

Preliminary

Dual Power MOSFET Module

$$V_{DSS} = 70 \text{ V}$$

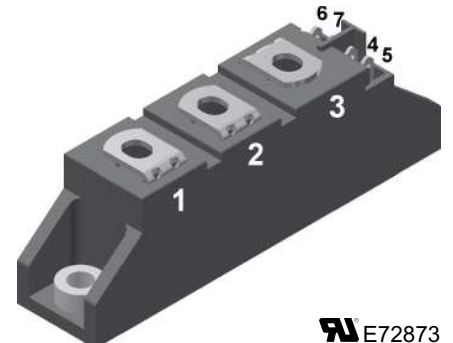
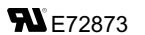
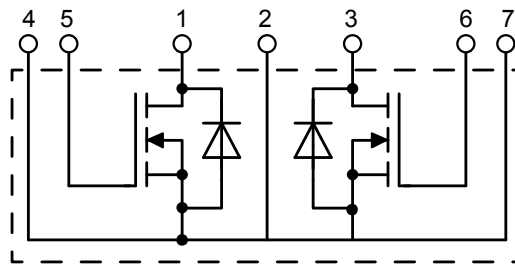
$$I_{D25} = 165 \text{ A}$$

$$R_{DS(on)} = 7 \text{ m}\Omega$$

Common-Source connected
N-Channel Enhancement Mode

Part number

VMK165-007T

Features / Advantages:

- Two MOSFET with common source
- Direct copper bonded Al_2O_3 ceramic base plate
- Low $R_{DS(on)}$ HDMOS™ process
- Low package inductance for high speed switching
- Kelvin source contact
- Keyed twin plugs
- High power density
- Low losses

Applications:

- Push-pull inverters
- Switched-mode and resonant-mode power supplies
- Uninterruptible power supplies (UPS)
- AC static switches

Package: TO-240AA

- Isolation Voltage: 4800 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

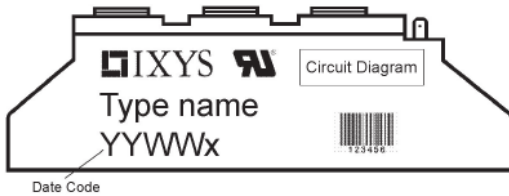
MOSFETs				Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	Unit	
V_{DSS}	drain source breakdown voltage	$T_{VJ} = 25^{\circ}\text{C to } 125^{\circ}\text{C}$			70	V	
V_{DGR}	drain gate voltage	$R_{GS} = 6.8 \text{ k}\Omega$ $T_{VJ} = 25^{\circ}\text{C to } 125^{\circ}\text{C}$			70	V	
V_{GS}	gate source voltage	Continuous			± 20	V	
V_{GSM}	max. transient gate source voltage	Transient			± 30	V	
I_{D25}	continuous drain current	$T_C = 25^{\circ}\text{C}$			165	A	
I_{D100}	drain current	$T_C = 100^{\circ}\text{C}$			104	A	
I_{DM}	maximum pulsed drain current	$t_p = 10 \mu\text{s}$, pulse width limited by T_{JM} $T_C = 25^{\circ}\text{C}$			660	A	
P_{tot}	total power dissipation	$T_{VJ} = 125^{\circ}\text{C}$ $T_C = 25^{\circ}\text{C}$			390	W	
V_{DSS}	drain source breakdown voltage	$V_{GS} = 0 \text{ V}; I_D = 1 \text{ mA}$	70			V	
$V_{GS(th)}$	gate threshold voltage	$V_{DS} = V_{GS}; I_D = 8 \text{ mA}$	2		4	V	
I_{GSS}	gate source leakage current	$V_{GS} = \pm 20 \text{ V DC}; V_{DS} = 0$			500	nA	
I_{DSS}	drain source leakage current	$V_{DS} = V_{DSS}; V_{GS} = 0 \text{ V}$ $V_{DS} = 0.8 \cdot V_{DSS}; V_{GS} = 0 \text{ V}$ $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$			200 1	μA mA	
$R_{DS(on)}$	static drain source on resistance	$V_{GS} = 10 \text{ V}; I_D = 0.5 \cdot I_{D25}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2 \%$ $T_{VJ} = 25^{\circ}\text{C}$		6	7	m Ω	
g_{fs}	forward transconductance	$V_{DS} = 10 \text{ V}; I_D = 0.5 \cdot I_{D25}$ pulsed	60	80		S	
C_{iss}	input capacitance	$V_{GS} = 0 \text{ V}; V_{DS} = 25 \text{ V}; f = 1 \text{ MHz}$		8.8		nF	
C_{oss}	output capacitance			4.0		nF	
C_{rss}	reverse transfer (Miller) capacitance			2.4		nF	
$t_{d(on)}$	turn-on delay time	$V_{GS} = 10 \text{ V}; V_{DS} = 0.5 \cdot V_{DSS}; I_D = 0.5 \cdot I_{D25}$ $R_G = 1 \Omega$ (external), resistive load		120		ns	
t_r	current rise time			280		ns	
$t_{d(off)}$	turn-off delay time			390		ns	
t_f	current fall time			110		ns	
Q_g	total gate charge	$V_{GS} = 10 \text{ V}; V_{DS} = 0.5 \cdot V_{DSS}; I_D = 0.5 \cdot I_{D25}$		480		nC	
Q_{gs}	gate source charge			60		nC	
Q_{gd}	gate drain (Miller) charge			240		nC	
R_{thJC}	thermal resistance junction to case	with heat transfer paste			0.32	K/W	
R_{thJH}	thermal resistance junction to heatsink			0.2		K/W	

Source-Drain Diodes				Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	Unit	
I_S	continuous source current	$V_{GS} = 0 \text{ V}$			165	A	
I_{SM}	maximum pulsed source current	Repetitive; pulse width limited by T_{JM}			660	A	
V_{SD}	forward voltage drop	$I_F = I_S; V_{GS} = 0 \text{ V}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2 \%$			1.5	V	
t_{rr}	reverse recovery time	$I_F = 50 \text{ A}$, $-di/dt = 200 \text{ A}/\mu\text{s}$; $V_{DS} = 25 \text{ V}; V_{GS} = 0 \text{ V}$		150		ns	

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated. $T_J = 25^{\circ}\text{C}$, unless otherwise specified

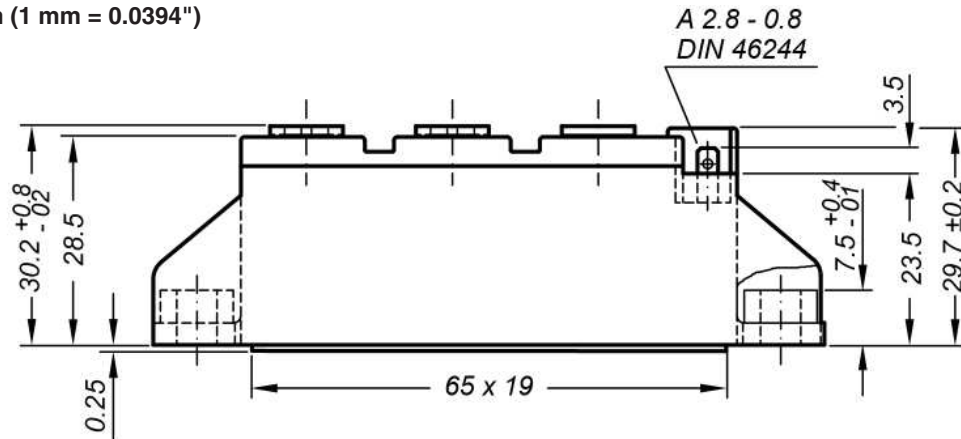


Package TO-240AA		Ratings				
Symbol	Definitions	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			200	A
T_{VJ}	virtual junction temperature		-40		150	°C
T_{VJM}	maximum virtual junction temperature				150	°C
T_{stg}	storage temperature		-40		125	°C
Weight				81		g
M_D	mounting torque		2.5		4	Nm
M_T	terminal torque		2.5		4	Nm
$d_{Spp/App}$	creepage distance on surface / striking distance through air	terminal to terminal	13.0	9.7		mm
$d_{Spb/Appb}$		terminal to backside	16.0	16.0		mm
V_{ISOL}	isolation voltage	t = 1 second t = 1 minute	50/60 Hz, RMS, $I_{ISOL} \leq 1$ mA		4800 4000	V V

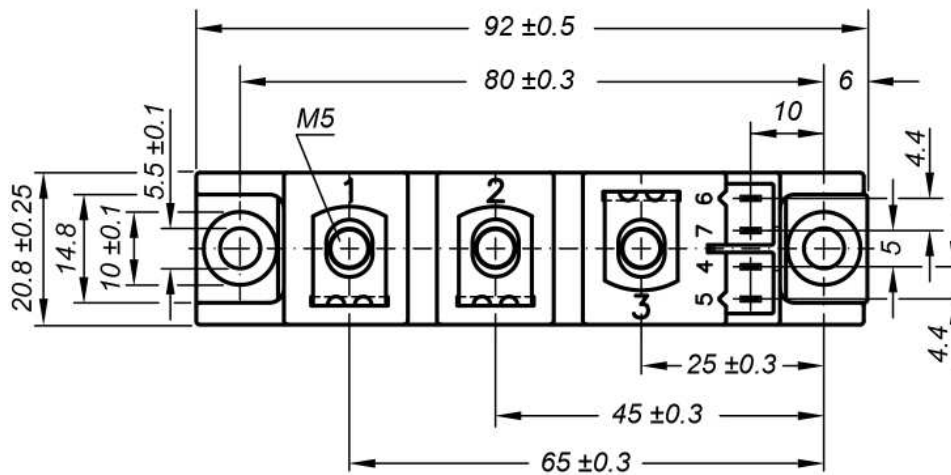


Outlines TO-240AA

Dimensions in mm (1 mm = 0.0394")



General tolerance: DIN ISO 2768 class „c“



Optional accessories for modules

Keyed gate/cathode twin plugs with wire length = 350 mm, gate = white, cathode = red

Type ZY 200L (L = Left for pin pair 4/5)

Type ZY 200R (R = Right for pin pair 6/7) } UL 758, style 3751

