

Power MOSFETs with Extended FBSOA

IXTB 30N100L IXTN 30N100L

$$V_{DSS} = 1000 \text{ V}$$

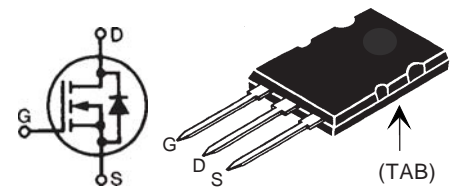
$$I_{D25} = 30 \text{ A}$$

$$R_{DS(on)} \leq 0.45 \text{ } \Omega$$

N-Channel Enhancement Mode
Avalanche Rated

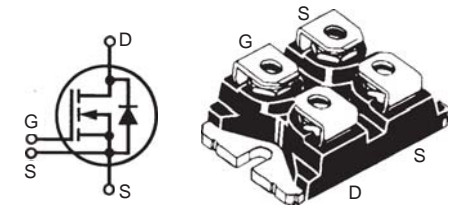
Symbol	Test Conditions	Maximum Ratings		
		IXTB	IXTN	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	1000	1000	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	1000	1000	V
V_{GS}	Continuous	± 30	± 30	V
V_{GSM}	Transient	± 40	± 40	V
I_{D25}	$T_C = 25^\circ\text{C}$	30	30	A
I_{DM}	$T_C = 25^\circ\text{C}$, Pulse width limited by T_{JM}	70	70	A
I_{AR}	$T_C = 25^\circ\text{C}$	30	30	A
E_{AR}	$T_C = 25^\circ\text{C}$	80	80	mJ
E_{AS}	$T_C = 25^\circ\text{C}$	2.0	2.0	J
P_D	$T_C = 25^\circ\text{C}$	800	800	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 $t = 1 \text{ min}$ $I_{ISOL} < 1 \text{ mA}$ $t = 1 \text{ s}$	-	2500 3000	V~ V~
M_d	Mounting torque Terminal connection torque	-	1.5/13 1.5/13	Nm/lb.in. Nm/lb.in.
F_C	Mounting force	28..150 / 6.4..30	-	N/lb.
Weight	PLUS264		10	g
	SOT-227B		30	g

PLUS264 (IXTB)



miniBLOC, SOT-227 B (IXTN)

E153432



G = Gate
S = Source

D = Drain
TAB = Drain

Either Source terminal at miniBLOC can be used as Main or Kelvin Source

Features

- Designed for linear operation
- International standard packages
- Molding epoxies meet UL 94 V-0 flammability classification
- SOT-227B miniBLOC with aluminium nitride isolation

Applications

- Programmable loads
- Current regulators
- DC-DC converters
- Battery chargers
- DC choppers
- Temperature and lighting controls

Advantages

- Easy to mount
- Space savings
- High power density

Symbol	Test Conditions ($T_J = 25^\circ\text{C}$ unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 1 \text{ mA}$	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250 \text{ } \mu\text{A}$	3		5 V
I_{GSS}	$V_{GS} = \pm 30 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 200 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$		50 μA
		$T_J = 125^\circ\text{C}$		1 mA
$R_{DS(on)}$	$V_{GS} = 20 \text{ V}$, $I_D = 0.5 \cdot I_{D25}$, Note 1			0.45 Ω

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

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)			
		Min.	Typ.	Max.	
g_{fs}	$V_{DS} = 20\text{ V}; I_D = 0.5 \cdot I_{D25}$, pulse test	6	10	15	S
C_{iss} C_{oss} C_{rss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		11.4 800 150		nF pF pF
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 15\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 2\ \Omega$ (External)		36 70 100 78		ns ns ns ns
$Q_{g(on)}$ Q_{gs} Q_{gd}	$V_{GS} = 15\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		530 125 150		nC nC nC
R_{thJC} R_{thCK} R_{thCK}	PLUS264 SOT-227B		0.15 0.05	0.156	KW KW KW

Safe Operating Area Specification

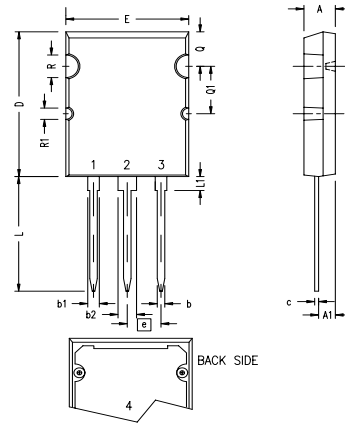
Symbol	Test Conditions	Min.	Typ.	Max.
SOA	$V_{DS} = 600\text{ V}, I_D = 0.5\text{ A}, T_C = 90^\circ\text{C}$	300		W

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)			
		Min.	Typ.	Max.	
I_S	$V_{GS} = 0\text{ V}$			30	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			50	A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V}$, Pulse test, $t < 300\text{ ms}$, duty cycle $d < 2\%$			1.5	V
t_{rr}	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$		1000		ns

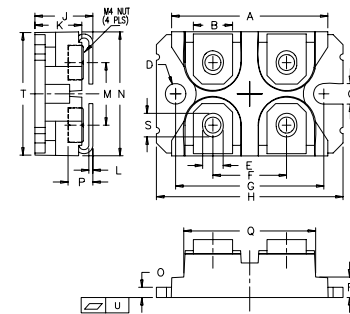
Note 1: Pulse test, $t < 300\ \mu\text{s}$, duty cycle $d < 2\%$

PLUS264 Outline



SYM	INCHES	
	MIN	MAX
A	.185	.209
A1	.102	.118
b	.037	.055
b1	.087	.102
b2	.110	.126
c	.017	.029
D	1.007	1.047
E	.760	.799
e	.215 BSC	
L	.779	.842
L1	.087	.102
Q	.240	.256
Q1	.330	.346
$\varnothing R$.155	.187
$\varnothing R1$.085	.093

miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	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.

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:	4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585
	4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692
	4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2

Fig. 1. Output Characteristics @ 25°C

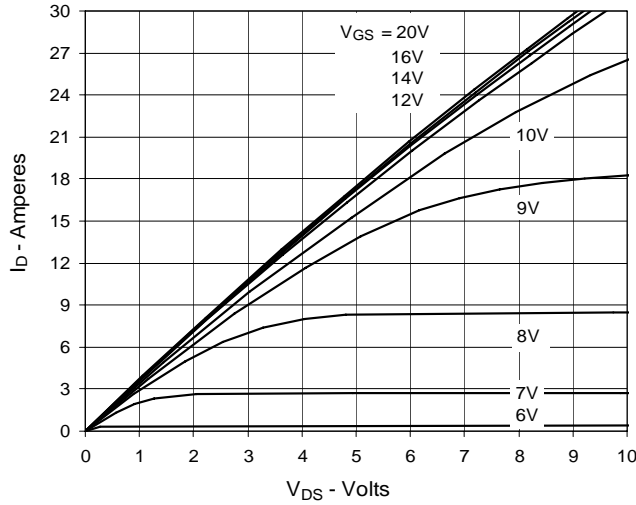


Fig. 2. Extended Output Characteristics @ 25°C

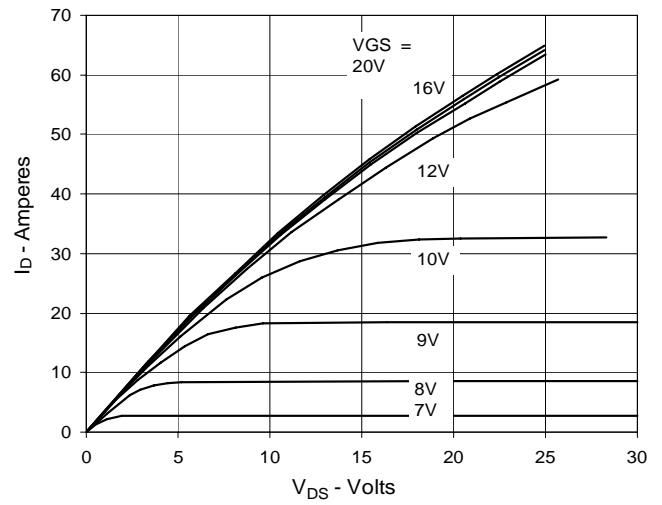


Fig. 3. Output Characteristics @ 125°C

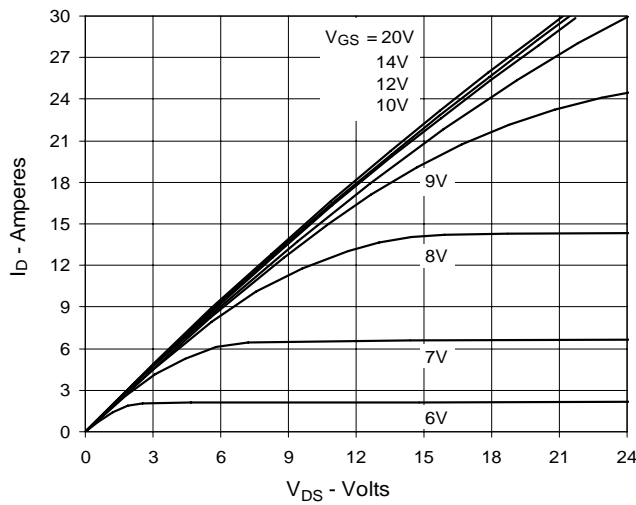


Fig. 4. $R_{DS(on)}$ Normalized to $I_D = 32A$ Value vs. Junction Temperature

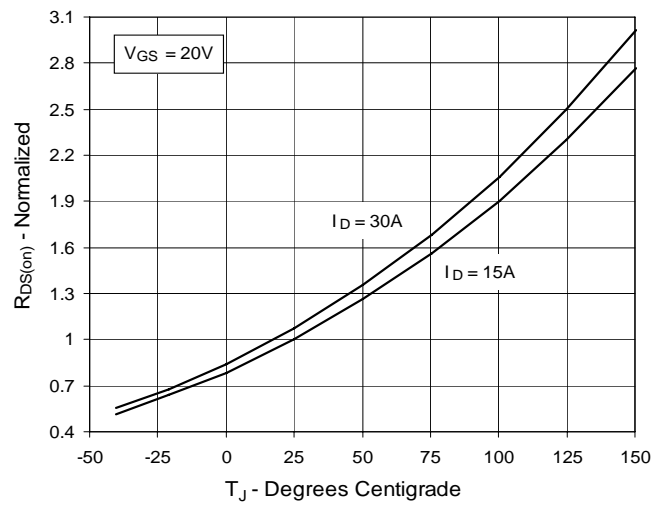


Fig. 5. $R_{DS(on)}$ Normalized to 0.5 I_{D25} Value vs. Drain Current

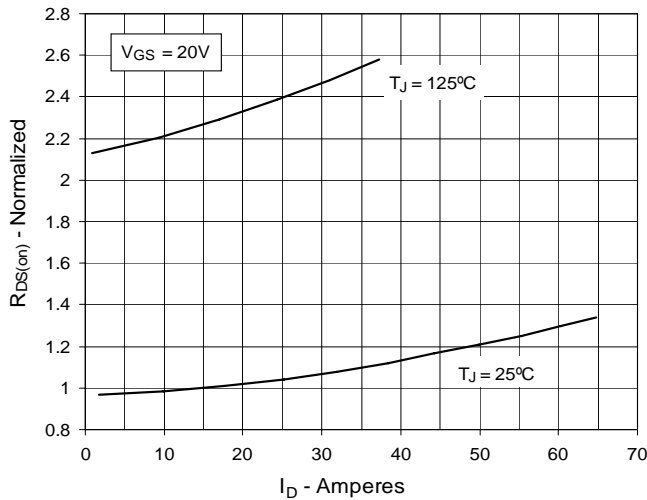


Fig. 6. Maximum Drain Current vs. Case Temperature

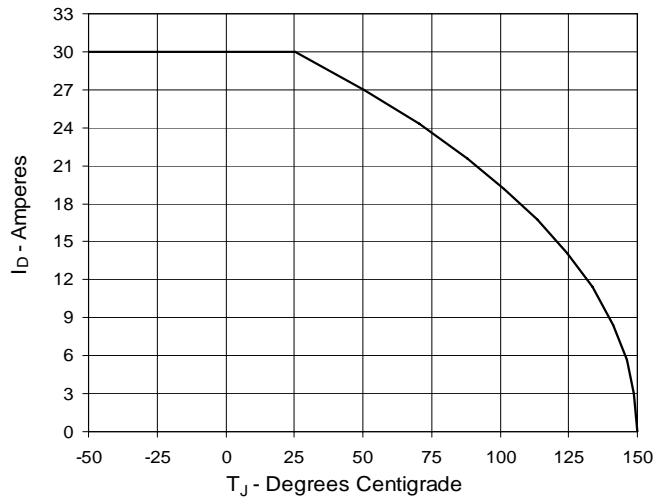


Fig. 7. Input Admittance

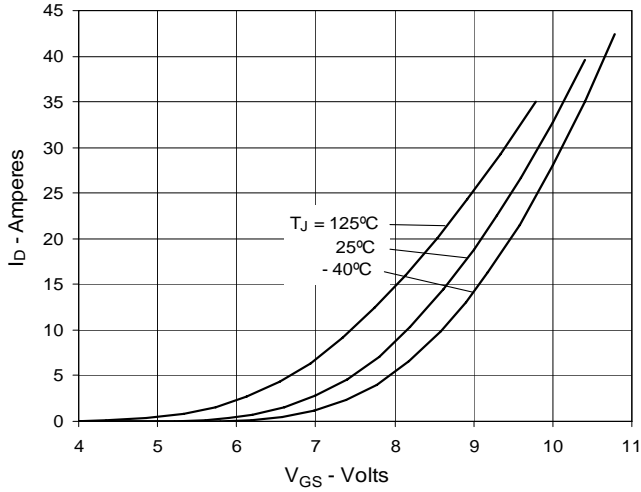


Fig. 8. Transconductance

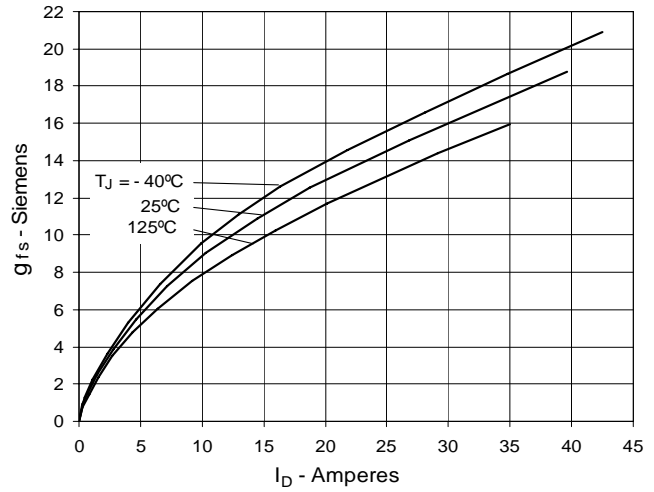


Fig. 9. Forward Voltage Drop of Intrinsic Diode

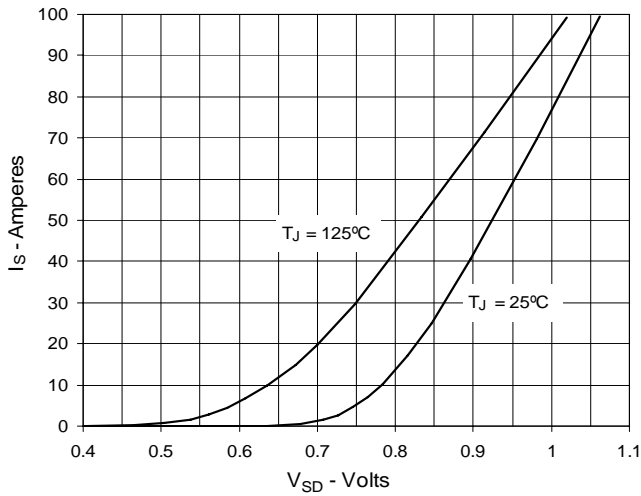


Fig. 10. Gate Charge

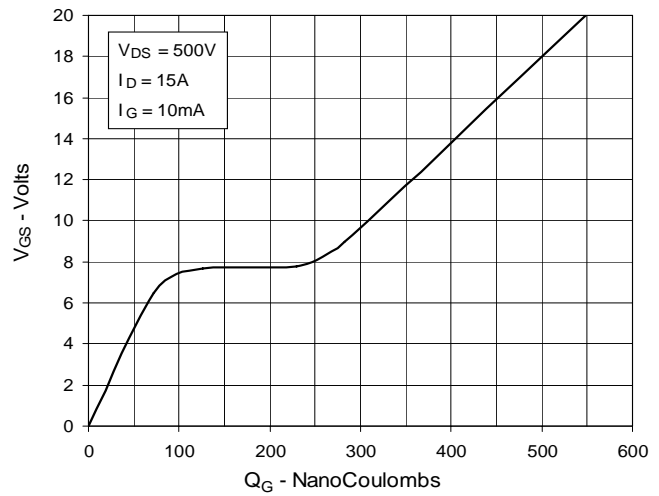


Fig. 11. Capacitance

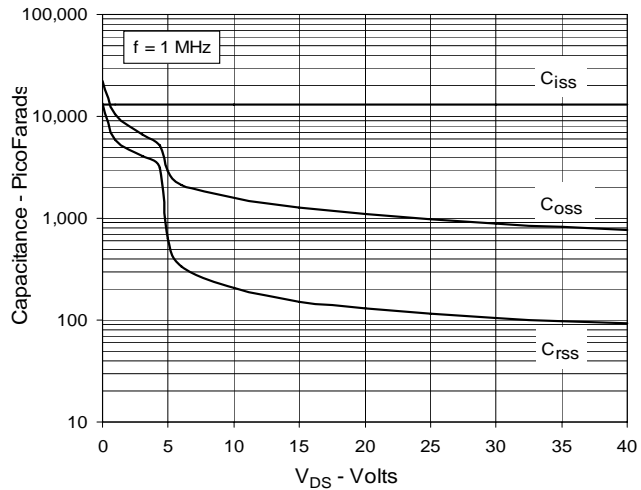


Fig. 12. Forward-Bias Safe Operating Area

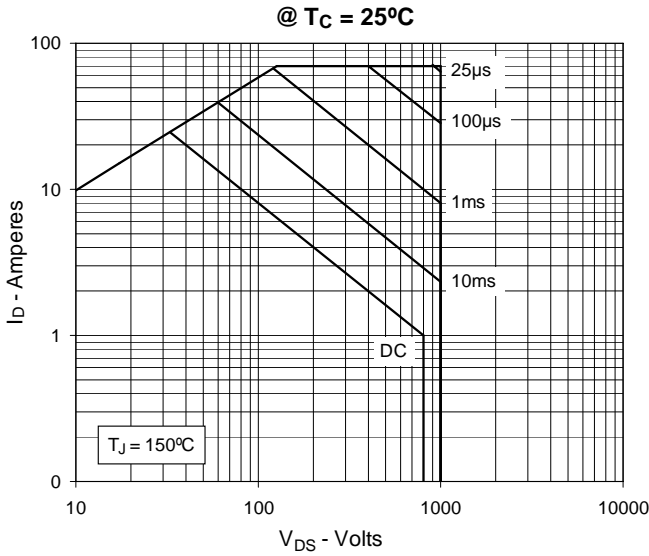


Fig. 13. Forward-Bias Safe Operating Area

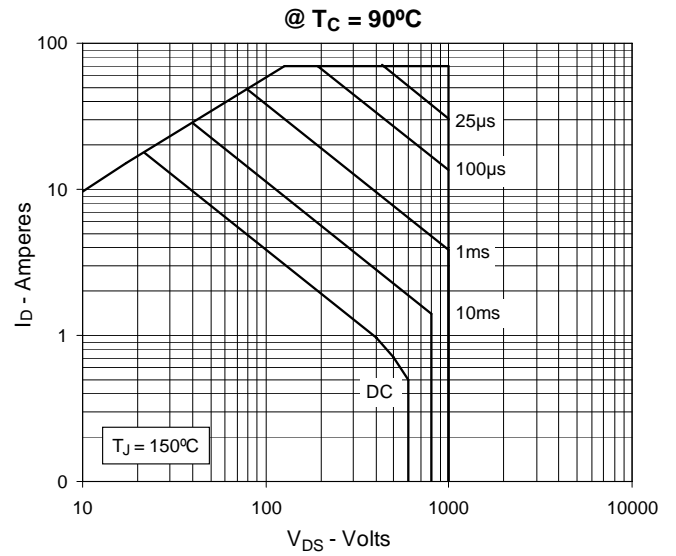


Fig. 14. Maximum Transient Thermal Resistance

