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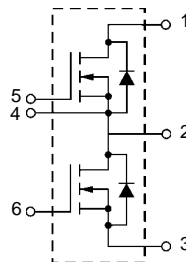
Dual Power HiPerFET™ Module

VMM 45-02F

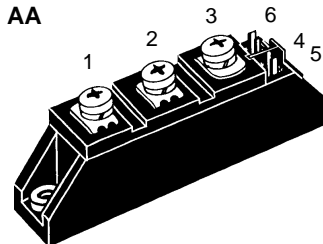
V_{DSS} = 200 V
I_{D25} = 45 A
R_{DS(on)} = 45 mΩ

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

Preliminary Data



TO-240 AA



1 = Drain 1 2 = Source 1, Drain 2
 3 = Source 2 4 = Kelvin Source 1
 5 = Gate 1 6 = Gate 2

Symbol	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 _C = 25°C	45	A
I _{D80}	T _C = 80°C	34	A
I _{DM}	T _C = 25°C, t _p = 10 μs, pulse width limited by T _{JM}	180	A
P _{tot}	T _C = 25°C	190	W
T _J		-40 ... +150	°C
T _{JM}		150	°C
T _{stg}		-40 ... +125	°C
V _{ISOL}	50/60 Hz I _{ISOL} ≤ 1 mA	t = 1 min t = 1 s	3000 V~ 3600 V~
M _d	Mounting torque(M5 or 10-32 UNF) Terminal connection torque (M5)	2.5-4.0/22-35 Nm/lb.in. 2.5-4.0/22-35 Nm/lb.in.	
Weight	Typical including screws	90	g

Features

- Two MOSFET's in phaseleg config.
- International standard package
- Direct copper bonded Al₂O₃ ceramic base plate
- Isolation voltage 3600 V~
- Low R_{DS(on)} HDMOS™ process

Applications

- Switched-mode and resonant-mode power supplies
- Uninterruptible power supplies (UPS)

Advantages

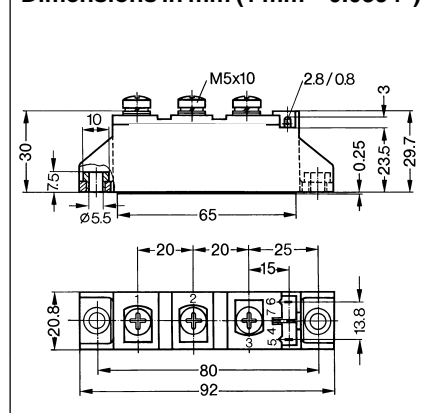
- Easy to mount with two screws
- Space and weight savings
- High power density
- Low losses

Symbol	Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
V _{DSS}	V _{GS} = 0 V, I _D = 1 mA	200		V
V _{GS(th)}	V _{DS} = V _{GS} , I _D = 4 mA	2		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 V _{DS} = 0.8 • V _{DSS} , V _{GS} = 0 V, T _J = 125°C			15 μA 1 mA
R _{DS(on)}	V _{GS} = 10 V, I _D = 0.5 • I _{D25} Pulse test, t ≤ 300 μs, duty cycle d ≤ 2%		39	45 mΩ

Data per MOSFET unless otherwise stated.

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	20	30	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		4800	7500 pF
C_{oss}			900	2250 pF
C_{rss}			310	750 pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1\ \Omega$ (External), resistive load		40	ns
t_r			45	ns
$t_{d(off)}$			300	ns
t_f			45	ns
Q_g	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		190	225 nC
Q_{gs}			35	55 nC
Q_{gd}			95	115 nC
R_{thJC}				0.63 K/W
R_{thCH}	heatsink compound applied		0.3	K/W
d_s	Creepage distance on surface	12.7		mm
d_A	Strike distance through air	9.6		mm
a	Allowable acceleration			50 m/s ²

Dimensions in mm (1 mm = 0.0394")


Source-Drain Diode
Characteristic Values

 ($T_J = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Conditions	min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			45 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			180 A
V_{SD}	$I_F = I_S; V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$		0.9	1.2 V
t_{rr}	$I_F = I_S, -di/dt = 100\text{ A}/\mu\text{s}$, $V_{DS} = 100\text{ V}, V_{GS} = 0\text{ V}$		200	400 ns