

HiPerFET[™] Power MOSFETs ISOPLUS247[™]

(Electrically Isolated Back Surface)

Single MOSFET Die

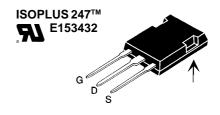
IXFR 44N60

 $V_{DSS} = 600 V$ $I_{D25} = 38 A$ $R_{DS(on)} = 130 m\Omega$





Symbol	Test Conditions	Maximum F	Maximum Ratings		
V _{DSS}	T _J = 25°C to 150°C	600	V		
V _{DGR}	$T_J^{\circ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}; R_{GS} = 1 \text{ M}\Omega$	600	V		
V _{GS}	Continuous	±20	V		
V _{GSM}	Transient	±30	V		
I _{D25}	T _C = 25°C	38	Α		
I _{DM}	$T_{c} = 25^{\circ}C$, Note 1	60	Α		
I _{AR}	$T_{c} = 25^{\circ}C$	44	Α		
E _{AR}	T _C = 25°C	60	mJ		
E _{AS}	$T_{c} = 25^{\circ}C$	3	J		
dv/dt	$\begin{array}{l} I_{_{S}} & \leq I_{_{DM}}, di/dt \leq 100 A/\mu s, V_{_{DD}} \leq V_{_{DSS}} \\ T_{_{J}} & \leq 150^{\circ} C, R_{_{G}} = 2 \Omega \end{array}$	5	V/ns		
P _D	T _c = 25°C	400	W		
T _J		-55 + 150	°C		
T _™		150	°C °C		
T _{stg}		-55 + 150	°C		
T _L	1.6 mm (0.063 in.) from case for 10 s	300	°C		
V _{ISOL}	50/60 Hz, RMS t = 1 min	2500	V~		
Weight		5	g		



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 $R_{DS (on)} HDMOS^{TM} process$
- 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

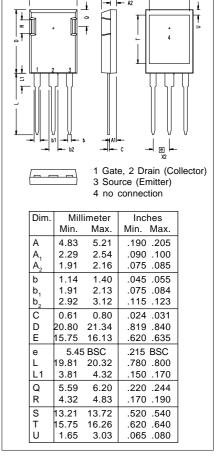
Symbol	Test Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
V _{DSS}	$V_{GS} = 0 \text{ V. } I_{D} = 250 \mu\text{A}$	600		V
V _{GS(th)}	$V_{DS} = V_{GS}$. $I_{D} = 4mA$	2.5		4.5 V
GSS	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0$			±100 nA
I _{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 V$	$T_J = 25^{\circ}C$ $T_J = 125^{\circ}C$		100 μA 2 mA
R _{DS(on)}	$V_{GS} = 10 \text{ V}, I_{D} = I_{T}$ Notes 2, 3			130 mΩ

ISOPLUS 247 (IXFR) OUTLINE



Symbol	Test Conditions (T = 25°	Characteristic Values (T ₁ = 25°C, unless otherwise specified)		
	· ·	min.	typ.	max.
\mathbf{g}_{fs}	$V_{DS} = 10 \text{ V}; I_{D} = I_{T}$ Notes 2, 3	30	45	S
C _{iss})		8900	pF
C _{oss}	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$		1000	pF
\mathbf{C}_{rss}	J	J	330	pF
t _{d(on)})		42	ns
t _r	$V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \bullet V_{DSS}, I_{D} = I_{T}$		55	ns
$\mathbf{t}_{d(off)}$	$R_{\rm G} = 2.0 \Omega$ (External), Notes 2, 3		110	ns
t _f	J		45	ns
Q _{g(on)})		330	nC
\mathbf{Q}_{gs}	$\begin{cases} V_{GS} = 10 \text{ V}, V_{DS} = 0.5 \bullet V_{DSS}, I_{D} = I_{T} \\ \text{Notes } 2, 3 \end{cases}$		60	nC
\mathbf{Q}_{gd}	Notes 2, 3	65	nC	
R _{thJC}				0.30 K/W
R _{thCK}			0.15	K/W

Source-Dr		Characteristic Values (T ₁ = 25°C, unless otherwise specified)			
Symbol		nin. ty		max.	
I _s	$V_{GS} = 0 V$			44	Α
I _{SM}	Repetitive; Note 1			176	Α
$\overline{\mathbf{V}_{\mathtt{SD}}}$	$I_F = I_T, V_{GS} = 0 \text{ V}, \text{ Notes } 2, 3$			1.3	V
t _{rr})			250	ns
$\mathbf{Q}_{_{\mathrm{RM}}}$	$I_{\rm F} = 50$ A,-di/dt = 100 A/ μ s, $V_{\rm R} = 100$ V	1	.4		μС
L	$V_{\rm F} = 300$ K, divat = 100 $M_{\rm H}$ 3, $V_{\rm R} = 100$ V		8		Α



Note: 1. Pulse width limited by T_{JM}

2. Pulse test, $t \le 300 \mu s$, duty cycle $d \le 2 \%$

3. $I_T = 22A$

