

TrenchMV™ Power MOSFET (Electrically Isolated Back Surface)

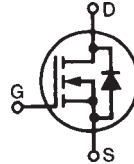
IXTF280N055T

$$V_{DSS} = 55 \text{ V}$$

$$I_{D25} = 160 \text{ A}$$

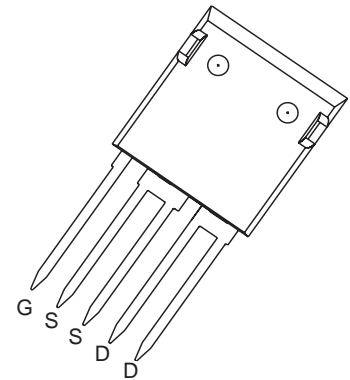
$$R_{DS(on)} \leq 4.0 \text{ m}\Omega$$

N-Channel Enhancement Mode
Avalanche Rated



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 175°C	55	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 175°C ; $R_{GS} = 1 \text{ M}\Omega$	55	V
V_{GSM}	Transient	± 20	V
I_{D25}	$T_C = 25^\circ\text{C}$	160	A
I_L	Package Current Limit, RMS (75 A per lead)	150	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	600	A
I_{AR}	$T_C = 25^\circ\text{C}$	40	A
E_{AS}	$T_C = 25^\circ\text{C}$	1.5	J
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A/ms}$, $V_{DD} \leq V_{DSS}$ $T_J \leq 175^\circ\text{C}$, $R_G = 3.3 \Omega$	3	V/ns
P_D	$T_C = 25^\circ\text{C}$	200	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		6	g

ISOPLUS i4-Pak™ (5-lead) (IXTF)



G = Gate
S = Source
D = Drain

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
 - High Side Switch
 - 12V Battery
 - ABS Systems
- DC/DC Converters and Off-line UPS
- Primary- Side Switch
- High Current Switching Applications

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
BV_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \mu\text{A}$	55		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu\text{A}$	2.0		4.0 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0 \text{ V}$			$\pm 200 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$			5 μA
	$V_{GS} = 0 \text{ V}$ $T_J = 150^\circ\text{C}$			250 μA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 50 \text{ A}$, Notes 1, 2			4.0 m Ω

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
C_{iss}			9800		pF
C_{OSS}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		1450		pF
C_{rss}			320		pF
$t_{d(on)}$			32		ns
t_r	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 50\text{ A}$		55		ns
$t_{d(off)}$	$R_G = 3.3\ \Omega$ (External)		49		ns
t_f			37		ns
$Q_{g(on)}$			200		nC
Q_{gs}	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 25\text{ A}$		50		nC
Q_{gd}			50		nC
R_{thJC}				0.75	$^\circ\text{C/W}$
R_{thCH}		0.15			$^\circ\text{C/W}$

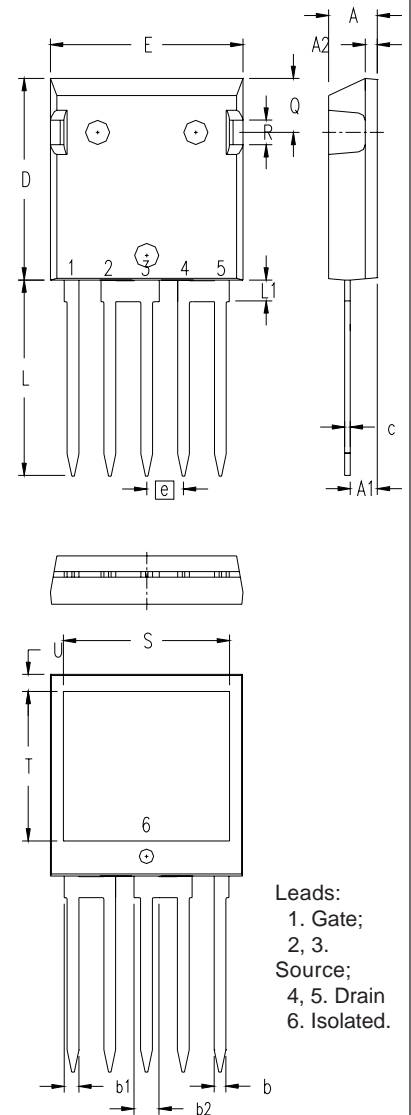
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)			
		Min.	Typ.	Max.	
I_s	$V_{GS} = 0\text{ V}$			150	A
I_{SM}	Pulse width limited by T_{JM}			600	A
V_{SD}	$I_F = 50\text{ A}, V_{GS} = 0\text{ V}$, Note 1			1.0	V
t_{rr}	$I_F = 25\text{ A}, -di/dt = 100\text{ A}/\mu\text{s}$ $V_R = 25\text{ V}, V_{GS} = 0\text{ V}$		40		ns

- Notes: 1. Pulse test: $t \leq 300\ \mu\text{s}$, duty cycled $\leq 2\%$;
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 i4-Pak™ (5-Lead) (IXTF) Outline



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

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	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.

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IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:	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
	4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2
	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