

Dual Power MOSFET Modules

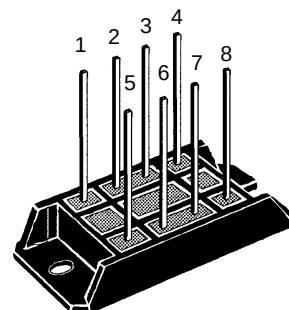
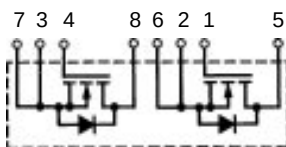
VMM 15-045

$V_{DSS} = 450 \text{ V}$

$I_{D25} = 20 \text{ A}$

$R_{DS(on)} = 0.2 \Omega$

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}	$T_J = 25^\circ\text{C}$ to 150°C	450	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 20 \text{ k}\Omega$	450	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_K = 25^\circ\text{C}$	20	A
I_{D85}	$T_K = 85^\circ\text{C}$	16	A
I_{DM}	$T_K = 25^\circ\text{C}$, $t_p = 10 \mu\text{s}$	80	A
P_D	$T_K = 25^\circ\text{C}$	175	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 V~ 3600 V~
M_d	Mounting torque	(M5) (10-32 UNF)	2-2.5 Nm 18-22 lb.in.
Weight	typ.	28	g

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

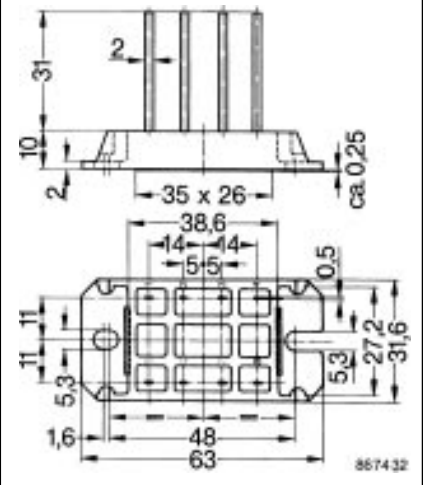
- Easy to mount with two screws
- Space and weight savings
- High power density
- Low losses

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 0.5 \text{ mA}$	450		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 5 \text{ mA}$	2.0		5.5 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V DC}$, $V_{DS} = 0$			$\pm 500 \text{ nA}$
I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0 \text{ V}$, $T_J = 25^\circ\text{C}$ $V_{DS} = 0.8 \cdot V_{DSS}$, $V_{GS} = 0 \text{ V}$, $T_J = 125^\circ\text{C}$			0.5 mA 3 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 $d \leq 2 \%$		0.18	0.2 Ω

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

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	$V_{DS} = 15\text{ V}; I_D = 0.5 \cdot I_{D25}$ pulsed		18	S
C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		5600	pF
C_{oss}			800	pF
C_{rss}			200	pF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 15\ \Omega$ (External), resistive load		25	ns
t_r			45	ns
$t_{d(off)}$			250	ns
t_f			75	ns
Q_g	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		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")



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