

TrenchMV™

Power MOSFETs

Common-Gate Pair

(Electrically Isolated Back Surface)

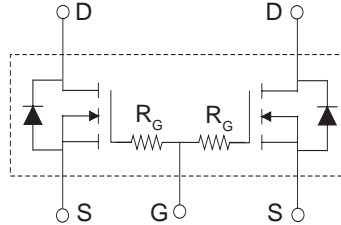
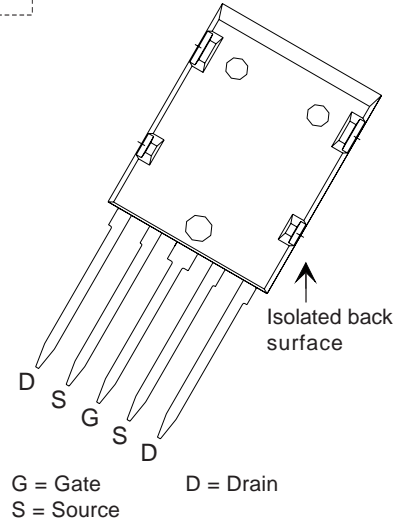
IXTL2x180N10T

$$V_{DSS} = 100 \text{ V}$$

$$I_{D25} = 2 \times 100 \text{ A}$$

$$R_{DS(on)} \leq 7.4 \text{ m}\Omega$$

N-Channel Enhancement Mode
Avalanche Rated


ISOPLUS i5-Pak™ (IXTL)


Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 175°C	100	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 175°C ; $R_{GS} = 1 \text{ M}\Omega$	100	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$ (Combined die total = 200 A)	100	A
I_{LRMS}	Package Current Limit, RMS (Combined die total = 150 A)	75	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	450	A
I_{AR}	$T_C = 25^\circ\text{C}$	25	A
E_{AS}	$T_C = 25^\circ\text{C}$	750	mJ
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$ $T_J \leq 175^\circ\text{C}$, $R_G = 3.3 \Omega$	3	V/ns
P_D	$T_C = 25^\circ\text{C}$	150	W
T_J		-55 ... +175	$^\circ\text{C}$
T_{JM}		175	$^\circ\text{C}$
T_{stg}		-55 ... +175	$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
T_{SOLD}	Plastic body for 10 seconds	260	$^\circ\text{C}$
V_{ISOL}	50/60 Hz, $t = 1$ minute, $I_{ISOL} < 1 \text{ mA}$, RMS	2500	V
F_C	Mounting force	20..120/4.5..25	N/lb.
Weight		9	g

Features

- Ultra-low On Resistance
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
- easy to drive and to protect
- 175 $^\circ\text{C}$ 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
- Distributed Power Architectures and VRMs
- Electronic Valve Train Systems
- High Current Switching Applications
- High Voltage Synchronous Rectifier

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \mu\text{A}$	100		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu\text{A}$	2.5		V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0 \text{ V}$			$\pm 200 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$ $T_J = 150^\circ\text{C}$			5 μA 250 μA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 50 \text{ A}$, Notes 1, 2			7.4 m Ω

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

DS9999752(01/07)

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{ V}$; $I_D = 60\text{ A}$, Note 1	70	110	S
R_G			3	Ω
C_{iss}			6900	pF
C_{oss}	$V_{GS} = 0\text{ V}$, $V_{DS} = 25\text{ V}$, $f = 1\text{ MHz}$		923	pF
C_{rss}			162	pF
$t_{d(on)}$			33	ns
t_r	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.5 V_{DSS}$, $I_D = 25\text{ A}$		54	ns
$t_{d(off)}$	$R_G = 3.3\ \Omega$ (External)		42	ns
t_f			31	ns
$Q_{g(on)}$			151	nC
Q_{gs}	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.5 V_{DSS}$, $I_D = 25\text{ A}$		39	nC
Q_{gd}			45	nC
R_{thJC}			1.0	$^\circ\text{C/W}$
R_{thCS}		0.50		$^\circ\text{C/W}$

Source-Drain Diode

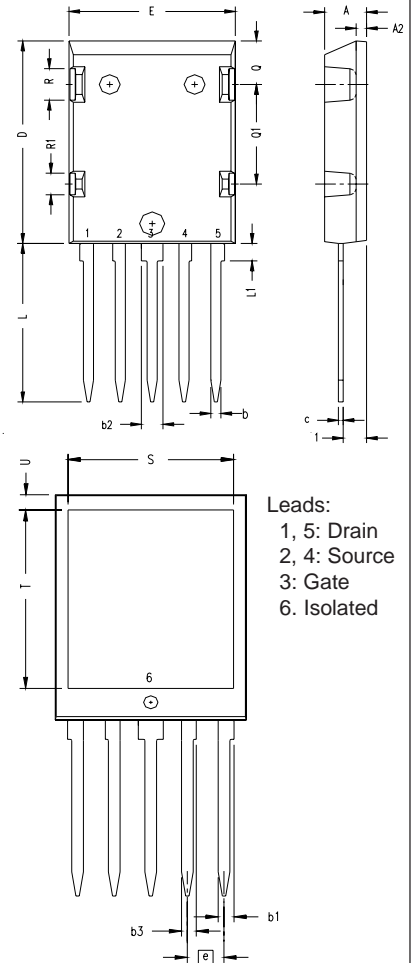
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
I_s	$V_{GS} = 0\text{ V}$			180 A
I_{SM}	Pulse width limited by T_{JM}			450 A
V_{SD}	$I_F = 50\text{ A}$, $V_{GS} = 0\text{ V}$, Note 1			1.0 V
t_{rr}	$I_F = 25\text{ A}$, $-di/dt = 100\text{ A}/\mu\text{s}$ $V_R = 50\text{ V}$, $V_{GS} = 0\text{ V}$		60	ns

- Notes: 1. Pulse test: $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$;
2. Drain and Source Kelvin contacts must be located less than 5 mm from the plastic body.

ADVANCETECHNICALINFORMATION

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



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	.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 4,835,592 4,931,844 5,049,961 5,237,481 6,162,665 6,404,065 B1 6,683,344 6,727,585 7,005,734 B2
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4,881,106 5,034,796 5,187,117 5,486,715 6,306,728 B1 6,583,505 6,710,463 6,771,478 B2 7,071,537