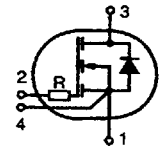
IXYS

Power MOSFET

N-Channel Enhancement Mode

IXTN36N45
IXTN36N50

$I_{D\ (cont)}$ = 36 A
V_{DSS} = 450/500 V
$R_{DS(on)}$ = 0.12 Ω

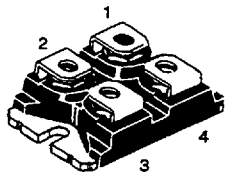


R = 0.5 Ω

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

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
BV_{DSS}	V_{GS} = 0 V, I_D = 1 mA	IXTN36N45	450			V
		IXTN36N50	500			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 20 mA		2.0		4.0	V
I_{GSS}	V_{GS} = ±20 V DC, V_{DS} = 0				±500	nA
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$	T_J = 25°C			400	µA
	V_{GS} = 0 V	T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS} = 10 V, $I_D = 0.5 \cdot I_{D25}$ Pulse test, t ≤ 300 µs, duty cycle δ ≤ 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

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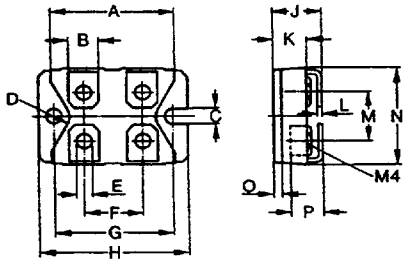
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 • I_{D25}, pulsed	30			S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		8.5		nF
C_{oss}			0.9		nF
C_{rss}			0.3		nF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}; R_G = 1 Ω (External), resistive load			100	ns
t_r				110	ns
$t_{d(off)}$				220	ns
t_f				105	ns
Q_g	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • 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

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) 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 V, Pulse test, t ≤ 300 µs, duty cycle δ ≤ 2 %			1.5	V
t_{rr}	$I_F = I_S$, -di/dt = 200 A/µs, V_{DS} = 100 V		600		ns

Dimensions



M4 screws (4x) supplied

Dim.	Millimeter Min.	Max.	Inches 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

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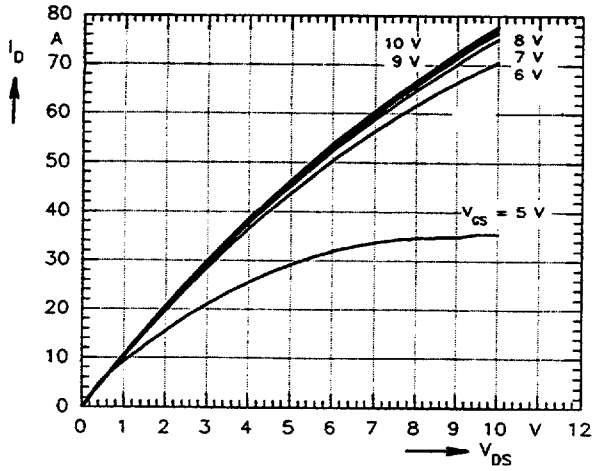

Fig. 1 Typ output characteristics, $I_D = f(V_{DS})$

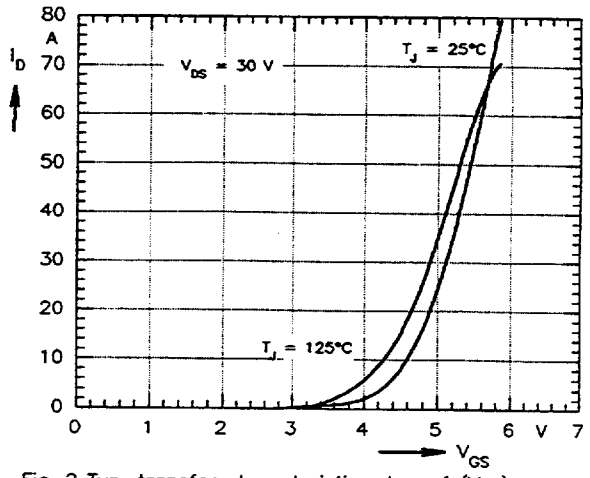

Fig. 2 Typ. transfer characteristics, $I_D = f(V_{GS})$

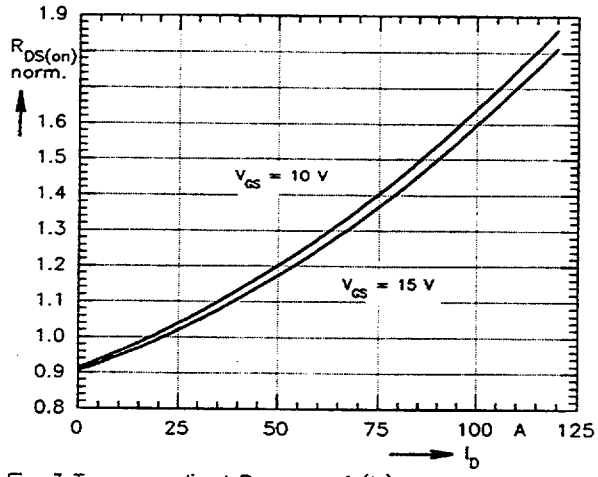

Fig. 3 Typ. normalized $R_{DS(on)} = f(I_D)$

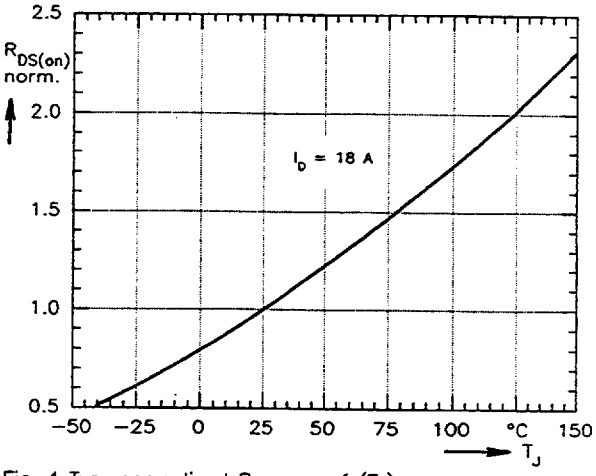

Fig. 4 Typ. normalized $R_{DS(on)} = f(T_J)$

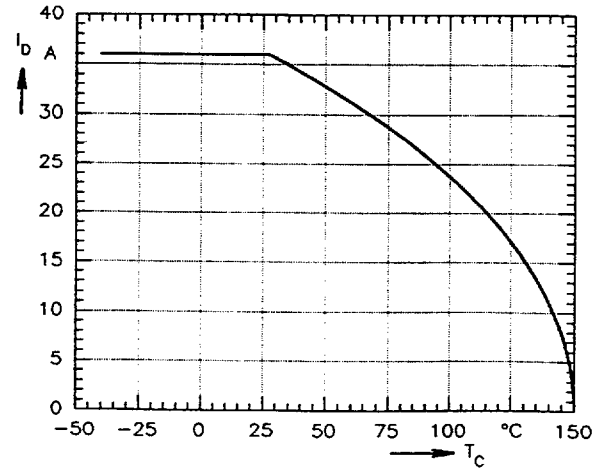

Fig. 5 Continuous drain current $I_D = f(T_C)$

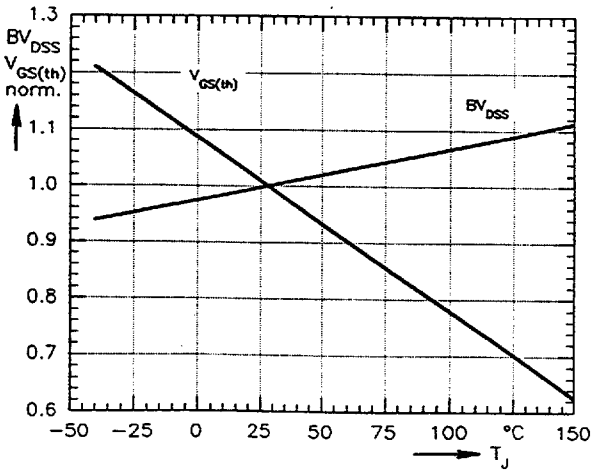

Fig. 6 Typ. normalized $BV_{DSS} = f(T_J)$, $V_{GS(th)} = f(T_J)$

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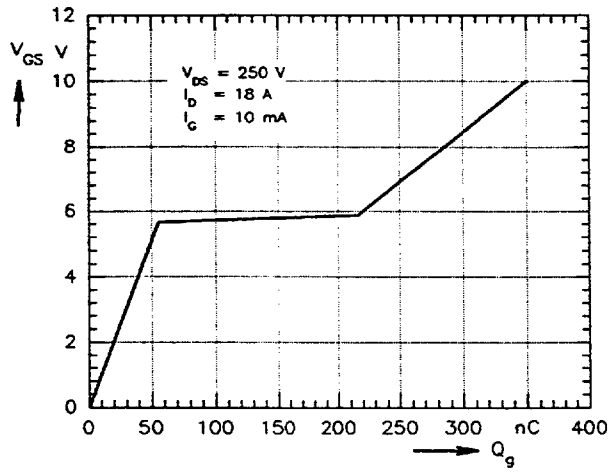

Fig. 7 Typ. turn-on gate charge characteristics, V_{GS} = f (Qg)

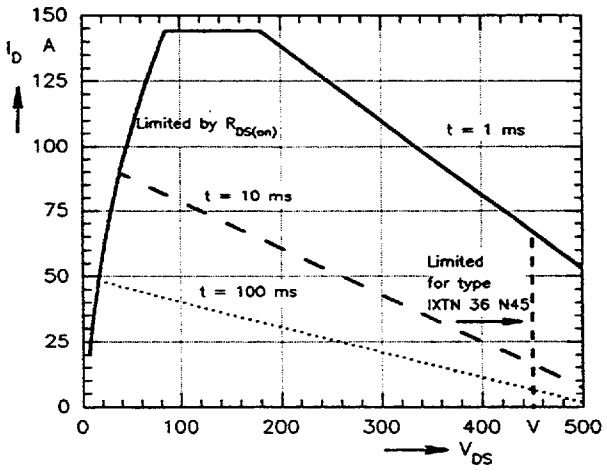

Fig. 8 Forward Bias Safe Operating Area I_D = f (V_{DS})

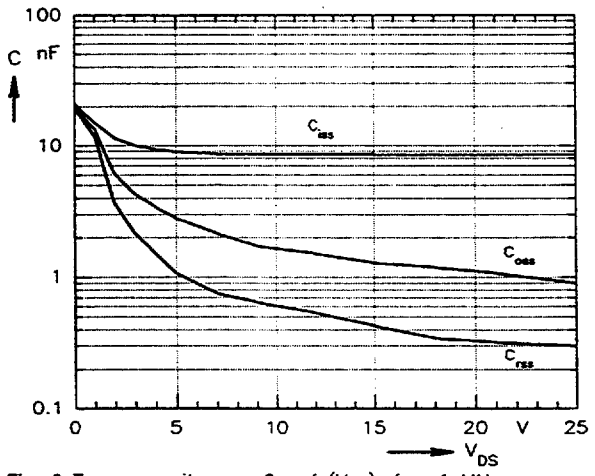

Fig. 9 Typ. capacitances C = f (V_{DS}), f = 1 MHz

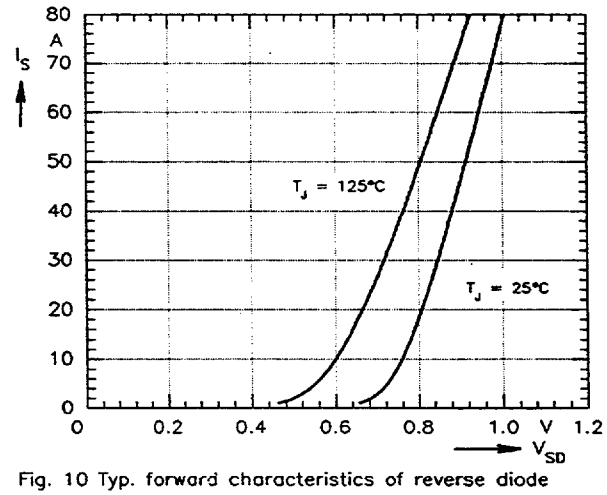

Fig. 10 Typ. forward characteristics of reverse diode I_S = f (V_{SD})

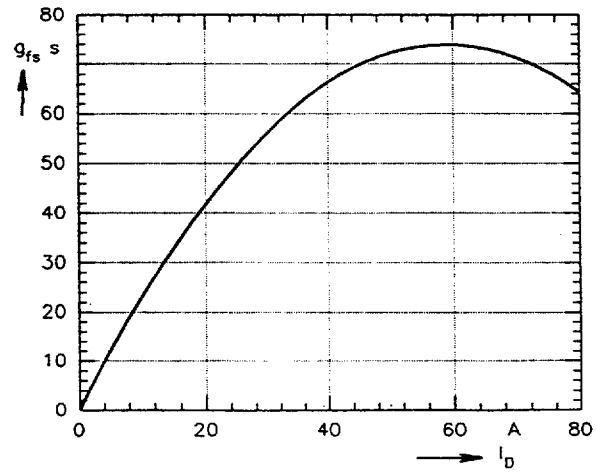

Fig. 11 Typ. transconductance, g_{fs} = f (I_D)

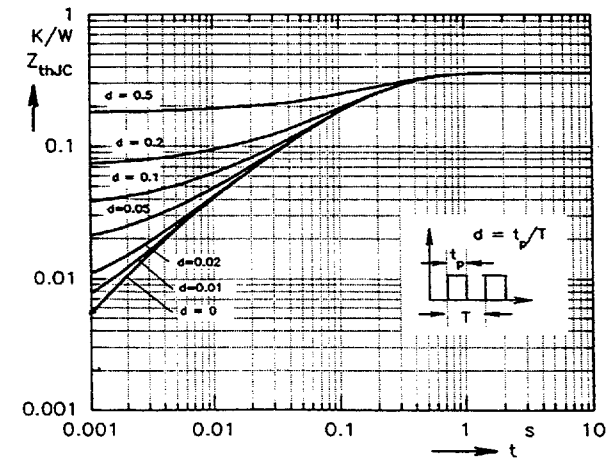

Fig. 12 Transient thermal resistance, Z_{thJC} = f (t)

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