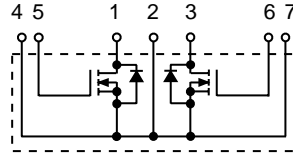


# Dual Power MOSFET Module

## VMK 165-007T

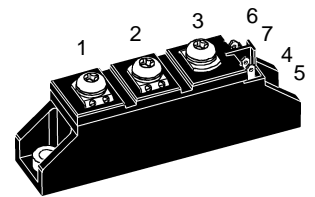
$V_{DSS} = 70 \text{ V}$   
 $I_{D25} = 165 \text{ A}$   
 $R_{DS(on)} = 7 \text{ m}\Omega$

Common-Source connected  
N-Channel Enhancement Mode



Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	70	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 6.8 \text{ k}\Omega$	70	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	165	A
$I_D$	$T_C = 100^\circ\text{C}$	104	A
$I_{DM}$	$T_C = 25^\circ\text{C}$ , $t_p = 10 \mu\text{s}$ , pulse width limited by $T_{JM}$	660	A
$P_{tot}$	$T_C = 25^\circ\text{C}$ , $T_J = 150^\circ\text{C}$	390	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(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.
<b>Weight</b>	Typical including screws	90	g

TO-240 AA  
E 72873



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

### Features

- Two MOSFET with common source
- International standard package JEDEC TO-240 AA
- Direct copper bonded  $\text{Al}_2\text{O}_3$  ceramic base plate
- Isolation voltage 3000 V~
- Low  $R_{DS(on)}$  HDMOS™ process
- Low package inductance for high speed switching
- Kelvin source contact
- Keyed twin plugs

### Applications

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

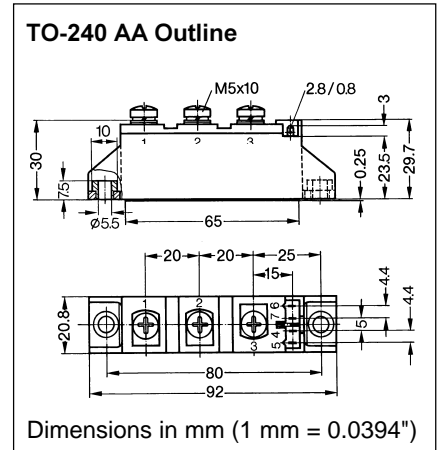
### Advantages

- Easy to mount with two screws
- 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.
$V_{DSS}$	$V_{GS} = 0 \text{ V}$ , $I_D = 1 \text{ mA}$	70		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 8 \text{ mA}$	2		V
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V DC}$ , $V_{DS} = 0$			500 nA
$I_{DSS}$	$V_{DS} = V_{DSS}$ , $V_{GS} = 0 \text{ V}$ , $T_J = 25^\circ\text{C}$ $V_{DS} = 0.8 \cdot V_{DSS}$ , $V_{GS} = 0 \text{ V}$ , $T_J = 125^\circ\text{C}$			200 $\mu\text{A}$ 1 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 $d \leq 2 \%$		6	7 m $\Omega$

Data per MOSFET unless otherwise stated.

Symbol	Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>g<sub>fs</sub></b>	V <sub>DS</sub> = 10 V; I <sub>D</sub> = 0.5 • I <sub>D25</sub> pulsed	60	80	S
<b>C<sub>iss</sub></b> <b>C<sub>oss</sub></b> <b>C<sub>rss</sub></b>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		8.8	nF
			4.0	nF
			2.4	nF
<b>t<sub>d(on)</sub></b> <b>t<sub>r</sub></b> <b>t<sub>d(off)</sub></b> <b>t<sub>f</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 • V <sub>DSS</sub> , I <sub>D</sub> = 0.5 • I <sub>D25</sub> R <sub>G</sub> = 1 Ω (External), resistive load		120	ns
			280	ns
			390	ns
			110	ns
<b>Q<sub>g</sub></b> <b>Q<sub>gs</sub></b> <b>Q<sub>gd</sub></b>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0.5 • V <sub>DSS</sub> , I <sub>D</sub> = 0.5 • I <sub>D25</sub>		480	nC
			60	nC
			240	nC
<b>R<sub>thJC</sub></b> <b>R<sub>thCH</sub></b>	with heat transfer paste			0.32 K/W
			0.2	K/W
<b>d<sub>S</sub></b> <b>d<sub>A</sub></b> <b>a</b>	Creepage distance on surface	12.7		mm
	Strike distance through air	9.6		mm
	Max. allowable acceleration	50		m/s <sup>2</sup>


**Source-Drain Diode**

Symbol	Conditions	Characteristic Values		
		(T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
<b>I<sub>S</sub></b>	V <sub>GS</sub> = 0 V			165 A
<b>I<sub>SM</sub></b>	Repetitive; pulse width limited by T <sub>JM</sub>			660 A
<b>V<sub>SD</sub></b>	I <sub>F</sub> = I <sub>S</sub> ; V <sub>GS</sub> = 0 V, Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			1.5 V
<b>t<sub>rr</sub></b>	I <sub>F</sub> = 50 A, -di/dt = 200 A/μs, V <sub>DS</sub> = 25 V, V <sub>GS</sub> = 0 V		150	ns