

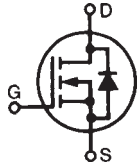
PolarHT™ Power MOSFET

(Electrically Isolated Tab)

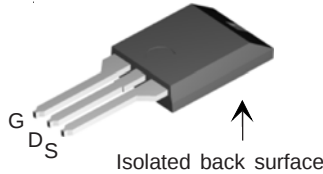
P-Channel Enhancement Mode
Avalanche Rated

IXTC36P15P
IXTR36P15P

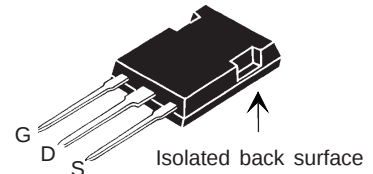
$V_{DSS} = -150 \text{ V}$
 $I_{D25} = -22 \text{ A}$
 $R_{DS(on)} \leq 120 \text{ m}\Omega$



ISOPLUS220 (IXTC)
E153432



ISOPLUS247 (IXTR)
E153432



G = Gate
S = Source
D = Drain
TAB = Drain

Symbol	Test Conditions	Maximum Ratings
V_{DSS}	$T_J = 25^\circ\text{C}$ to 175°C	- 150 V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 175°C ; $R_{GS} = 1 \text{ M}\Omega$	- 150 V
V_{GS}	Continuous	± 20 V
V_{GSM}	Transient	± 30 V
I_{D25}	$T_C = 25^\circ\text{C}$	- 22 A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	- 100 A
I_{AR}	$T_C = 25^\circ\text{C}$	- 36 A
E_{AR}	$T_C = 25^\circ\text{C}$	30 mJ
E_{AS}	$T_C = 25^\circ\text{C}$	1.5 J
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 175^\circ\text{C}$, $R_G = 5 \Omega$	10 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 $^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS, $t = 1$, leads-to-tab	2500 V~
F_C	Mounting force	ISOPLUS220 11..65 / 2.5..15 N/lb ISOPLUS247 20..120 / 4.5..25 N/lb
Weight		ISOPLUS220 3 g ISOPLUS247 5 g

Symbol	Test Conditions	Characteristic Values
	$(T_J = 25^\circ\text{C}$ unless otherwise specified)	Min. Typ. Max.
BV_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = -250 \mu\text{A}$	- 150 V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250 \mu\text{A}$	- 3.0 - 5.0 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0 \text{ V}$	± 100 nA
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$ $T_J = 150^\circ\text{C}$	- 10 μA - 250 μA
$R_{DS(on)}$	$V_{GS} = -10 \text{ V}$, $I_D = I_T$, (Note 1)	120 m Ω

Features:

- Silicon chip on Direct-Copper Bond (DCB) substrate
 - International standard isolated and UL recognized package
 - Isolated mounting surface
 - 2500V electrical isolation
- Dynamic dv/dt rating
- Avalanche rated
- Fast intrinsic diode
- The rugged PolarHT™ process
- Low Q_G
- Low Drain-to-Tab capacitance
- Low package inductance
 - easy to drive and to protect

Applications:

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC Choppers
- AC motor control
- Uninterrupted power supplies
- High speed power switching applications

Advantages:

- Low gate charge results in simple drive requirement
- Improved Gate, Avalanche and dynamic dv/dt ruggedness
- High power density
- Low collector capacitance to ground
- Fast switching
- Easy of paralleling

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
g_{fs}	$V_{DS} = -10\text{ V}; I_D = I_T$, (Note 1)	11	19	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = -25\text{ V}, f = 1\text{ MHz}$		2950	pF
C_{oss}			615	pF
C_{rss}			115	pF
$t_{d(on)}$	$V_{GS} = -10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = I_T$ $R_G = 5\ \Omega$ (External)		28	ns
t_r			37	ns
$t_{d(off)}$			45	ns
t_f			14	ns
$Q_{g(on)}$	$V_{GS} = -10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = I_T$		55	nC
Q_{gs}			21	nC
Q_{gd}			20	nC
R_{thJC}				1.0 $^\circ\text{C/W}$
R_{thCS}		0.15		$^\circ\text{C/W}$

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		Min.	Typ.	Max.
I_s	$V_{GS} = 0\text{ V}$			- 36 A
I_{SM}	Repetitive			- 100 A
V_{SD}	$I_F = I_T, V_{GS} = 0\text{ V}$, (Note 1)			- 3 V
t_{rr}	$I_F = -25\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$ $V_R = -100\text{ V}, V_{GS} = 0\text{ V}$		150	ns
Q_{RM}			2.0	μC

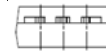
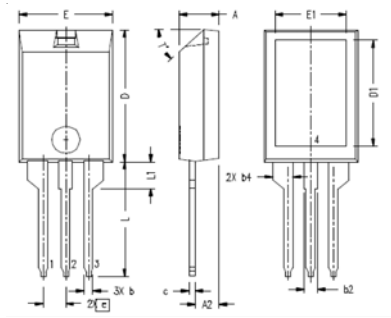
Note 1: Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle, $d \leq 2\%$;

Note 2: Test Current, $I_T = -18\text{ A}$

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.

ISOPLUS220™ (IXTC) Outline

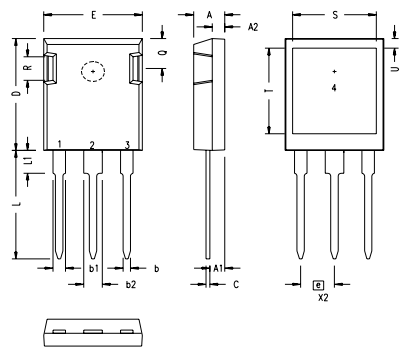


Note:
Bottom heatsink (Pin 4) is electrically isolated from Pin 1, 2, or 3.

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.157	.197	4.00	5.00
A2	.098	.118	2.50	3.00
b	.035	.051	0.90	1.30
b2	.049	.065	1.25	1.65
b4	.093	.100	2.35	2.55
c	.028	.039	0.70	1.00
D	.591	.630	15.00	16.00
D1	.472	.512	12.00	13.00
E	.394	.433	10.00	11.00
E1	.295	.335	7.50	8.50
e	.100 BASIC		2.55 BASIC	
L	.512	.571	13.00	14.50
L1	.118	.138	3.00	3.50
T*			42.5*	47.5*

Ref: IXYS CO 0177 R0

ISOPLUS247 (IXTR) Outline



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b1	.075	.084	1.91	2.13
b2	.115	.123	2.92	3.12
C	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
E	.620	.635	15.75	16.13
e	.215 BSC		5.45 BSC	
L	.780	.800	19.81	20.32
L1	.150	.170	3.81	4.32
Q	.220	.244	5.59	6.20
R	.170	.190	4.32	4.83
S	.520	.540	13.21	13.72
T	.620	.640	15.75	16.26
U	.065	.080	1.65	2.03

- 1 - GATE
- 2 - DRAIN (COLLECTOR)
- 3 - SOURCE (EMITTER)
- 4 - NO CONNECTION

NOTE: This drawing will meet all dimensions requirement of JEDEC outline TO-247AD except screw hole.

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

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	7,157,338 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	