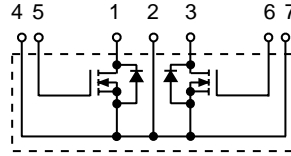


# Dual Power MOSFET Module

## VMK 165-007T

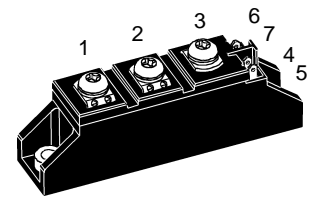
$V_{DSS} = 70 \text{ V}$   
 $I_{D25} = 165 \text{ A}$   
 $R_{DS(on)} = 7 \text{ m}\Omega$

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	$t = 1 \text{ min}$	3000 V~
	$I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ s}$	3600 V~
$M_d$	Mounting torque(M5 or 10-32 UNF)	2.5-4.0/22-35 Nm/lb.in.	
	Terminal connection torque (M5)	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

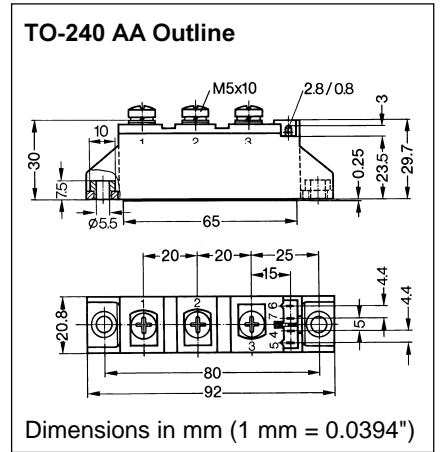
### Advantages

- 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
$I_{DSS}$	$V_{DS} = V_{DSS}$ , $V_{GS} = 0 \text{ V}$ , $T_J = 25^\circ\text{C}$			200 $\mu\text{A}$
	$V_{DS} = 0.8 \cdot V_{DSS}$ , $V_{GS} = 0 \text{ V}$ , $T_J = 125^\circ\text{C}$			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 ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$g_{fs}$	$V_{DS} = 10\text{ V}; I_D = 0.5 \cdot I_{D25}$ pulsed	60	80	S
$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		8.8	nF
$C_{oss}$			4.0	nF
$C_{rss}$			2.4	nF
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1\ \Omega$ (External), resistive load		120	ns
$t_r$			280	ns
$t_{d(off)}$			390	ns
$t_f$			110	ns
$Q_g$	$V_{GS} = 10\text{ V}, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		480	nC
$Q_{gs}$			60	nC
$Q_{gd}$			240	nC
$R_{thJC}$	with heat transfer paste			0.32 K/W
$R_{thCH}$			0.2	K/W
$d_s$	Creepage distance on surface	12.7		mm
$d_A$	Strike distance through air	9.6		mm
$a$	Max. allowable acceleration	50		$\text{m/s}^2$


**Source-Drain Diode**

Symbol	Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$I_S$	$V_{GS} = 0\text{ V}$			165 A
$I_{SM}$	Repetitive; pulse width limited by $T_{JM}$			660 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
$t_{rr}$	$I_F = 50\text{ A}, -di/dt = 200\text{ A}/\mu\text{s}$ , $V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V}$		150	ns