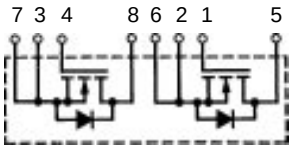
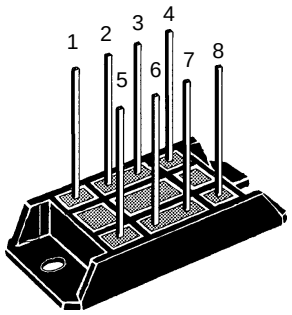
Dual Power MOSFET Modules

VMM 15-045

V_{DSS} = 450 V
I_{D25} = 20 A
$R_{DS(on)}$ = 0.2 Ω

N-Channel Enhancement Mode





1, 4 = Gate, 5, 8 = Drain
6, 7 = Source, 2, 3 Kelvin Source

Symbol	Test Conditions		Maximum Ratings per switch	
V_{DSS}	T_J = 25°C to 150°C		450	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 20 kΩ		450	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_K = 25°C		20	A
I_{D85}	T_K = 85°C		16	A
I_{DM}	T_K = 25°C, t_p = 10 µs		80	A
P_D	T_K = 25°C		175	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 3600	V~ V~
M_d	Mounting torque	(M5) (10-32 UNF)	2-2.5 18-22	Nm lb.in.
Weight	typ.		28	g

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
V_{DSS}	V_{GS} = 0 V, I_D = 0.5 mA	450			V
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 5 mA	2.0		5.5	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			0.5 3	mA mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 • I_{D25} Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %		0.18	0.2	Ω

Features

- 2 independent MOSFET in 1 package
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Low $R_{DS(on)}$ HDMOS™ process
- Low package inductance for high speed switching
- Kelvin contact for easy drive
- UL registered E 72873

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

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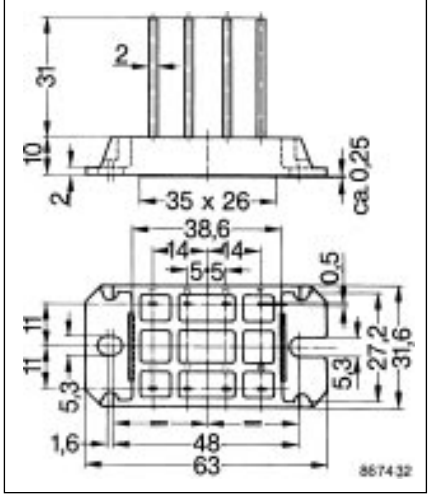
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} = 15 V; I_D = 0.5 • I_{D25} pulsed		18		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		5600		pF
C_{oss}			800		pF
C_{rss}			200		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25} R_G = 15 Ω (External), resistive load		25		ns
t_r			45		ns
$t_{d(off)}$			250		ns
t_f			75		ns
Q_g	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		110		nC
Q_{gs}			15		nC
Q_{gd}			40		nC
R_{thJK}	with 30 µm heat transfer paste			0.7	K/W
d_S	Creepage distance on surface	17			mm
d_A	Strike distance through air	9.6			mm
a	Maximum allowable acceleration	50			m/s^2

Dimensions in mm (1 mm = 0.0394")



Source-Drain Diode

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V			20	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			80	A
V_{SD}	I_F = I_S; V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %		1.5		V
t_{rr}	I_F = I_S, -di/dt = 200 A/µs, V_{DS} = 100 V		600		ns