



Power MOSFET

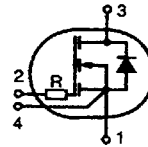
N-Channel Enhancement Mode

IXTN36N45
IXTN36N50

$$I_{D(\text{cont})} = 36 \text{ A}$$

$$V_{DSS} = 450/500 \text{ V}$$

$$R_{DS(\text{on})} = 0.12 \Omega$$

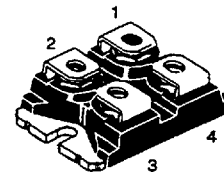


$R = 0.5 \Omega$

Symbol	Test Conditions	Maximum Ratings		
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	IXTN36N45 IXTN36N50	450 500	V V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 10 \text{ k}\Omega$		500	V
V_{GS}	Continuous		± 20	V
V_{GSM}	Transient		± 30	V
I_{D25}	$T_C = 25^\circ\text{C}$		36	A
I_{DM}	$T_C = 25^\circ\text{C}$		144	A
P_D	$T_C = 25^\circ\text{C}$		400	W
T_J			-40 ... +150	$^\circ\text{C}$
T_{JM}			150	$^\circ\text{C}$
T_{stg}			-40 ... +150	$^\circ\text{C}$
V_{ISOL}	50/60 Hz $I_{ISOL} = 1 \text{ mA}$	$t = 1 \text{ min}$ $t = 1 \text{ s}$	2500 3000	V~ V~
M_d	Mounting torque (M4) Terminal connection torque (M4)		1.5/13 Nm/lb.in. 1.5/13 Nm/lb.in.	
Weight			30	g

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 1 \text{ mA}$	IXTN36N45 IXTN36N50	450 500	V V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 20 \text{ mA}$	2.0		4.0 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V DC}$, $V_{DS} = 0$			$\pm 500 \text{ nA}$
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		400 μA 2 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 0.5 \cdot I_{D25}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $\delta \leq 2\%$			0.12 Ω

miniBLOC, SOT-227 B



E72873 (M)

1 = Source, 2 = Gate
3 = Drain, 4 = Kelvin Source

Features

- International standard package miniBLOC (ISOTOP compatible)
- Isolation voltage 2500 V (RMS)
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Low drain-to-case capacitance (< 45 pF)
 - reduced RFI
- Low package inductance (< 5 nH)
 - easy to drive and to protect

Applications

- AC motor speed control
- DC servo and robot drives
- Uninterruptible power systems (UPS)
- Switched-mode and resonant-mode power supplies
- DC choppers

Advantages

- Easy to mount
- Space savings
- High power density

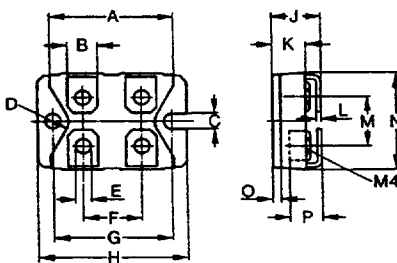
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$, pulsed	30		S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		8.5	nF
C_{oss}			0.9	nF
C_{rss}			0.3	nF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1\ \Omega$ (External), resistive load			100 ns
t_r				110 ns
$t_{d(off)}$				220 ns
t_f				105 ns
Q_g	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		350	nC
Q_{gs}			90	nC
Q_{gd}			190	nC
R_{thJC}				0.31 K/W
R_{thCK}				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	$V_{GS} = 0$			36 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			144 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\delta \leq 2\%$			1.5 V
t_{rr}	$I_F = I_S, -di/dt = 200\text{ A}/\mu\text{s}, V_{DS} = 100\text{ V}$	600		ns

Dimensions



M4 screws (4x) supplied

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.5	31.7	1.241	1.249
B	7.8	8.2	0.307	0.323
C	4.0	-	0.158	-
D	4.1	4.3	0.162	0.169
E	4.1	4.3	0.162	0.169
F	14.9	15.1	0.587	0.595
G	30.1	30.3	1.186	1.193
H	38.0	38.2	1.497	1.505
J	11.8	12.2	0.465	0.481
K	8.9	9.1	0.351	0.359
L	0.75	0.85	0.030	0.033
M	12.6	12.8	0.496	0.504
N	25.2	25.4	0.993	1.001
O	1.95	2.05	0.077	0.081
P	-	5.0	-	0.197

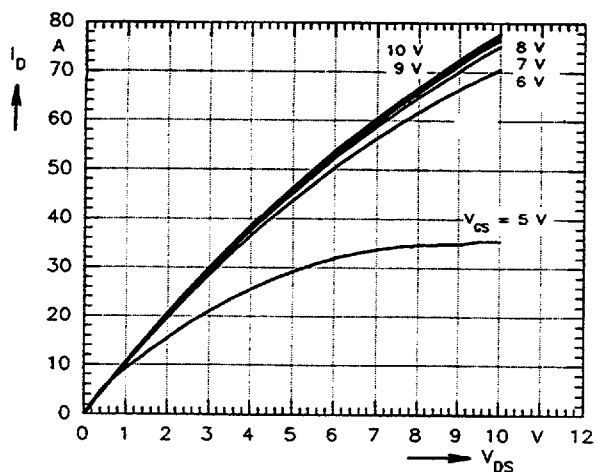


Fig. 1 Typ output characteristics, $I_D = f(V_{DS})$

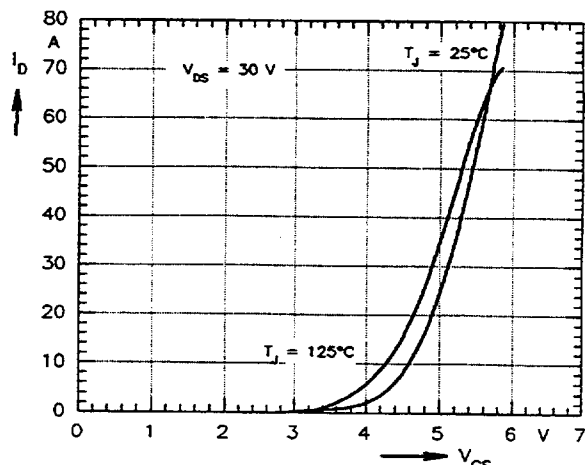


Fig. 2 Typ. transfer characteristics, $I_D = f(V_{GS})$

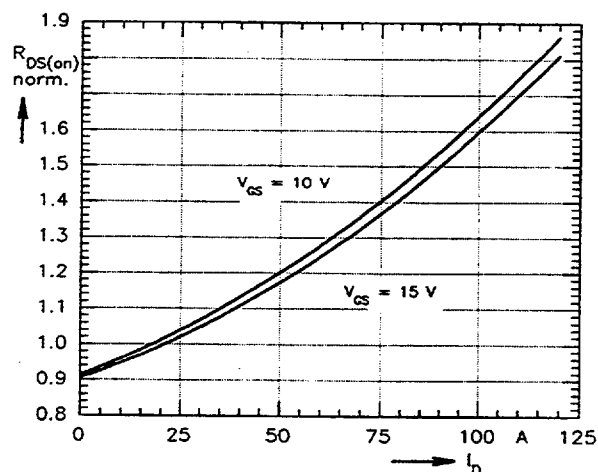


Fig. 3 Typ. normalized $R_{DS(on)} = f(I_D)$

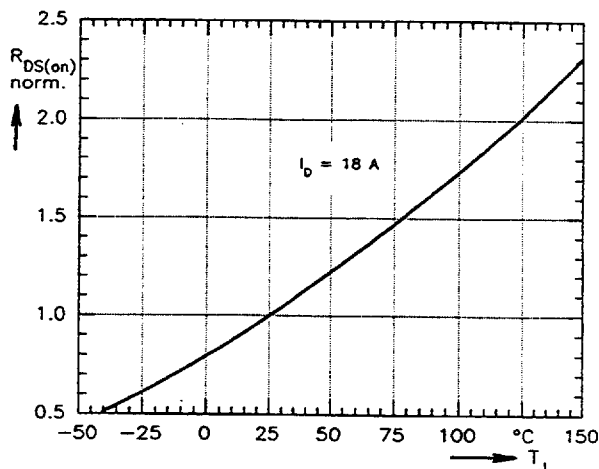


Fig. 4 Typ. normalized $R_{DS(on)} = f(T_J)$

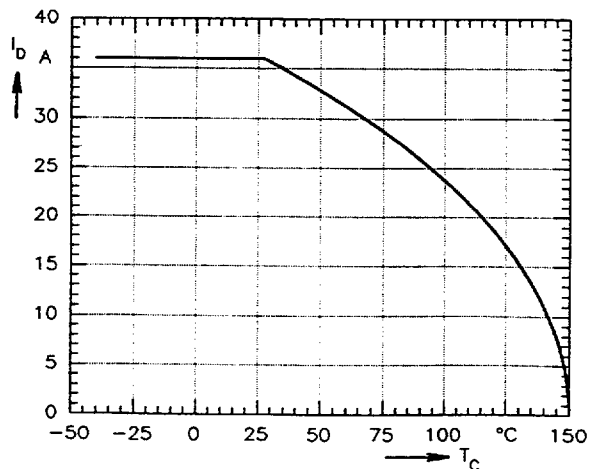


Fig. 5 Continuous drain current $I_D = f(T_C)$

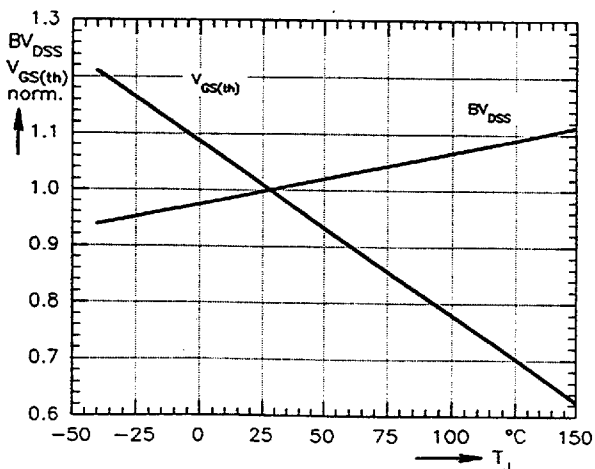


Fig. 6 Typ. normalized $BV_{DSS} = f(T_J)$, $V_{GS(th)} = f(T_J)$

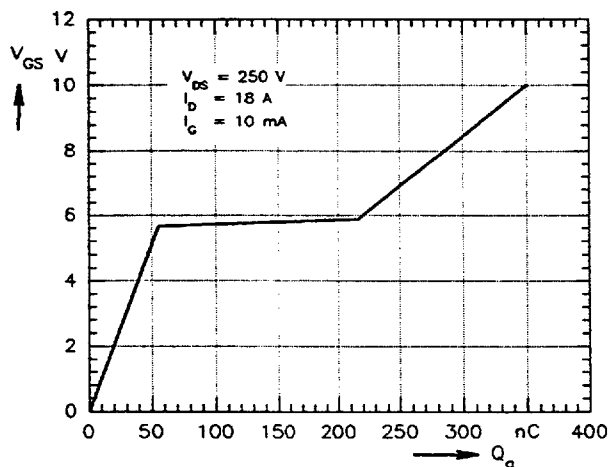


Fig. 7 Typ. turn-on gate charge characteristics, $V_{GS} = f(Q_g)$

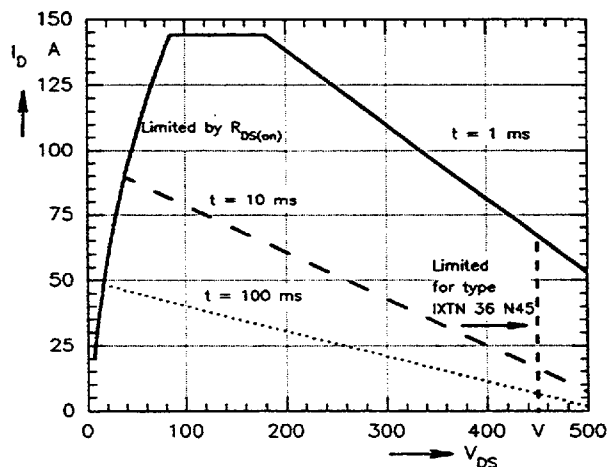


Fig. 8 Forward Bias Safe Operating Area $I_D = f(V_{DS})$

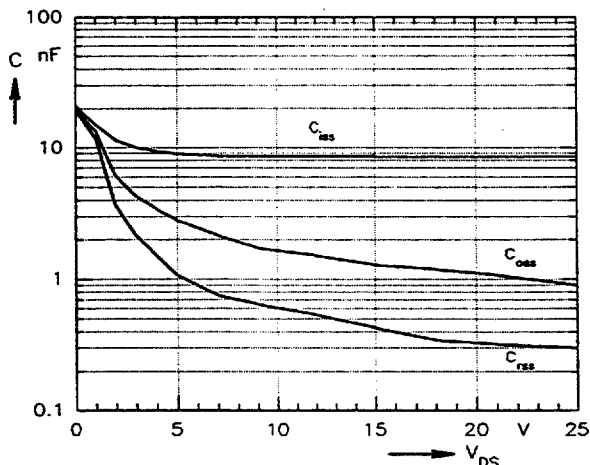


Fig. 9 Typ. capacitances $C = f(V_{DS})$, $f = 1 \text{ MHz}$

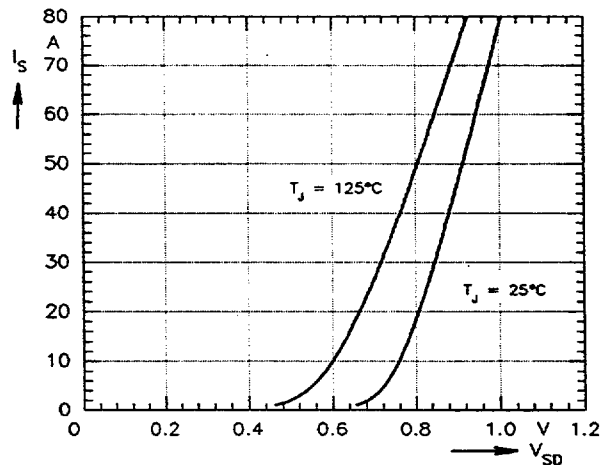


Fig. 10 Typ. forward characteristics of reverse diode $I_S = f(V_{SD})$

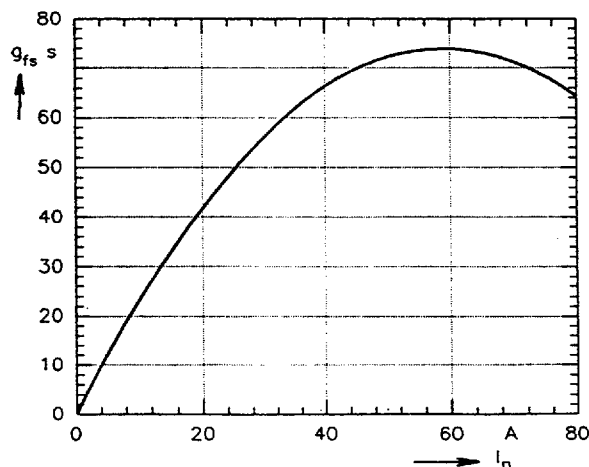


Fig. 11 Typ. transconductance, $g_{fs} = f(I_D)$

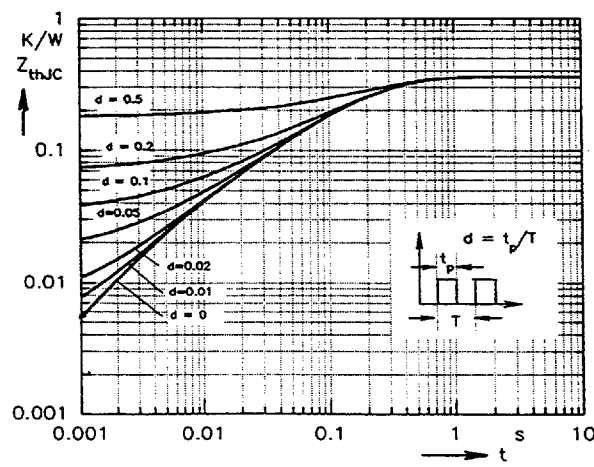


Fig. 12 Transient thermal resistance, $Z_{thJC} = f(t)$