

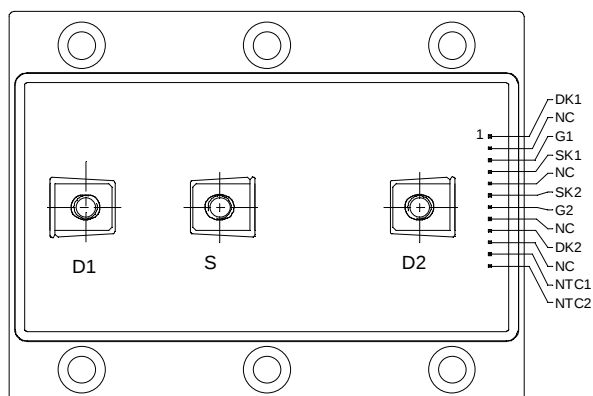
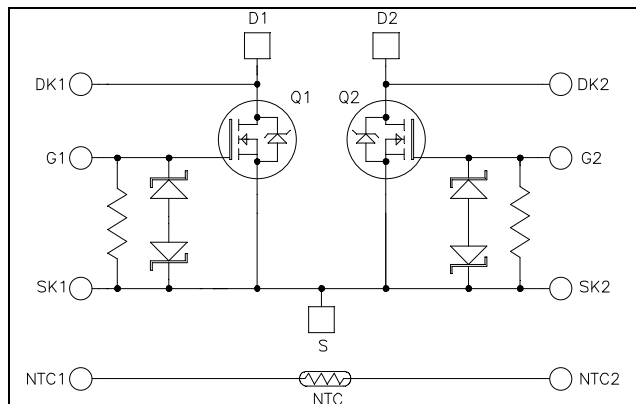
Dual common source MOSFET Power Module

$$V_{DSS} = 500V$$
$$R_{DS(on)} = 25m\Omega \text{ max @ } T_j = 25^{\circ}C$$

$I_D = 149A @ T_c = 25^\circ C$

Application

- AC Switches
- Switched Mode Power Supplies
- Uninterruptible Power Supplies



Features

- Power MOS V[®] MOSFETs
 - Low R_{DSon}
 - Low input and Miller capacitance
 - Low gate charge
 - Avalanche energy rated
 - Very rugged
- Kelvin source for easy drive
- Kelvin Drain for VDS monitoring
- Very low stray inductance
 - Symmetrical design
 - M5 power connectors
- Internal thermistor for temperature monitoring
- High level of integration

Benefits

- Outstanding performance at high frequency operation
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Solderable terminals for signal and M5 for power for easy PCB mounting
- RoHS compliant

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V _{DSS}	Drain - Source Breakdown Voltage	500	V
I _D	Continuous Drain Current	T _c = 25°C 149	A
		T _c = 80°C 111	
I _{DM}	Pulsed Drain current	300	
V _{GS}	Gate - Source Voltage	±15*	V
R _{DSon}	Drain - Source ON Resistance	25	mΩ
P _D	Maximum Power Dissipation	T _c = 25°C 1250	W
I _{AR}	Avalanche current (repetitive and non repetitive)	149	A
E _{AR}	Repetitive Avalanche Energy	30	mJ
E _{AS}	Single Pulse Avalanche Energy	1300	

* Limited by internal zener protection.



CAUTION: These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed. See application note APT0502 on www.microsemi.com

All ratings @ $T_j = 25^\circ\text{C}$ unless otherwise specified

Electrical Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0V, V_{DS} = 500V$ $T_j = 25^\circ\text{C}$			300	μA
		$V_{GS} = 0V, V_{DS} = 400V$ $T_j = 125^\circ\text{C}$			2000	
$R_{DS(on)}$	Drain – Source on Resistance	$V_{GS} = 10V, I_D = 74.5A$			25	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 8\text{mA}$	2		4	V
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 15V, V_{DS} = 0V$			± 250	nA
R	Gate Source input impedance			10		$\text{k}\Omega$

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0V$		29.6		nF
C_{oss}	Output Capacitance	$V_{DS} = 25V$		4		
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		1.6		
Q_g	Total gate Charge	$V_{GS} = 10V$		1200		nC
Q_{gs}	Gate – Source Charge	$V_{Bus} = 250V$		200		
Q_{gd}	Gate – Drain Charge	$I_D = 149A$		560		
$T_{d(on)}$	Turn-on Delay Time	Resistive Switching $V_{GS} = 15V$ $V_{Bus} = 250V$ $I_D = 149A$ $R_G = 0.22\Omega$		12		ns
T_r	Rise Time			10		
$T_{d(off)}$	Turn-off Delay Time			50		
T_f	Fall Time			8		

Source - Drain diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I_S	Continuous Source current (Body diode)	$T_c = 25^\circ\text{C}$			149	A
		$T_c = 80^\circ\text{C}$			111	
V_{SD}	Diode Forward Voltage	$V_{GS} = 0V, I_S = -149A$			1.3	V
t_{rr}	Reverse Recovery Time	$I_S = -149A, V_R = 250V$		510		ns
Q_{rr}	Reverse Recovery Charge	$di_s/dt = 800A/\mu\text{s}$		80		μC

Thermal and package characteristics

Symbol	Characteristic			Min	Typ	Max	Unit
R _{thJC}	Junction to Case Thermal Resistance					0.1	°C/W
V _{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, I isol<1mA, 50/60Hz			2500			V
T _J	Operating junction temperature range			-40		150	°C
T _{STG}	Storage Temperature Range			-40		125	
T _C	Operating Case Temperature			-40		100	
Torque	Mounting torque	To heatsink	M5	2		3.5	N.m
		For terminals	M5	2		3.5	
Wt	Package Weight					550	g

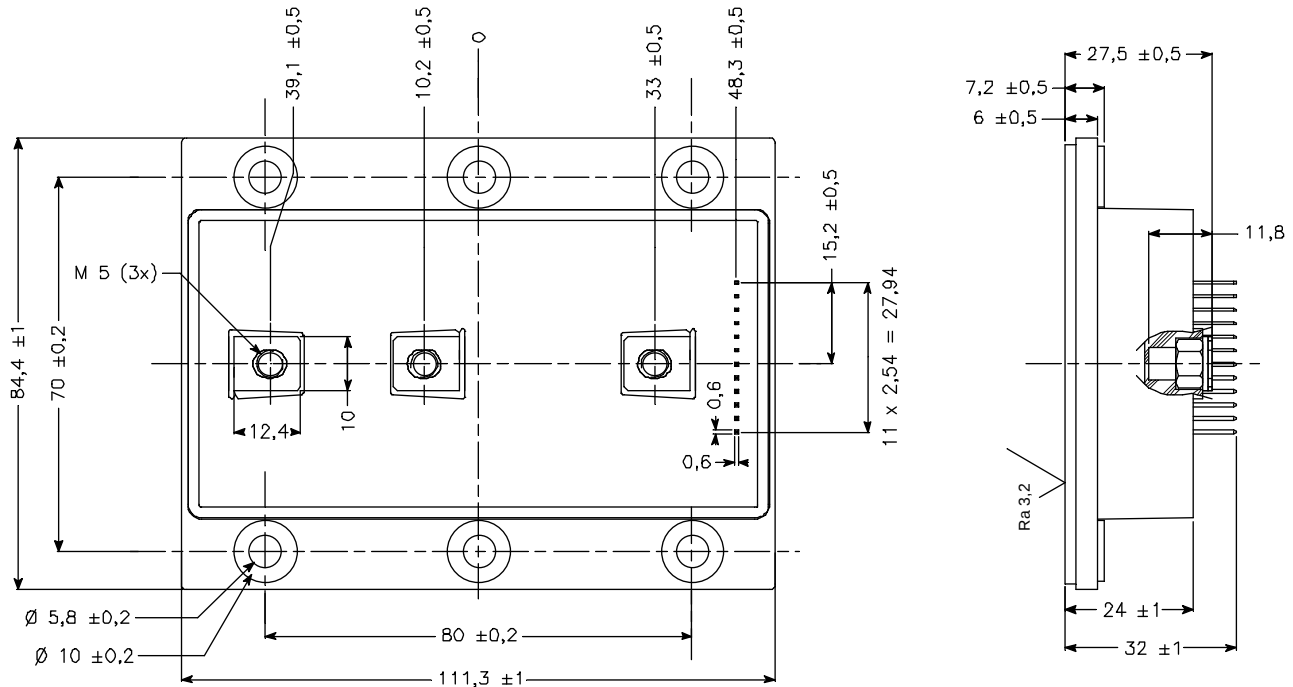
Temperature sensor NTC (see application note APT0406 on www.microsemi.com for more information).

Symbol	Characteristic	Min	Typ	Max	Unit
R_{25}	Resistance @ 25°C		50		kΩ
$\Delta R_{25}/R_{25}$			5		%
$B_{25/85}$	$T_{25} = 298.15 \text{ K}$		3952		K
$\Delta B/B$	$T_C = 100^\circ\text{C}$		4		%

$$R_T = \frac{R_{25}}{\exp \left[B_{25/85} \left(\frac{1}{T_{25}} - \frac{1}{T} \right) \right]}$$

T: Thermistor temperature
 R_T : Thermistor value at T

Package outline (dimensions in mm)



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