

HiPerFET™ Power MOSFET

N-Channel Enhancement Mode

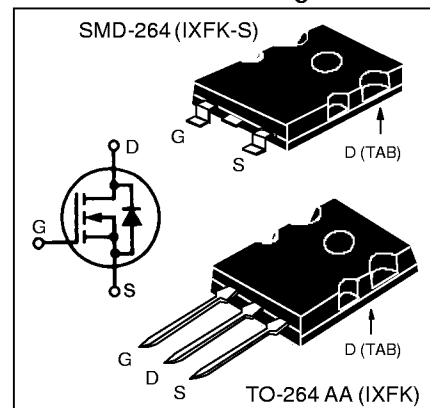
Avalanche Rated, High dv/dt, Low t_{rr} ($t_{rr} \leq 250$) ns

	V_{DSS}	I_{D25}	$R_{DS(on)}$
IXFK/FN 44N50	500 V	44 A	0.12 Ω
IXFK/FN 48N50	500 V	48 A	0.10 Ω

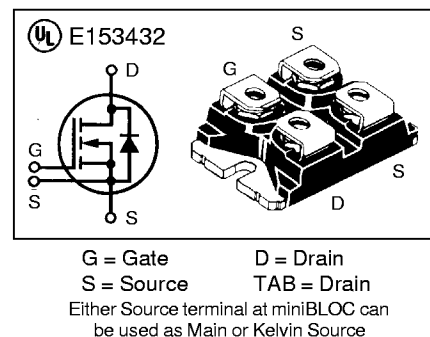
Symbol	Test Conditions	Maximum Ratings		
		IXFK	IXFN	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	500	500	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	500	500	V
V_{GS}	Continuous	± 20	± 20	V
V_{GSM}	Transient	± 30	± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$	44N50 44 48N50 48	44 44 48 48	A
I_{DM}	$T_C = 25^\circ\text{C}$, pulse width limited by T_{JM}	44N50 176 48N50 192	44 176 48 192	A
I_{AR}	$T_C = 25^\circ\text{C}$	24	24	A
E_{AR}	$T_C = 25^\circ\text{C}$	30	30	mJ
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	5	V/ns
P_D	$T_C = 25^\circ\text{C}$	500	520	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 $t = 1 \text{ min}$ $I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$	-	2500 3000	V~ V~
M_d	Mounting torque Terminal connection torque	0.9/6 -	1.5/13 Nm/lb.in. 1.5/13 Nm/lb.in.	
Weight		10	30	g

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$, unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 1 \text{ mA}$	500		V
$V_{GH(th)}$	$V_{DS} = V_{GS}$, $I_D = 8 \text{ mA}$	2		V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 200 \text{ nA}$
I_{DSS}	$V_{DS} = 0.8 V_{DSS}$, $T_J = 25^\circ\text{C}$ $V_{GS} = 0 \text{ V}$, $T_J = 125^\circ\text{C}$			400 μA 2 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $\leq 2 \%$	44N50 48N50		0.12 Ω 0.10 Ω

TO-264 Packages



miniBLOC, SOT-227B (IXFN)



Features

- International standard packages
- Molding epoxies meet UL 94 V-0 flammability classification
- SOT-227B miniBLOC with aluminium nitride isolation
- Unclamped Inductive Switching (UIS) rated
- Fast intrinsic rectifier

Applications

- DC choppers
- DC-DC converters
- Synchronous rectification
- Battery chargers
- Switched-mode and resonant-mode power supplies
- Temperature and lighting controls

Advantages

- Easy to mount
- Space savings
- High power density
- S version suitable for surface mounting

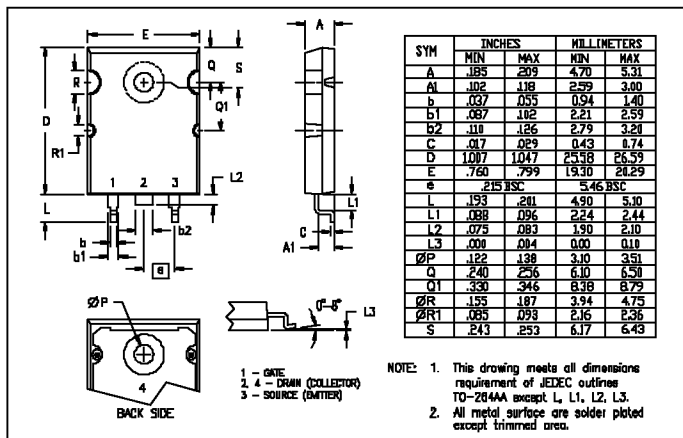
Symbol Test Conditions Characteristic Values
($T_J = 25^\circ\text{C}$, unless otherwise specified)

		Min.	Typ.	Max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 0.5 I_{D25}$, pulse test	30	42	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		8400	pF
C_{oss}			900	pF
C_{rss}			280	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$ $R_G = 1\ \Omega$ (External),		30	ns
t_r			60	ns
$t_{d(off)}$			100	ns
t_f			30	ns
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}$		270	nC
Q_{gs}			60	nC
Q_{gd}			135	nC
R_{thJC}	TO-264 AA; SMD-264		0.25	K/W
R_{thCK}	TO-264 AA		0.15	K/W
R_{thJC}	miniBLOC, SOT-227 B		0.24	K/W
R_{thCK}	miniBLOC, SOT-227 B		0.05	K/W

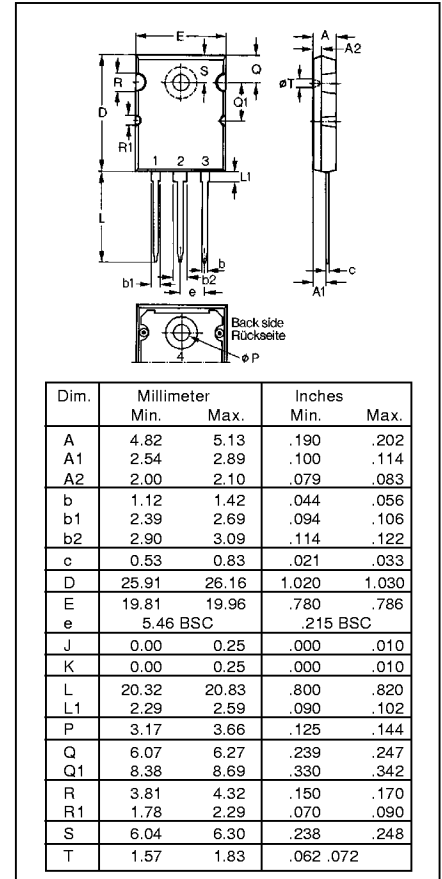
Source-Drain Diode Characteristic Values
($T_J = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions	Min.	Typ.	Max.
I_S	$V_{GS} = 0$			48 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			192 A
V_{SD}	$I_F = 100\text{ A}, V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$			1.5 V
t_{rr}	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$			250 ns
I_{RM}			20	A

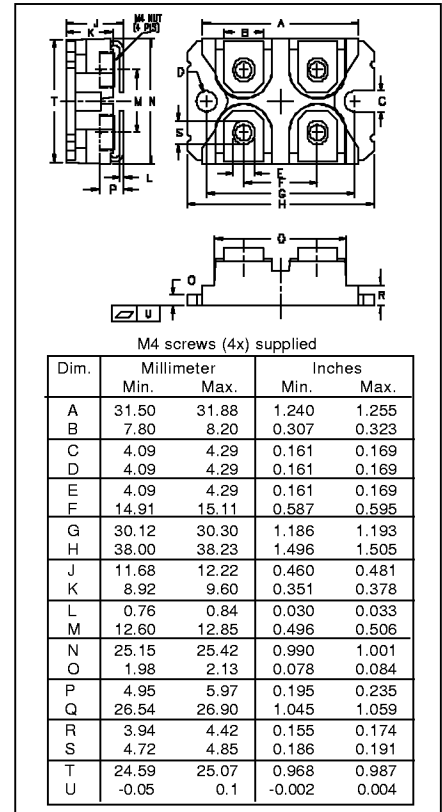
SMD-264 Outline



TO-264 AA Outline



miniBLOC, SOT-227 B



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
4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025

Fig.1. Output Characteristics

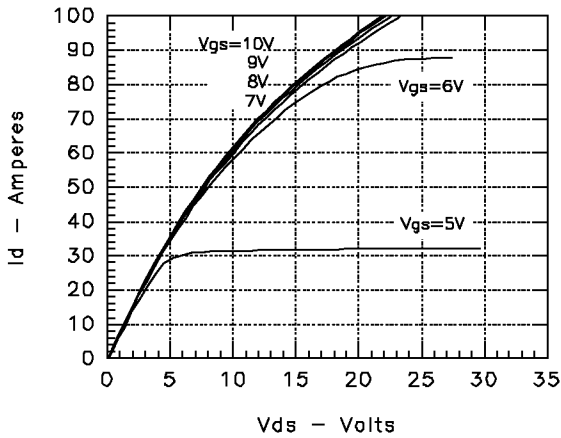


Fig. 2. Input Admittance

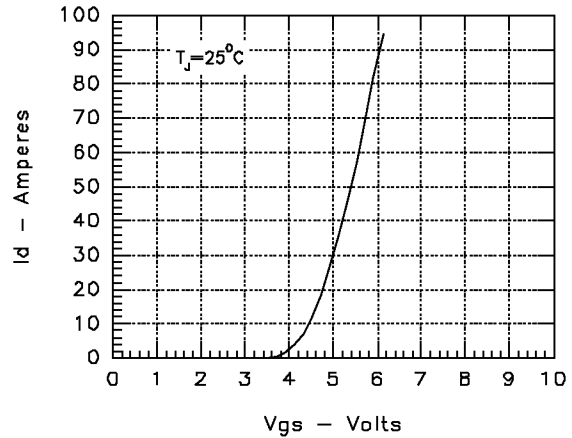


Fig. 3. Rds(on) vs. Drain Current

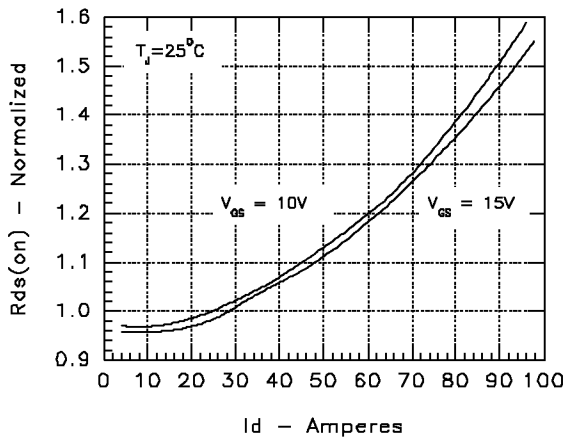


Fig. 4. Temperature Dependence of Drain to Source Resistance

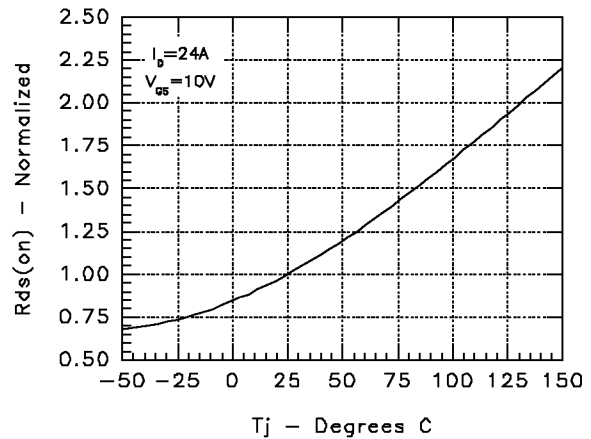


Fig. 5. Drain Current vs. Case Temperature

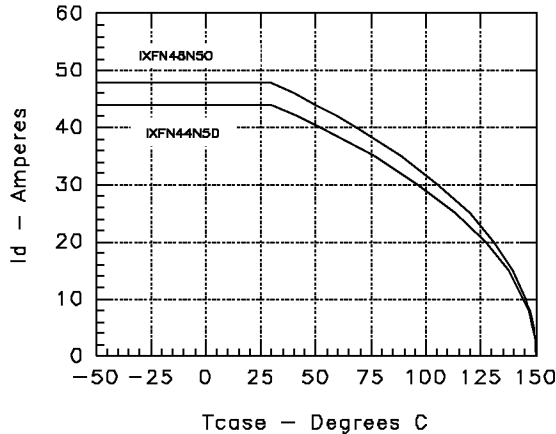


Fig. 6. Temperature Dependence of Breakdown Voltage and Threshold Voltage

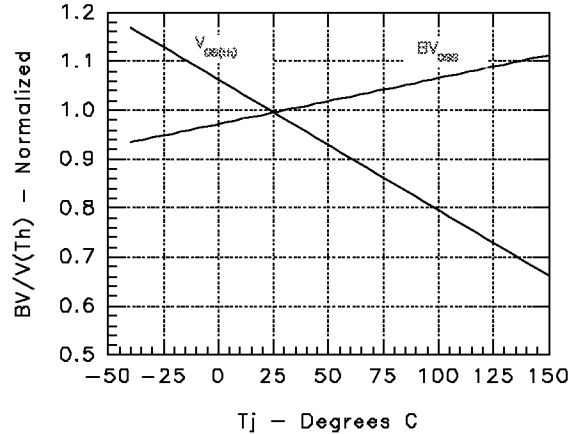


Fig. 7. Gate Charge

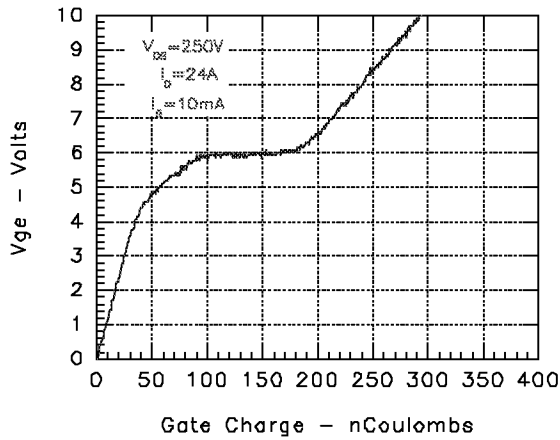


Fig. 8. Capacitance Curves

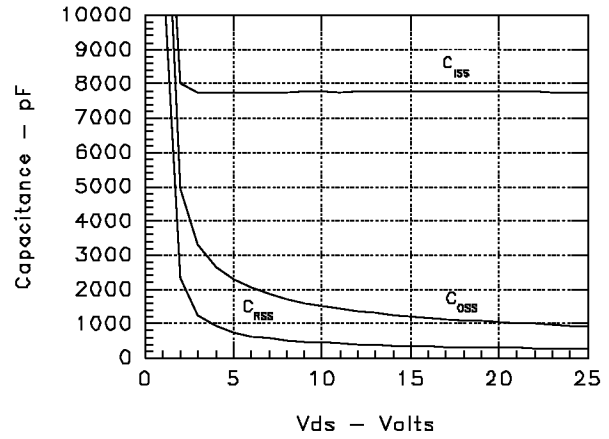


Fig. 9. Source Current vs. Source to Drain Voltage

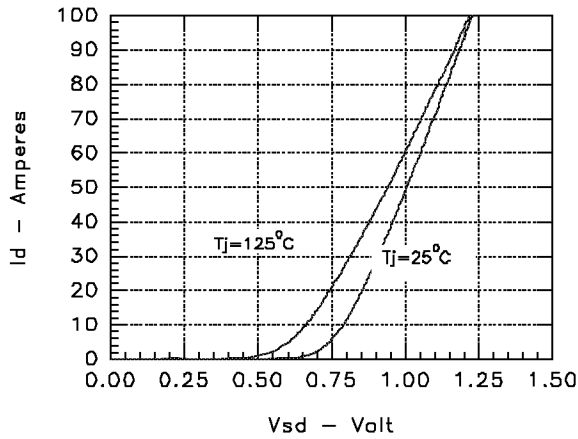


Fig. 10. Transient Thermal Impedance

