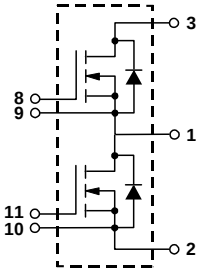
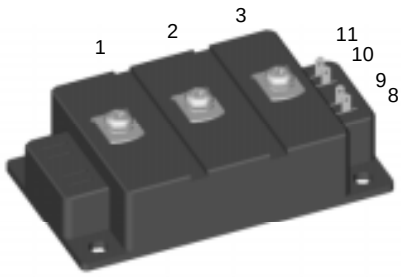
MOSFET Module with ultrafast Schottky Diode

VMM 600-0075 S

V_{DSS} = 75 V
I_{D25} = 590 A
$R_{DS(on)}$ = 1.1 mΩ

N-Channel Enhancement Mode





1 = Drain 1, Source 2 2 = Source 1
3 = Drain 2 8 = Gate 2
9 = Kelvin Source 2 10 = Kelvin Source 1
11 = Gate 1

Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C		75	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 10 kΩ		75	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_S = 25°C		590	A
I_{D80}	T_S = 80°C		440	A
I_{DM}	T_S = 25°C	pulse width limited by T_{JM}	2360	A
P_D	T_C = 25°C		1040	W
	T_S = 25°C		690	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	
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

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 5 mA		75			V
$V_{GS(th)}$	V_{DS} = 20 V, I_D = 2.5 mA		2		5	V
I_{GSS}	V_{GS} = ±20 V DC, V_{DS} = 0				± 1	µA
I_{DSS}	V_{DS} = 0.8 • V_{DSS}	T_J = 25°C			TBD	mA
	V_{GS} = 0 V	T_J = 125°C			TBD	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 • I_{D25} Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %				1.1	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
- Ultrafast Schottky Diode for less switching losses and less RFI

Applications

- AC motor speed control for electric vehicles
- DC servo and robot drives
- DC choppers

Advantages

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

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

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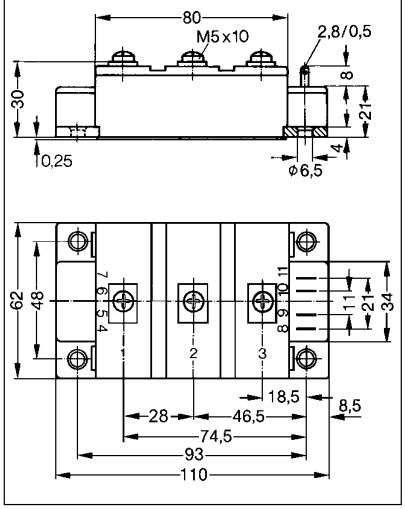
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 • I_{D25} pulsed		270		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		45		nF
C_{oss}			8		nF
C_{rss}			2		nF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		70		ns
t_r			100		ns
$t_{d(off)}$			70		ns
t_f			30		ns
Q_g	V_{GS} = 30 V, V_{DS} = 0.5 • V_{DSS}, I_D = 600 A		770		nC
Q_{gs}			280		nC
Q_{gd}			220		nC
R_{thJC}				0.12	K/W
R_{thJS}	with 30 µm heat transfer paste		0.18		K/W

Dimensions in mm (1 mm = 0.0394")



Reverse Diode (Schottky)

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
I_F	V_{GS} = 0 V			510	A
I_{FSM}	Repetitive; pulse width limited by T_{JM}			TBD	A
V_F	I_F = 600 A; V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %		1.05		V
I_{RM}	I_F = I_S, -di/dt = 1000 A/µs, V_{DS} = 0.5 • V_{DSS}		TBD		A
t_{rr}			TBD		ns
R_{thJC}	Diode			0.19	K/W
R_{thJK}	package with 30 mm heat transfer paste		0.28		K/W

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