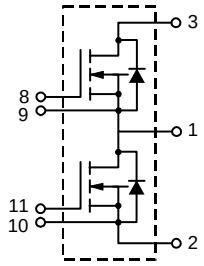
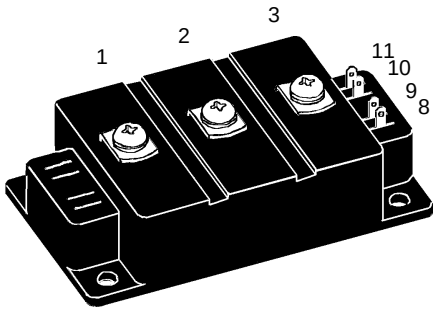
Dual Power HiPerFET™ Module

VMM 300-03F

V_{DSS} = 300 V
I_{D25} = 290 A
$R_{DS(on)}$ typ. = 7.4 mΩ

Phaseleg Configuration
High dv/dt, Low t_{rr}, HDMOS™ Family





Symbol	Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	300	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 10 kΩ	300	V
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	290	A
I_{D80}	T_C = 80°C	220	A
I_{DM}	T_C = 25°C; t_p = 10 µs ①	1160	A
P_D	T_C = 25°C	1500	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	Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 12 mA	300			V
$V_{GS(th)}$	V_{DS} = 20 V, I_D = 30 mA	2		4	V
I_{GSS}	V_{GS} = ±20 V DC, V_{DS} = 0			±500	nA
I_{DSS}	V_{DS} = V_{DSS}, T_J = 25°C			0.5	mA
	V_{GS} = 0 V, T_J = 125°C			8	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 • I_{D25}		7.4	8.6	mΩ
	Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %				

① Additional current limitation by external leads

Features

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

Applications

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

Advantages

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

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

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Symbol	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		280		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		40		nF
C_{oss}			7.2		nF
C_{rss}			2.8		nF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25} R_G = 1 Ω		200		ns
t_r			400		ns
$t_{d(off)}$			400		ns
t_f			150		ns
Q_g	V_{GS} = 10 V, V_{DS} = 150 V, I_D = 150 A		1440		nC
Q_{gs}			240		nC
Q_{gd}			720		nC
R_{thJC}				0.08	K/W
R_{thJS}	with heat transfer paste		0.12		K/W

Source-Drain Diode

Symbol	Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V, T_C = 25°C, T_J = T_{JM}			290	A
I_{SM}	②			1160	A
V_{SD}	I_F = 300 A, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %		0.9	1.1	V
t_{rr}	I_F = 300 A, -di/dt = 400 A/µs, V_{DS} = 0.5 • V_{DSS}		300		ns

② Additional current limitation by external leads

Dimensions in mm (1 mm = 0.0394")