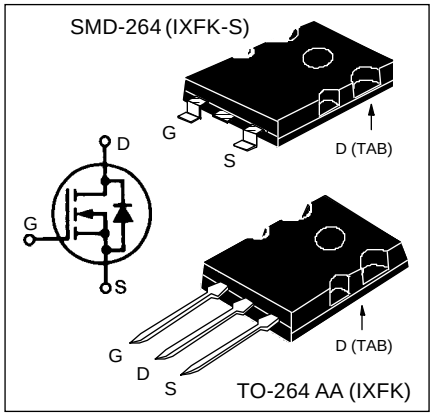
	V_{DSS}	I_{D25}	$R_{DS(on)}$
IXFK/FN 44N50	500 V	44 A	0.12 Ω
IXFK/FN 48N50	500 V	48 A	0.10 Ω

HiPerFET™ Power MOSFET

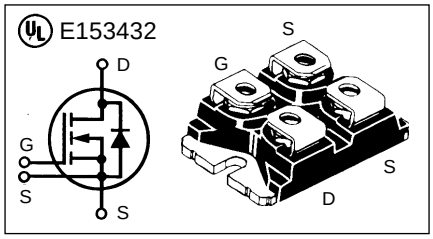
N-Channel Enhancement Mode

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

TO-264 Packages



miniBLOC, SOT-227B (IXFN)



G = Gate D = Drain
S = Source TAB = Drain
Either Source terminal at miniBLOC can be used as Main or Kelvin Source

Symbol	Test Conditions		Maximum Ratings IXFK	IXFN	
V_{DSS}	T_J = 25°C to 150°C		500	500	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ		500	500	V
V_{GS}	Continuous		±20	±20	V
V_{GSM}	Transient		±30	±30	V
I_{D25}	T_C = 25°C	44N50	44	44	A
		48N50	48	48	A
I_{DM}	T_C = 25°C,	44N50	176	176	A
	pulse width limited by T_{JM}	48N50	192	192	A
I_{AR}	T_C = 25°C		24	24	A
E_{AR}	T_C = 25°C		30	30	mJ
dv/dt	$I_S \leq I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \leq V_{DSS}$, $T_J \leq 150°C$, R_G = 2 Ω		5	5	V/ns
P_D	T_C = 25°C		500	520	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~
	$I_{ISOL} \leq$ 1 mA	t = 1 s	-	3000	V~
M_d	Mounting torque		0.9/6	1.5/13	Nm/lb.in.
	Terminal connection torque		-	1.5/13	Nm/lb.in.
Weight			10	30	g

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)		Characteristic Values Min.	Typ.	Max.	
V_{DSS}	V_{GS} = 0 V, I_D = 1 mA		500			V
$V_{GH(th)}$	$V_{DS} = V_{GS}$, I_D = 8 mA		2		4	V
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0				±200	nA
I_{DSS}	V_{DS} = 0.8 V_{DSS}	T_J = 25°C			400	µA
	V_{GS} = 0 V	T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 I_{D25}	44N50			0.12	Ω
		48N50			0.10	Ω
	Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %					

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

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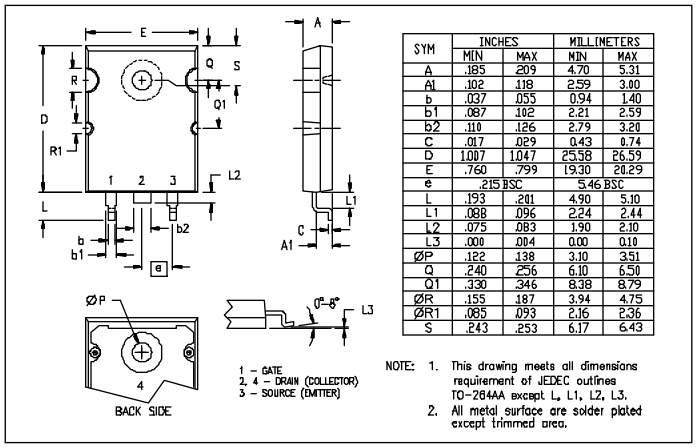
Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 I_{D25}, pulse test	30	42		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		8400		pF
C_{oss}			900		pF
C_{rss}			280		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25} R_G = 1 Ω (External),		30		ns
t_r			60		ns
$t_{d(off)}$			100		ns
t_f			30		ns
$Q_{g(on)}$	V_{GS} = 10 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

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values 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 A, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %			1.5	V
t_{rr}	I_F = I_S, -di/dt = 100 A/µs, V_R = 100 V			250	ns
I_{RM}			20		A

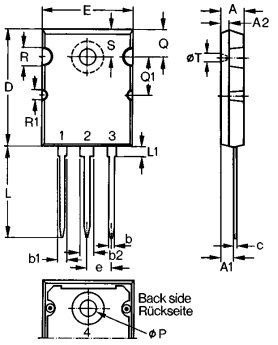
SMD-264 Outline



SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.185	.209	4.70	5.31
A1	.102	.118	2.59	3.00
b	.037	.055	0.94	1.40
b1	.087	.102	2.21	2.59
b2	.110	.126	2.79	3.20
C	.017	.029	0.43	0.74
D	1.007	1.047	25.58	26.59
E	.760	.799	19.30	20.29
e	.215 BSC		5.46 BSC	
L	.193	.201	4.90	5.10
L1	.088	.096	2.24	2.44
L2	.075	.083	1.90	2.10
L3	.000	.004	0.00	0.10
ØP	.122	.138	3.10	3.51
Q	.240	.256	6.10	6.50
Q1	.330	.346	8.38	8.79
ØR	.155	.187	3.94	4.75
ØR1	.085	.093	2.16	2.36
S	.243	.253	6.17	6.43

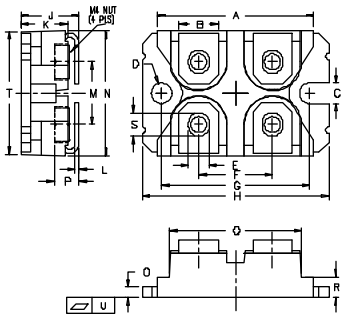
NOTE: 1. This drawing meets all dimensions requirement of JEDEC outlines TO-264AA except L, L1, L2, L3.
2. All metal surface are solder plated except trimmed area.

TO-264 AA Outline



Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	4.82	5.13	.190	.202
A1	2.54	2.89	.100	.114
A2	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b1	2.39	2.69	.094	.106
b2	2.90	3.09	.114	.122
c	0.53	0.83	.021	.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	.780	.786
e	5.46 BSC		.215 BSC	
J	0.00	0.25	.000	.010
K	0.00	0.25	.000	.010
L	20.32	20.83	.800	.820
L1	2.29	2.59	.090	.102
P	3.17	3.66	.125	.144
Q	6.07	6.27	.239	.247
Q1	8.38	8.69	.330	.342
R	3.81	4.32	.150	.170
R1	1.78	2.29	.070	.090
S	6.04	6.30	.238	.248
T	1.57	1.83	.062	.072

miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	38.00	38.23	1.496	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004

IXYS reserves the right to change limits, test conditions, and dimensions.

Fig.1. Output Characteristics

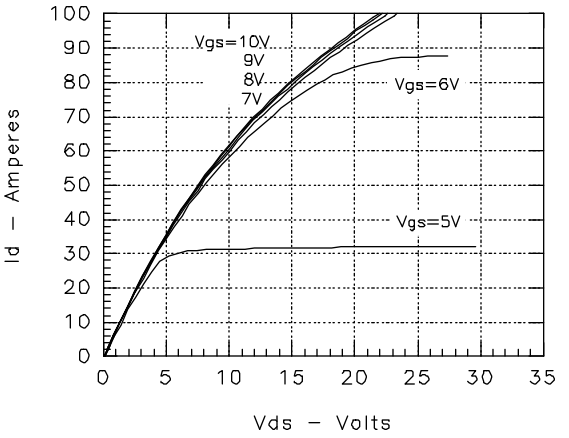


Fig. 2. Input Admittance

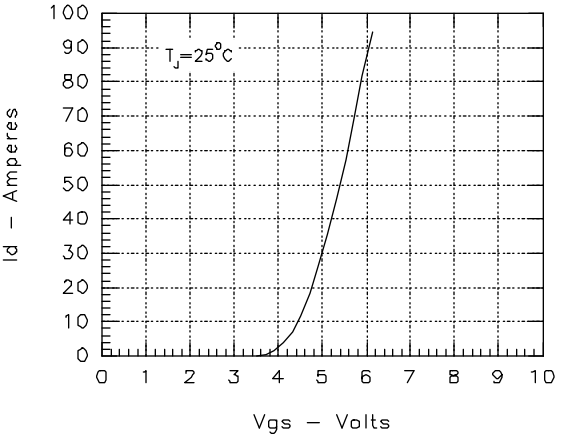


Fig. 3. Rds(on) vs. Drain Current

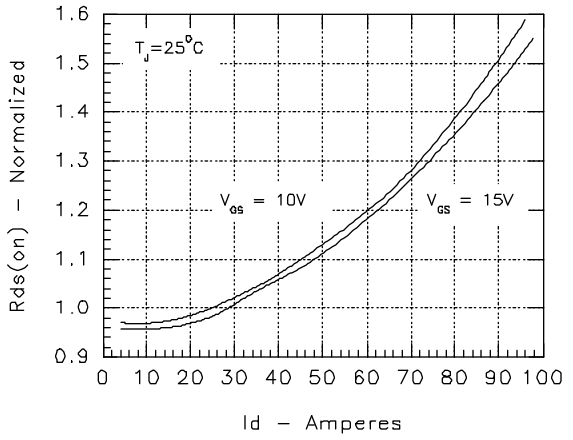


Fig. 4. Temperature Dependence of Drain to Source Resistance

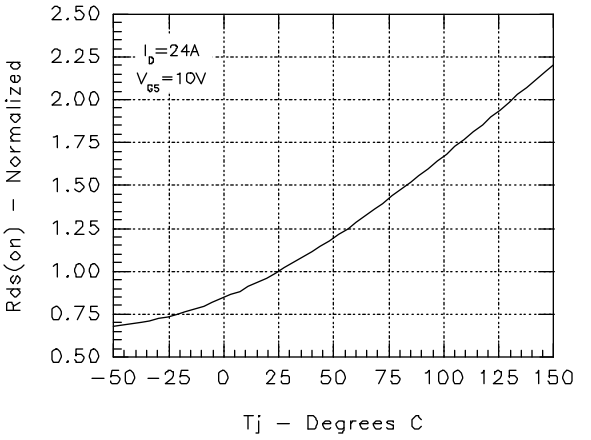


Fig. 5. Drain Current vs. Case Temperature

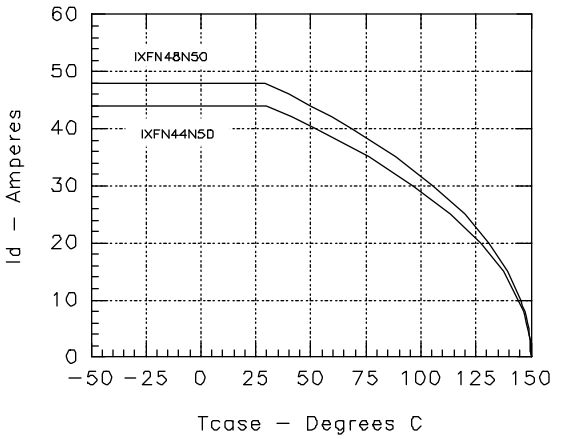


Fig. 6. Temperature Dependence of Breakdown Voltage and Threshold Voltage

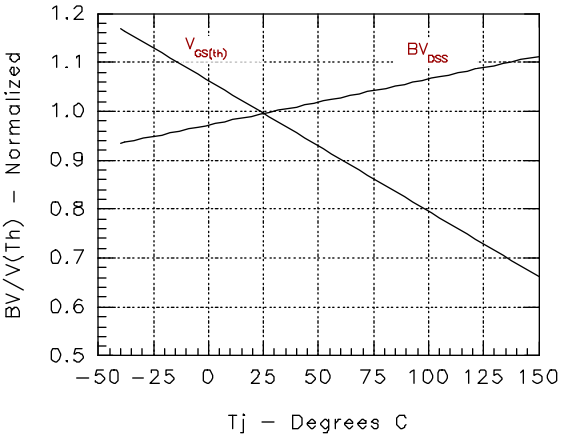


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Fig. 7. Gate Charge

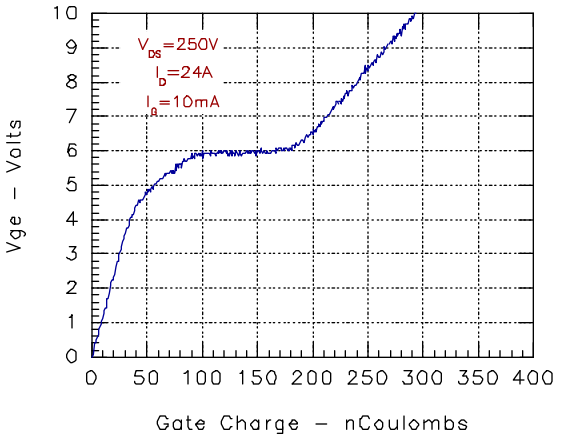

Fig. 8. Capacitance Curves

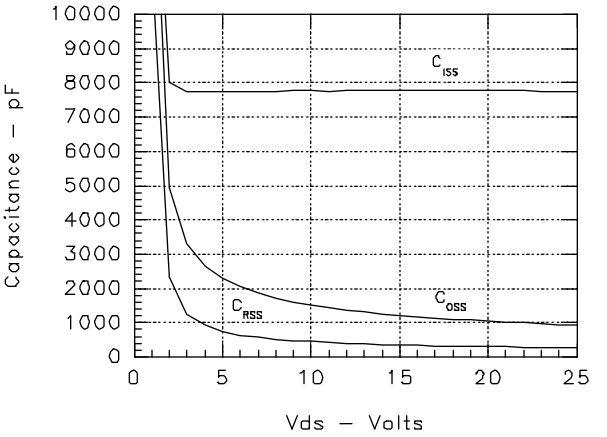

Fig. 9. Source Current vs. Source to Drain Voltage

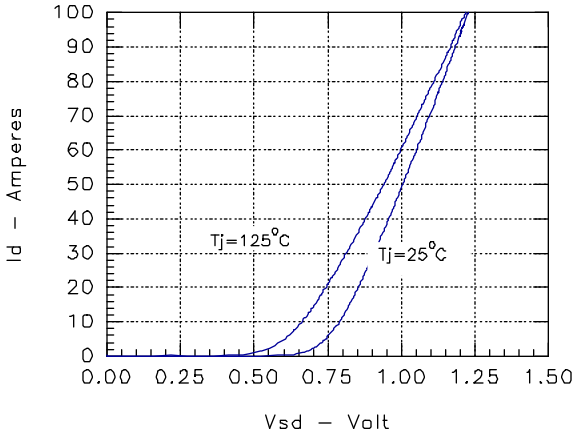

Fig. 10. Transient Thermal Impedance