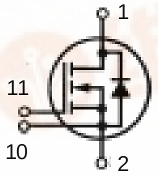
IXYS

MegaMOS™FET Module

VMO 380-02 F

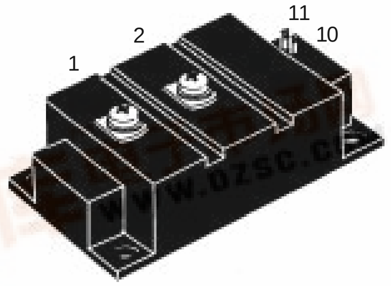
V_{DSS} = 200 V
I_{D25} = 385 A
$R_{DS(on)}$ = 4.6 mΩ

N-Channel Enhancement Mode



Preliminary data

Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C		200	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 10 kΩ		200	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_K = 25°C		385	A
I_{DM}	T_K = 25°C, t_P = 10 µs		1540	A
P_D	T_C = 25°C		2230	W
	T_K = 25°C		1505	W
T_J			-40 ...+150	°C
T_{JM}			150	°C
T_{stg}			-40 ... +125	°C
V_{ISOL}	50/60 Hz	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque (M6)		2.25-2.75/20-25	Nm/lb.in.
	Terminal connection torque (M5)		2.5-3.7/22-33	Nm/lb.in.
Weight	typical including screws		250	g



1 = Drain 2 = Source
10 = Kelvin Source 11 = Gate

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 12 mA	200			V
$V_{GS(th)}$	V_{DS} = 20 V, I_D = 120 mA	3		6	V
I_{GSS}	V_{GS} = ±20 V DC, V_{DS} = 0			±500	nA
I_{DSS}	V_{DS} = V_{DSS}, V_{GS} = 0 V T_J = 25°C			2,5	mA
	V_{DS} = 0.8 • V_{DSS}, V_{GS} = 0 V T_J = 125°C			12	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 • I_{D25} Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %			4.6	mΩ

Features

- International standard package
- **D**irect **C**opper **B**onded Al_2O_3 ceramic base plate
- Isolation voltage 3600 V~
- Low $R_{DS(on)}$ HDMOS™ process
- Low package inductance for high speed switching
- Kelvin Source contact for easy drive

Applications

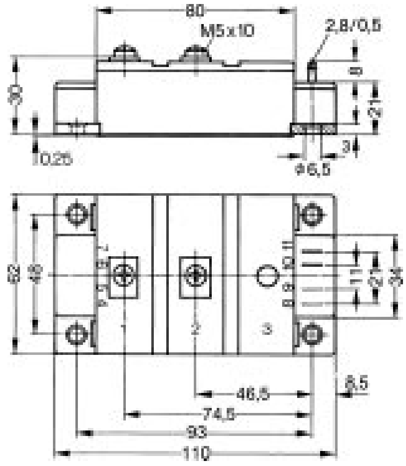
- AC motor speed control for electric vehicles
- DC servo and robot drives
- Switched-mode and resonant-mode power supplies
- DC choppers in fork lift trucks

Advantages

- Easy to mount
- Space and weight savings
- High power density
- Low losses

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

Symbol	Test Conditions	Characteristic Values (TJ = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} =10V; I_D=0.5•I_{D25} pulsed		TBD		S
C_{iss}	V_{GS} =0V, V_{DS}=25V, f=1 MHz		48		nF
C_{oss}			8.8		nF
C_{rss}			3.1		nF
$t_{d(on)}$	V_{GS}=10V, V_{DS}=0.5•V_{DSS}, I_D=0.5•I_{D25}; R_G = 1 Ω (External)		210		ns
t_r			500		ns
$t_{d(off)}$			900		ns
t_f			350		ns
Q_g	V_{GS}=10V, V_{DS}=0.5•V_{DSS}, I_D=0.5•I_{D25}		2090		nC
Q_{gs}			385		nC
Q_{gd}			1045		nC
R_{thJC}				0.056	K/W
R_{thJK}	with 30 µm heat transfer paste			0.083	K/W



Source-Drain Diode Symbol	Test Conditions	Characteristic Values (TJ = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} =0			385	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			1540	A
V_{SD}	I_F=I_S; V_{GS}=0V, Pulse test, t≤300µs, duty cycle d≤2%		0.9	1.2	V
t_{rr}	I_F = I_S, -di/dt = 1200 A/				

IXYS MOSFETS and IGBTs are covered by one or more of the following U.S. patents:

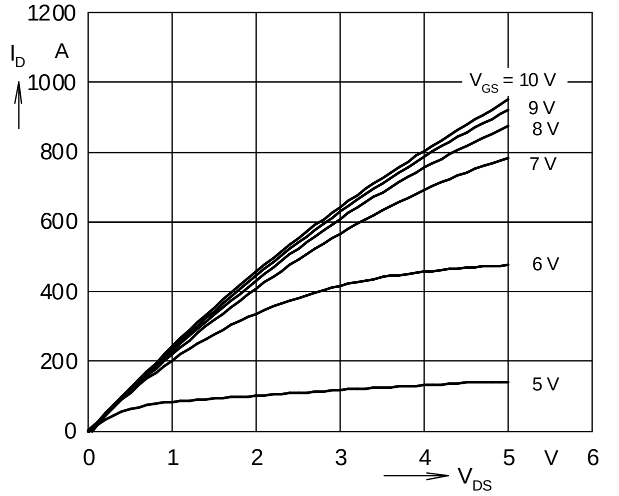


Fig. 1 Typical output characteristics $I_D = f(V_{DS})$

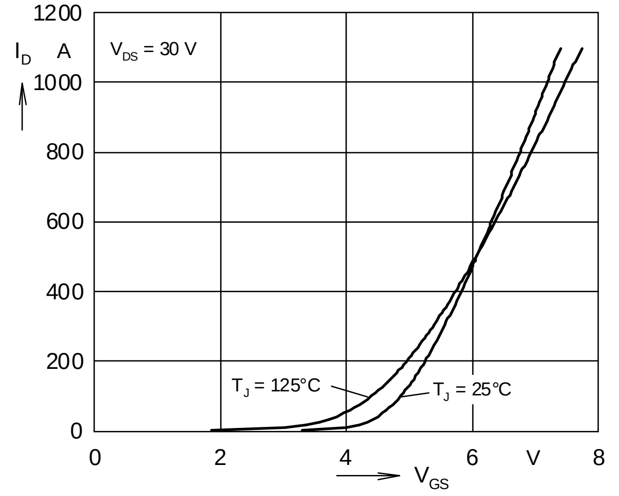


Fig. 2 Typical transfer characteristics $I_D = f(V_{GS})$

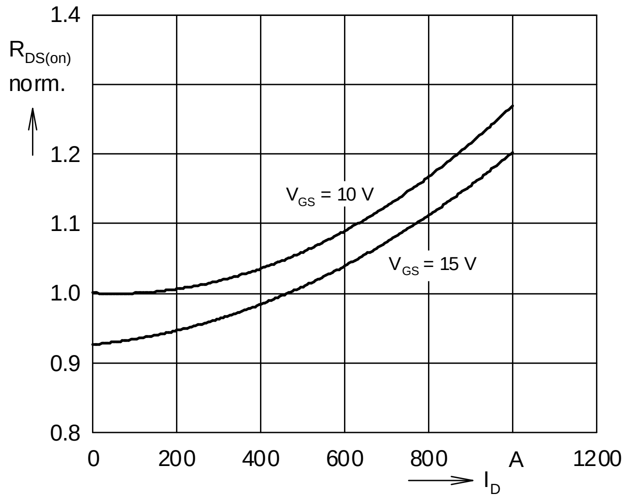


Fig. 3 Typical $R_{DS(on)} = f(I_D)$, normalized

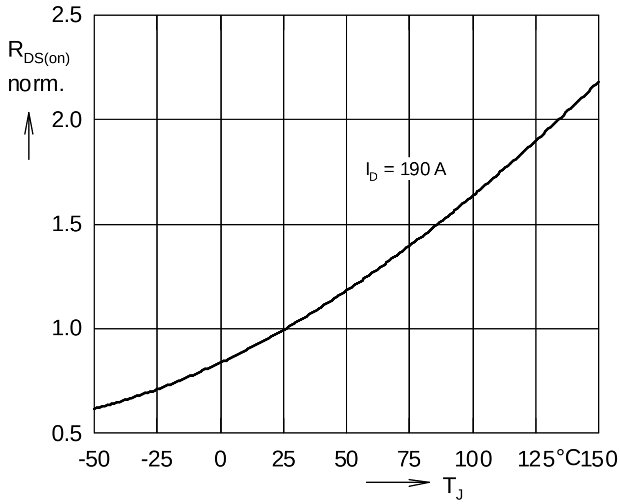


Fig. 4 $R_{DS(on)} = f(T_J)$, normalized

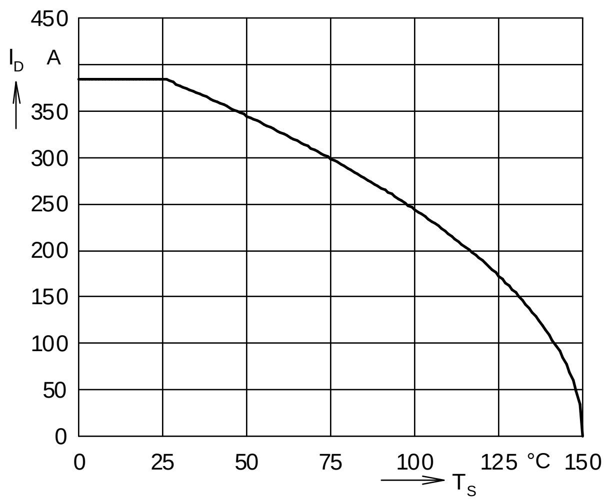


Fig. 5 Continuous drain current $I_D = f(T_K)$

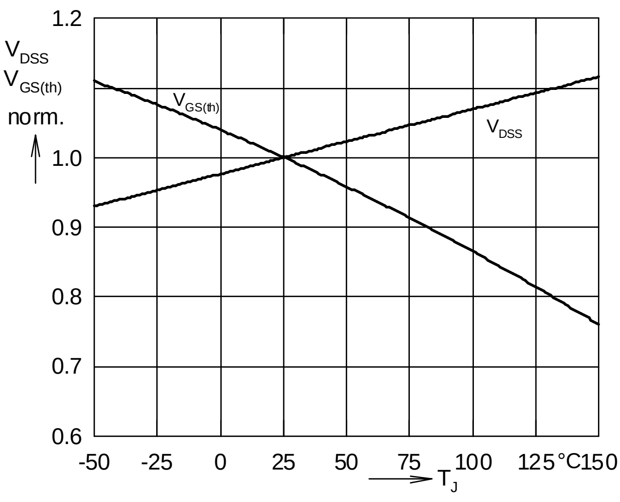


Fig. 6 $V_{DSS} = f(T_J)$, $V_{GS(th)} = f(T_J)$, normalized

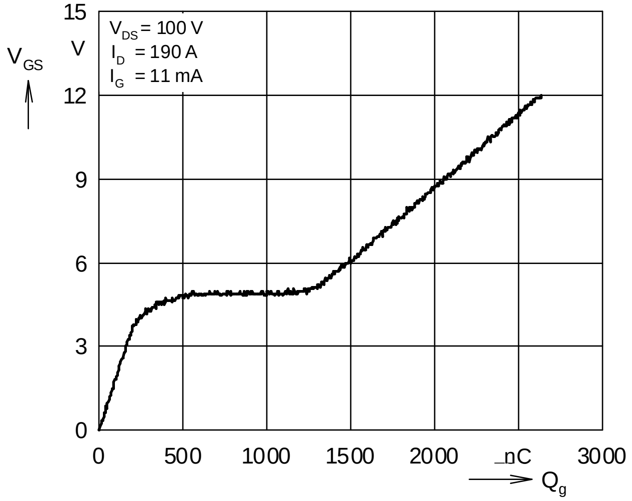


Fig. 7 Typical turn-on gate charge characteristics

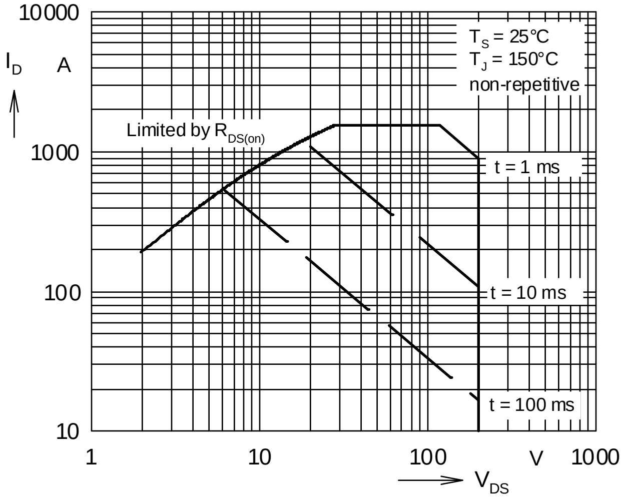


Fig. 8 Forward Bias Safe Operating Area, $I_D = f(V_{DS})$

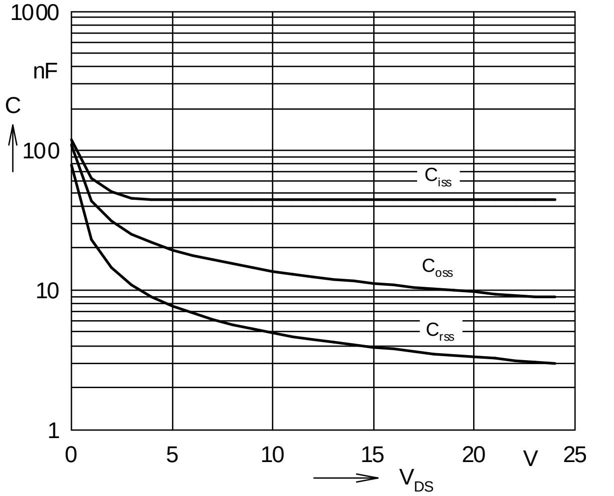


Fig. 9 Typical capacitances $C = f(V_{DS})$, f = 1 MHz

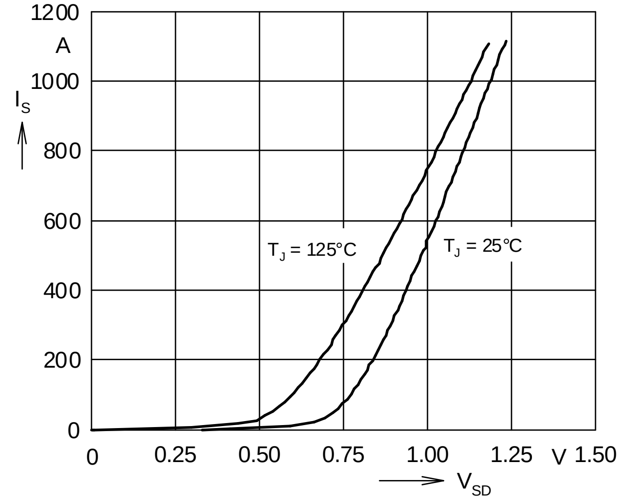


Fig. 10 Typical forward characteristics of reverse diode, $I_S = f(V_{SD})$

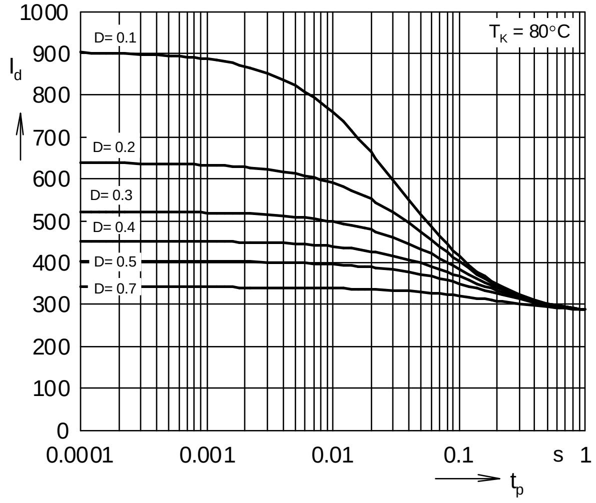


Fig. 11 Drain current versus pulse width and duty cycle

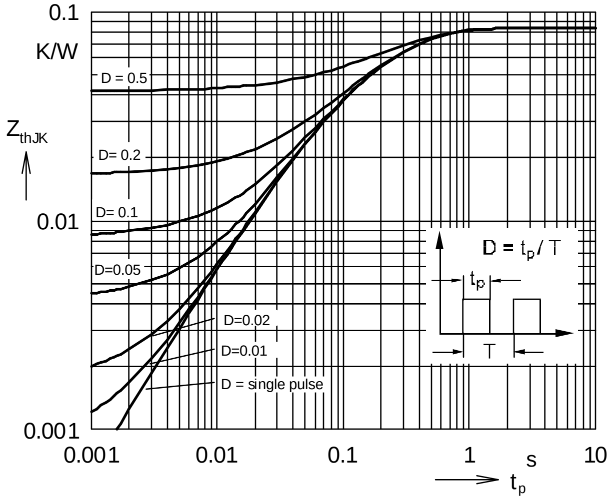


Fig. 12 Transient thermal resistance $Z_{thJK} = f(t_p)$

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