJC}				1.0	°C/W
R_{thCS}			0.5		°C/W

Source-Drain Diode

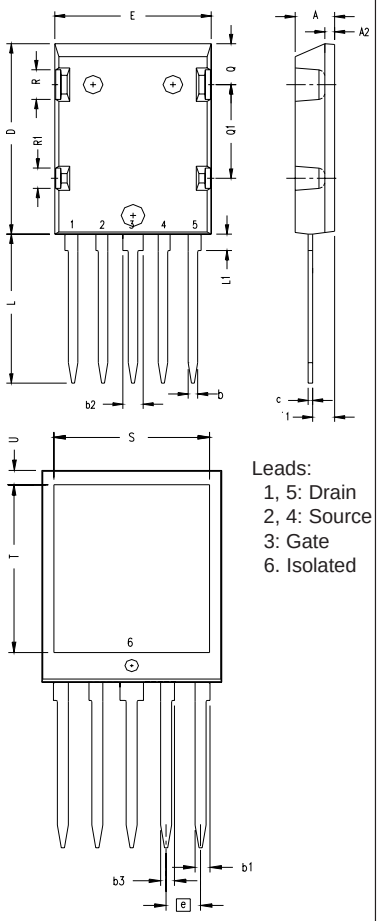
Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) Min.	Typ.	Max.	
I_S	V_{GS} = 0 V			220	A
I_{SM}	Pulse width limited by T_{JM}			600	A
V_{SD}	I_F = 50 A, V_{GS} = 0 V, Note 1			1.0	V
t_{rr}	I_F = 25 A, -di/dt = 100 A/µs V_R = 40 V, V_{GS} = 0 V		50		ns

Notes: 1. Pulse test: t ≤ 300 µs, duty cycle d ≤ 2 %;
2. Drain and Source Kelvin contacts must be located less than 5 mm from the plastic body.

ADVANCE TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from a subjective evaluation of the design, based upon prior knowledge and experience, and constitute a "considered reflection" of the anticipated result. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

ISOPLUS i5-Pak™ (IXTL) Outline



Leads:
1, 5: Drain
2, 4: Source
3: Gate
6. Isolated

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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	.063	.072	1.60	1.83
b2	.100	.110	2.54	2.79
b3	.058	.068	1.47	1.73
c	.020	.029	0.51	0.74
D	1.020	1.040	25.91	26.42
E	.770	.799	19.56	20.29
e	.150 BSC		3.81 BSC	
L	.780	.820	19.81	20.83
L1	.080	.102	2.03	2.59
Q	.210	.235	5.33	5.97
Q1	.490	.513	12.45	13.03
R	.150	.180	3.81	4.57
R1	.100	.130	2.54	3.30
S	.668	.690	16.97	17.53
T	.801	.821	20.34	20.85
U	.065	.080	1.65	2.03

Note:
1. TAB 6 - Electrically isolated from the other pins.
2. All leads and tab are tin plated.

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IXYS MOSFETs and IGBTs are covered by one or moreof the following U.S. patents: 4,835,592 4,850,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405B2 6,710,463 6,727,585 6,759,692 6771478 B2 7,005,734 B2 7,063,975 B2 7,071,537