

HiPerFET™ Power MOSFETs IXFR 26N60Q ISOPLUS247™ Q-CLASS

(Electrically Isolated Back Surface)

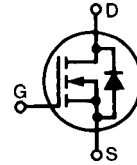
N-Channel Enhancement Mode
Avalanche Rated, High dV/dt
Low Gate Charge and Capacitances

$$V_{DSS} = 600 \text{ V}$$

$$I_{D25} = 23 \text{ A}$$

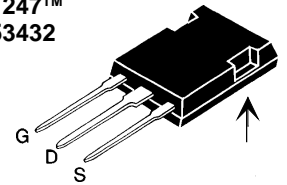
$$R_{DS(on)} = 250 \text{ m}\Omega$$

$$t_{rr} \leq 250 \text{ ns}$$



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	600	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	600	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	23	A
I_{DM}	$T_C = 25^\circ\text{C}$, Note 1	92	A
I_{AR}	$T_C = 25^\circ\text{C}$	26	A
E_{AR}	$T_C = 25^\circ\text{C}$	45	mJ
E_{AS}	$T_C = 25^\circ\text{C}$	1.5	J
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$ $T_J \leq 150^\circ\text{C}$, $R_G = 2 \Omega$	5	V/ns
P_D	$T_C = 25^\circ\text{C}$	310	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	250	$^\circ\text{C}$
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
- IXYS advanced low Q_g process
- Low gate charge and capacitances
- easier to drive
- faster switching
- Low drain to tab capacitance (<30pF)
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Rated for Unclamped Inductive Load

Switching (UIS)

- Fast intrinsic Rectifier

Applications

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

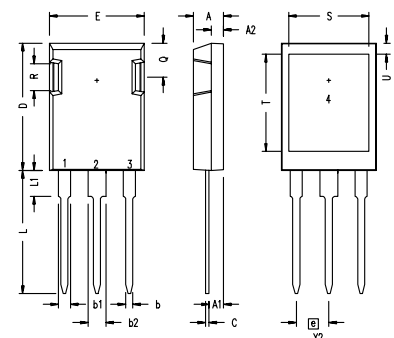
Advantages

- Easy assembly
- Space savings
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 250 \mu\text{A}$	600		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4 \text{ mA}$	2.5		4.5 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0$			$\pm 100 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$		$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	25 μA 1 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = I_T$ Notes 2, 3			250 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	14	22	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		5100	pF
C_{oss}			560	pF
C_{rss}			210	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$ $R_G = 2.0\ \Omega$ (External), Notes 2, 3		30	ns
t_r			32	ns
$t_{d(off)}$			80	ns
t_f			15	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = I_T$ Notes 2, 3		150	nC
Q_{gs}			34	nC
Q_{gd}			80	nC
R_{thJC}			0.4	K/W
R_{thCK}		0.15		K/W

ISOPLUS 247 (IXFR) 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
L ₁	3.81	4.32	.150	.170
Q	5.59	6.20	.220	.244
R	4.32	4.83	.170	.190
S	13.21	13.72	.520	.540
T	15.75	16.26	.620	.640
U	1.65	3.03	.065	.080

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			26 A
I_{SM}	Repetitive; Note 1			104 A
V_{SD}	$I_F = I_T, V_{GS} = 0\text{ V}$, Notes 2, 3			1.5 V
t_{rr}	$I_F = 50\text{ A}, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$			250 ns
Q_{RM}			1.0	μC
I_{RM}			10	A

- Note: 1. Pulse width limited by T_{JM}
2. Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$
3. $I_T = 13\text{ A}$