

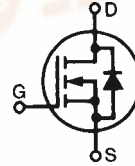


HiPerFET™ Power MOSFETs ISOPLUS247™ (Electrically Isolated Back Surface)

IXFR 90N30

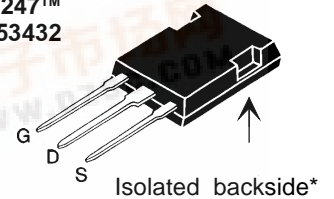
$V_{DSS} = 300 \text{ V}$
 $I_{D25} = 75 \text{ A}$
 $R_{DS(on)} = 33 \text{ m}\Omega$
 $t_{rr} \leq 250 \text{ ns}$

Single MOSFET Die



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	300	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	300	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	75	A
I_{DM}	$T_C = 25^\circ\text{C}$, Note 1	360	A
I_{AR}	$T_C = 25^\circ\text{C}$	90	A
E_{AR}	$T_C = 25^\circ\text{C}$	64	mJ
E_{AS}	$T_C = 25^\circ\text{C}$	3	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	$T_C = 25^\circ\text{C}$	400	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

ISOPLUS247™
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 $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Fast intrinsic Rectifier

Applications

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

Advantages

- Easy assembly
- Space savings
- High power density
- Low noise to ground

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \mu\text{A}$	300		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4 \text{ mA}$	2.0		4.5 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0$			$\pm 100 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$		100 μA
		$T_J = 125^\circ\text{C}$		2 mA
	$V_{GS} = 10 \text{ V}$, $I_D = I_T$ Notes 2, 3			33 $\text{m}\Omega$

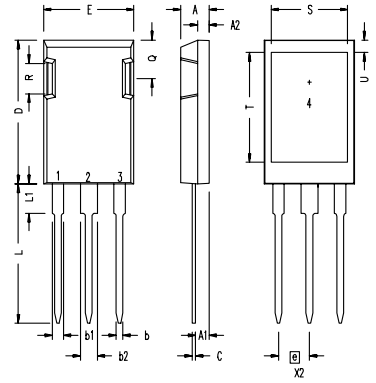


Symbol	Test Conditions	Characteristic Values			
		(T _J = 25°C, unless otherwise specified)			
		min.	typ.	max.	
g_{fs}	V _{DS} = 10 V; I _D = I _T	Notes 2, 3	40	70	S
C_{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		10000		pF
C_{oss}			1800		pF
C_{rss}			700		pF
t_{d(on)}	V _{GS} = 10 V, V _{DS} = 0.5 • V _{DSS} , I _D = I _T R _G = 2.0 Ω (External), Notes 2, 3		42		ns
t_r			55		ns
t_{d(off)}			100		ns
t_f			40		ns
Q_{g(on)}	V _{GS} = 10 V, V _{DS} = 0.5 • V _{DSS} , I _D = I _T		360		nC
Q_{gs}			60		nC
Q_{gd}			180		nC
R_{thJC}				0.30	K/W
R_{thCK}			0.15		K/W

Source-Drain Diode		Characteristic Values			
		(T _J = 25°C, unless otherwise specified)			
Symbol	Test Conditions	min.	typ.	max.	
I_S	V _{GS} = 0 V			90 A	
I_{SM}	Repetitive; Note 1			360 A	
V_{SD}	I _F = I _T , V _{GS} = 0 V, Notes 2, 3			1.5 V	
t_{rr}	I _F = 50A, -di/dt = 100 A/μs, V _R = 100 V			250 ns	
Q_{RM}			1.4		μC
I_{RM}			10		A

Note: 1. Pulse width limited by T_{JM}
 2. Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %
 3. I_T = 45A

ISOPLUS 247 OUTLINE



1 Gate, 2 Drain (Collector)
 3 Source (Emitter)
 4 no connection

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	.190	.205
A ₁	2.29	2.54	.090	.100
A ₂	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b ₁	1.91	2.13	.075	.084
b ₂	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	.244
R	4.32	4.83	.170	.190