IXYS

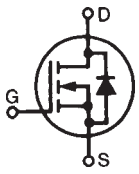
Advance Technical Information

TrenchMV™ Power MOSFET (Electrically Isolated Back Surface)

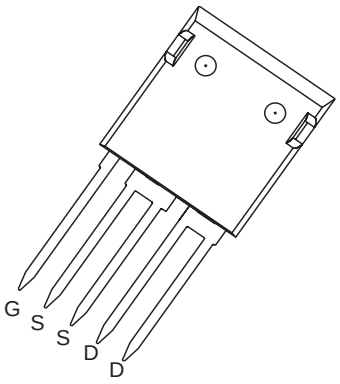
IXTF250N075T

V_{DSS} = 75 V
I_{D25} = 140 A
$R_{DS(on)}$ ≤ 4.4 mΩ

N-Channel Enhancement Mode
Avalanche Rated



ISOPLUS i4-Pak™ (5-lead) (IXTF)



G = Gate D = Drain
S = Source

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25℃ to 175℃	75	V
V_{DGR}	T_J = 25℃ to 175℃; R_{GS} = 1 MΩ	75	V
V_{GSM}	Transient	± 20	V
I_{D25}	T_C = 25℃	140	A
I_L	Package Current Limit, RMS (75 A per lead)	150	A
I_{DM}	T_C = 25℃, pulse width limited by T_{JM}	560	A
I_{AR}	T_C = 25℃	40	A
E_{AS}	T_C = 25℃	1.5	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤ 100 A/ms, $V_{DD} \le V_{DSS}$ $T_J \le$ 175℃, R_G = 3.3 W	3	V/ns
P_D	T_C = 25℃	200	W
T_J		-55 ... +175	℃
T_{JM}		175	℃
T_{stg}		-55 ... +175	℃
T_L	1.6 mm (0.062 in.) from case for 10 s	300	℃
T_{SOLD}	Plastic body for 10 seconds	260	℃
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		6	g

Symbol	Test Conditions (T_J = 25℃ 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 T_J = 150℃			5 250	μA μA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 50 A, Notes 1, 2			4.4	mΩ

Features
- Ultra-low On Resistance
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
  - easy to drive and to protect
- 175°X 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	122		S
C_{iss}			9900		pF
C_{oss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		1330		pF
C_{rss}			285		pF
$t_{d(on)}$			32		ns
t_r	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 50 A		50		ns
$t_{d(off)}$	R_G = 3.3 W (External)		58		ns
t_f			45		ns
$Q_{g(on)}$			200		nC
Q_{gs}	V_{GS}= 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 25 A		50		nC
Q_{gd}			60		nC
R_{thJC}				0.75	°C/W
R_{thCH}			0.15		°C/W

Source-Drain Diode

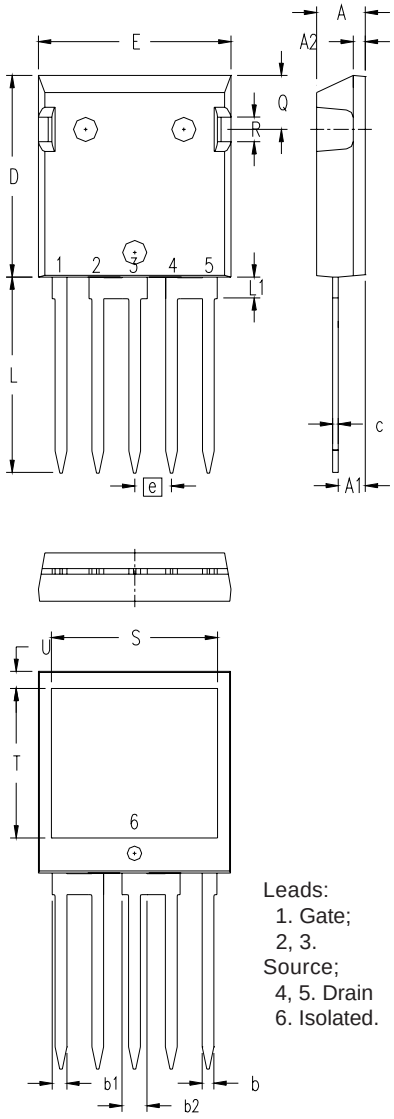
Symbol	Test Conditions (T_J = 25°C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
I_S	V_{GS} = 0 V			150	A
I_{SM}	Pulse width limited by T_{JM}			560	A
V_{SD}	I_F = 50 A, V_{GS} = 0 V, Note 1			1.0	V
t_{rr}	I_F = 25 A, -di/dt = 100 A/µs V_R = 25 V, V_{GS} = 0 V		50		ns

Notes: 1. Pulse test: t ≤ 300 µs, duty cycled ≤ 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 i4-Pak™ (5-Lead) (IXTF) Outline



Leads:
1. Gate;
2, 3. Source;
4, 5. Drain
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	.085	1.17	2.16
b	.045	.055	1.14	1.40
b1	.058	.068	1.47	1.73
b2	.100	.110	2.54	2.79
C	.020	.029	0.51	0.74
D	.819	.840	20.80	21.34
E	.770	.799	19.56	20.29
e	.150 BSC		3.81 BSC	
L	.780	.840	19.81	21.34
L1	.083	.102	2.11	2.59
Q	.210	.244	5.33	6.20
R	.100	.180	2.54	4.57
S	.660	.690	16.76	17.53
T	.590	.620	14.99	15.75
U	.065	.080	1.65	2.03

All leads and tab are tin plated.

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