IXYS

Advance Technical Information

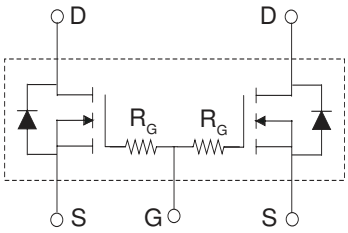
TrenchMV™ Power MOSFETs Common-Gate Pair

(Electrically Isolated Back Surface)

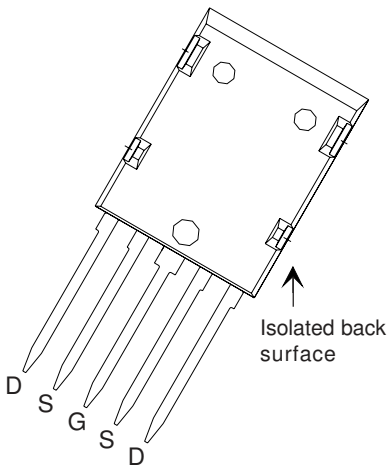
N-Channel Enhancement Mode
Avalanche Rated

IXTL2x240N055T

V_{DSS} = 55 V
I_{D25} = 2x140 A
$R_{DS(on)}$ ≤ 4.4 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	55	V
V_{DGR}	T_J = 25°C to 175°C; R_{GS} = 1 MΩ	55	V
V_{GSM}	Transient	± 20	V
I_{D25}	T_C = 25°C (Combined die total = 280 A)	140	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}	650	A
I_{AS}	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
	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	30..170 / 7..36	N/lb.
Weight	Package	9	g

Symbol	Test Conditions (T_J = 25°C unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
BV_{DSS}	V_{GS} = 0 V, I_D = 250 μA	55			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°C			5 250	μA μA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 50 A, Note 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 °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

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

DS99721 (01/07)

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	80	132		S
R_G			3		Ω
C_{iss}			7600		pF
C_{oss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		1240		pF
C_{rss}			260		pF
$t_{d(on)}$			40		ns
t_r	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 25A		54		ns
$t_{d(off)}$	R_G = 5 Ω (External)		63		ns
t_f			75		ns
$Q_{g(on)}$			170		nC
Q_{gs}	V_{GS}= 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 25A		32		nC
Q_{gd}			48		nC
R_{thJC}				1.0	°C/W
R_{thCS}			0.25		°C/W

Source-Drain Diode

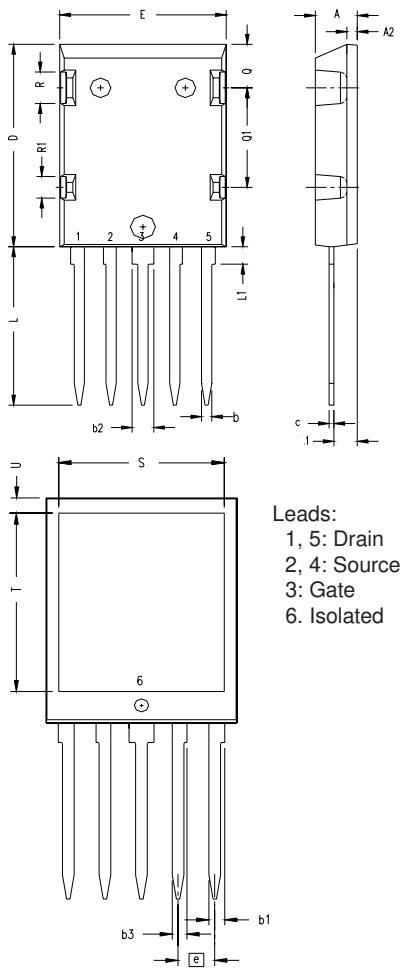
Symbol	Test Conditions	Characteristic Values (T_J = 25°C unless otherwise specified) Min.	Typ.	Max.	
I_S	V_{GS} = 0 V			240	A
I_{SM}	Pulse width limited by T_{JM}			650	A
V_{SD}	I_F = 50 A, V_{GS} = 0 V, Note 1			1.0	V
t_{rr}	I_F = 25 A, -di/dt = 100 A/µs V_R = 30 V, V_{GS} = 0 V		40		ns

Notes: 1. Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %;
2. Drain and source Kelvin contact 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.