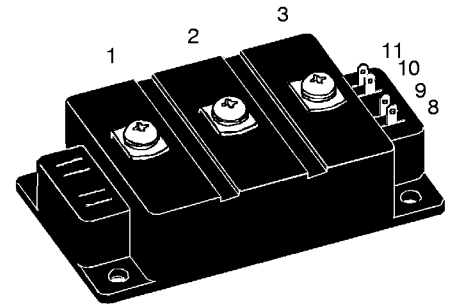
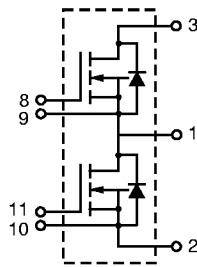


# Dual Power HiPerFET™ Module

**VMM 300-02F**
 $V_{DSS} = 200 \text{ V}$   
 $I_{D25} = 310 \text{ A}$   
 $R_{DS(on) \text{ typ.}} = 5.2 \text{ m}\Omega$ 

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


Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	200	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 10 \text{ k}\Omega$	200	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	310	A
$I_{D80}$	$T_C = 80^\circ\text{C}$	230	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ ; $t_p = 10 \mu\text{s}$ ①	1240	A
$P_D$	$T_C = 25^\circ\text{C}$	1350	W
$T_J$		-40 ... +150	$^\circ\text{C}$
$T_{JM}$		150	$^\circ\text{C}$
$T_{stg}$		-40 ... +125	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz $I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ min}$ $t = 1 \text{ s}$	3000 3600 V~
$M_d$	Mounting torque (M6) Terminal connection torque (M5)	2.25-2.75/20-25 2.5-3.7/22-33	Nm/lb.in. Nm/lb.in.
<b>Weight</b>	typical including screws	250	g

## Features

- International standard package
- Direct Copper Bonded  $\text{Al}_2\text{O}_3$  ceramic base plate
- 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

## Advantages

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

Symbol	Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0 \text{ V}$ , $I_D = 10 \text{ mA}$	200		V
$V_{GS(th)}$	$I_D = 30 \text{ mA}$	2		V
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V DC}$ , $V_{DS} = 0$			$\pm 500 \text{ nA}$
$I_{DSS}$	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0 \text{ V}$			1.6 mA 8 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 $d \leq 2\%$		5.2	6.8 $\text{m}\Omega$

① Additional current limitation by external leads

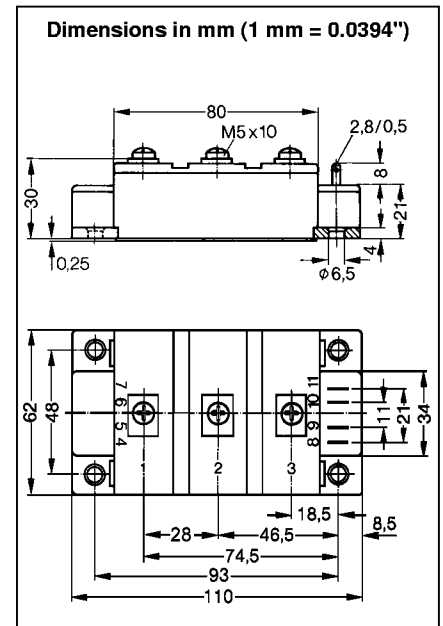
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IXYS reserves the right to change limits, test conditions and dimensions.

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Symbol	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		250	S
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		38	nF
$C_{oss}$			7	nF
$C_{rss}$			2.5	nF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1.8\ \Omega$		210	ns
$t_r$			500	ns
$t_{d(off)}$			900	ns
$t_f$			350	ns
$Q_g$	$V_{GS} = 10\text{ V}, V_{DS} = 100\text{ V}, I_D = 150\text{ A}$		1650	nC
$Q_{gs}$			300	nC
$Q_{gd}$			840	nC
$R_{thJC}$				0.09 K/W
$R_{thJS}$	with heat transfer paste		0.13	K/W


**Source-Drain Diode**

Symbol	Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$I_S$	$V_{GS} = 0\text{ V}, T_C = 25^\circ\text{C}, T_J = T_{JM}$			310 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$ ②			1240 A
$V_{SD}$	$I_F = 300\text{ A}, V_{GS} = 0\text{ V}$ , Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $d \leq 2\%$		1	1.2 V
$t_{rr}$	$I_F = 300\text{ A}, -di/dt = 700\text{ A}/\mu\text{s}, V_{DS} = 100\text{ V}$		300	ns

② Additional current limitation by external leads