IXYS

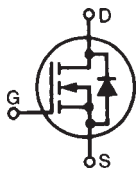
HiPerFET™ Power MOSFETs ISOPLUS264™
(Electrically Isolated Backside)

IXFL 44N80 V_{DSS} = 800 V
I_{D25} = 44 A
$R_{DS(on)}$ = 0.165 Ω

Single Die MOSFET

N-Channel Enhancement Mode
Avalanche Rated, High dv/dt, Low t_{rr}

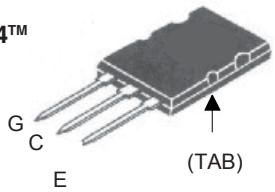
Preliminary Data Sheet



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	800	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	800	V
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	44	A
I_{DM}	T_C = 25°C, Note 1	176	A
I_{AR}	T_C = 25°C	44	A
E_{AR}	T_C = 25°C	64	mJ
E_{AS}	T_C = 25°C	4	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \le V_{DSS}$ $T_J \le$ 150°C, R_G = 2 Ω	5	V/ns
P_D	T_C = 25°C	550	W
T_J		-55 ... +150	°C
T_{JM}		150	°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~
	$I_{ISOL} \le$ 1 mA t = 1 s	3000	V~
Weight		5	g

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.
V_{DSS}	V_{GS} = 0 V, I_D = 3mA	800		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8mA	2.0		4.0 V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0			±100 nA
I_{DSS}	$V_{DS} = V_{DSS}$ V_{GS} = 0 V	T_J = 25°C		100 µA
		T_J = 125°C		2 mA
$R_{DS(on)}$	V_{GS} = 10 V, $I_D = I_T$ Note 1			0.165 Ω

ISOPLUS-264™



G = Gate C = Collector
E = Emitter Tab = Collector

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 motor control

Advantages

- Easy assembly
- Space savings
- High power density

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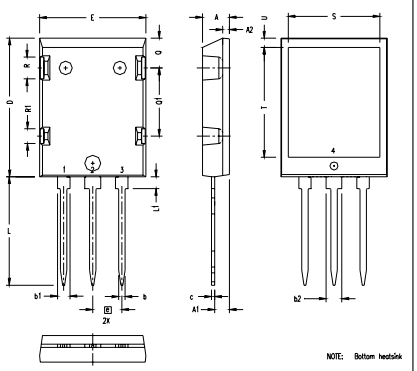
Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} = 15 V; $I_D = I_T$	Note 2	32	50		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz			10000		pF
C_{oss}				1300		pF
C_{rss}				330		pF
$t_{d(on)}$	V_{GS} = 10 V, $V_{DS} = 0.5 \bullet V_{DSS}$, $I_D = I_T$; R_G = 1 Ω (External)			35		ns
t_r				48		ns
$t_{d(off)}$				100		ns
t_f				24		ns
$Q_{g(on)}$	V_{GS} = 10 V, $V_{DS} = 0.5 \bullet V_{DSS}$, $I_D = I_T$			380		nC
Q_{gs}				70		nC
Q_{gd}				170		nC
R_{thJC}					0.225	K/W
R_{thCK}				0.05		K/W

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V			44	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			176	A
V_{SD}	$I_F = I_S$, V_{GS} = 0 V, Note 1			1.3	V
t_{rr}	$I_F = I_S$, -di/dt = 100 A/μs, V_R = 100 V			250	ns
Q_{RM}			1.2		μC
I_{RM}			8		A

Note: 1. Pulse width limited by T_{JM}
2. Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %
3. Test current I_T = 22A

ISOPLUS 264 OUTLINE



NOTE: Bottom heatsink

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.190	.205	4.83	5.21
A1	.102	.118	2.59	3.00
A2	.046	.055	1.17	1.40
b	.045	.055	1.14	1.40
b1	.087	.102	2.21	2.59
b2	.111	.126	2.82	3.20
c	.020	.029	0.51	0.74
D	1.020	1.040	25.91	26.42
E	.770	.799	19.56	20.29
e	.215 BSC		5.46 BSC	
L	.780	.820	19.81	20.83
L1	.080	.102	2.03	2.59
Q	.210	.235	5.33	5.97
Q1	.490	.513	12.45	13.03
R	.150	.180	3.81	4.57
R1	.100	.130	2.54	3.30
S	.668	.690	16.97	17.53
T	.801	.821	20.34	20.85
U	.065	.080	1.65	2.03

NOTE: Bottom heatsink meets 2500Vrms isolation to the other pins.

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 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715 6,306,728B1 6,259,123B1 6,306,728B1 4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025 6,404,065B1 6,162,665 6,534,343