

Standard Power MOSFETs

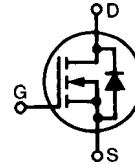
ISOPLUS247™

(Electrically Isolated Backside)

IXTR 30N25

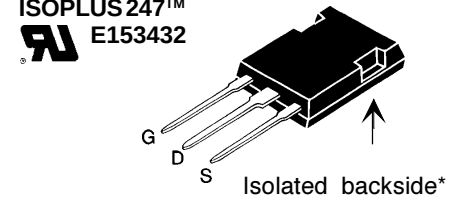
$$\begin{aligned} V_{DSS} &= 250 \text{ V} \\ I_{D(\text{cont})} &= 25 \text{ A} \\ R_{DS(\text{on})} &= 75 \text{ m}\Omega \end{aligned}$$

N-Channel Enhancement Mode
Avalanche Rated, High dv/dt



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	250	V
V_{DGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GS} = 1 \text{ M}\Omega$	250	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	25	A
I_{DM}	$T_C = 25^\circ\text{C, Note 1}$	120	A
I_{AR}	$T_C = 25^\circ\text{C}$	30	A
E_{AR}	$T_C = 25^\circ\text{C}$	30	mJ
E_{AS}	$T_C = 25^\circ\text{C}$	1.0	J
dv/dt	$I_S \leq I_{DM}, di/dt \leq 100 \text{ A}/\mu\text{s}, V_{DD} \leq V_{DSS}$ $T_J \leq 150^\circ\text{C}, R_G = 2 \Omega$	5	V/ns
P_D	$T_C = 25^\circ\text{C}$	150	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
T_L	1.6 mm (0.063 in.) from case for 10 s	300	$^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS $t = 1 \text{ min}$	2500	V~
Weight		5	g

ISOPLUS 247™
E153432



G = Gate
D = Drain
S = Source

* Patent pending

Features

- Silicon chip on Direct-Copper-Bond substrate
- High power dissipation
- Isolated mounting surface
- 2500V electrical isolation
- Low drain to tab capacitance(<30pF)
- Low $R_{DS(\text{on})}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Rated for Unclamped Inductive Load Switching (UIS)

Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control

Advantages

- Easy assembly
- Space savings
- High power density

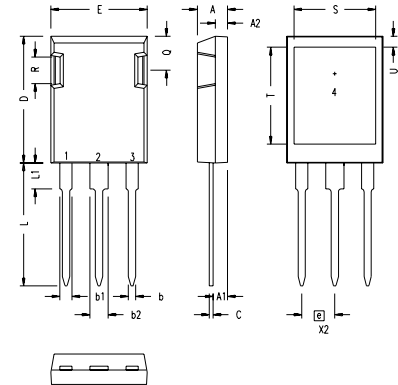
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	250		V
$V_{GS(\text{th})}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	2.0		4.0 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0$			$\pm 100 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$ $T_J = 125^\circ\text{C}$			25 μA 250 μA
$R_{DS(\text{on})}$	$V_{GS} = 10 \text{ V}, I_D = I_T$ Notes 2, 3	60		75 m Ω

Symbol	Test Conditions		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
			min.	typ.	max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = I_T$	Notes 2, 3	24	32	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$			3950	pF
C_{oss}				510	pF
C_{rss}				177	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 30\text{ A}$ $R_G = 3.6\ \Omega$ (External), Notes 2, 3			19	ns
t_r				19	ns
$t_{d(off)}$				79	ns
t_f				17	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = I_T$ Notes 2, 3			136	nC
Q_{gs}				32	nC
Q_{gd}				52	nC
R_{thJC}				0.75	K/W
R_{thCK}				0.15	K/W

Source-Drain Diode		Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			30 A
I_{SM}	Repetitive; Note 1			120 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V}$, Notes 2, 3			1.5 V
t_{rr}	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$		300	ns
Q_{RM}			3.0	μC

Note: 1. Pulse width limited by T_{JM}
 2. Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$
 3. $I_T = 15\text{ A}$

ISOPLUS 247 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.