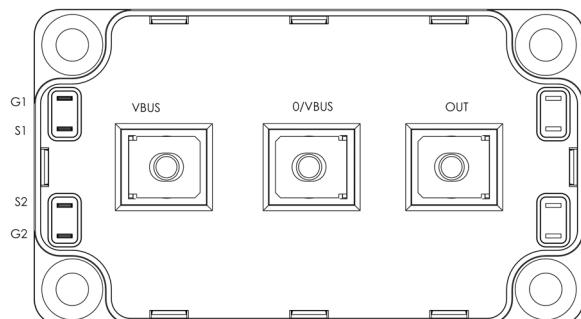
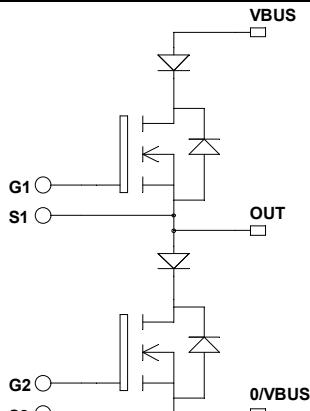


*Phase leg
with Series diodes
MOSFET Power Module*

$V_{DSS} = 1000V$
 $R_{DSon} = 130m\Omega$ typ @ $T_j = 25^\circ C$
 $I_D = 65A$ @ $T_c = 25^\circ C$



Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{DSS}	Drain - Source Breakdown Voltage	1000	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	A
		$T_c = 80^\circ C$	
I_{DM}	Pulsed Drain current	240	
V_{GS}	Gate - Source Voltage	± 30	V
R_{DSon}	Drain - Source ON Resistance	156	$m\Omega$
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	W
I_{AR}	Avalanche current (repetitive and non repetitive)	24	A
E_{AR}	Repetitive Avalanche Energy	30	
E_{AS}	Single Pulse Avalanche Energy	1300	mJ

 **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	$V_{GS} = 0\text{V}$, $V_{DS} = 1000\text{V}$	$T_j = 25^\circ\text{C}$			600	μA
		$V_{GS} = 0\text{V}$, $V_{DS} = 800\text{V}$	$T_j = 125^\circ\text{C}$			2	mA
$R_{DS(on)}$	Drain – Source on Resistance	$V_{GS} = 10\text{V}$, $I_D = 32.5\text{A}$			130	156	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}$, $I_D = 6\text{mA}$		3		5	V
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 30\text{ V}$, $V_{DS} = 0\text{V}$				± 450	nA

Dynamic Characteristics

Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$ $V_{DS} = 25\text{V}$ $f = 1\text{MHz}$			15.2		nF
C_{oss}	Output Capacitance				2.6		
C_{tss}	Reverse Transfer Capacitance				0.42		
Q_g	Total gate Charge	$V_{GS} = 10\text{V}$ $V_{Bus} = 500\text{V}$ $I_D = 65\text{A}$			562		nC
Q_{gs}	Gate – Source Charge				75		
Q_{gd}	Gate – Drain Charge				363		
$T_{d(on)}$	Turn-on Delay Time	Inductive switching @ 125°C $V_{GS} = 15\text{V}$ $V_{Bus} = 667\text{V}$ $I_D = 65\text{A}$ $R_G = 0.5\Omega$			9		ns
T_r	Rise Time				9		
$T_{d(off)}$	Turn-off Delay Time				50		
T_f	Fall Time				24		
E_{on}	Turn-on Switching Energy	Inductive switching @ 25°C $V_{GS} = 15\text{V}$, $V_{Bus} = 667\text{V}$ $I_D = 65\text{A}$, $R_G = 0.5\Omega$			2.13		mJ
E_{off}	Turn-off Switching Energy				0.46		
E_{on}	Turn-on Switching Energy	Inductive switching @ 125°C $V_{GS} = 15\text{V}$, $V_{Bus} = 667\text{V}$ $I_D = 65\text{A}$, $R_G = 0.5\Omega$			4.4		mJ
E_{off}	Turn-off Switching Energy				0.57		

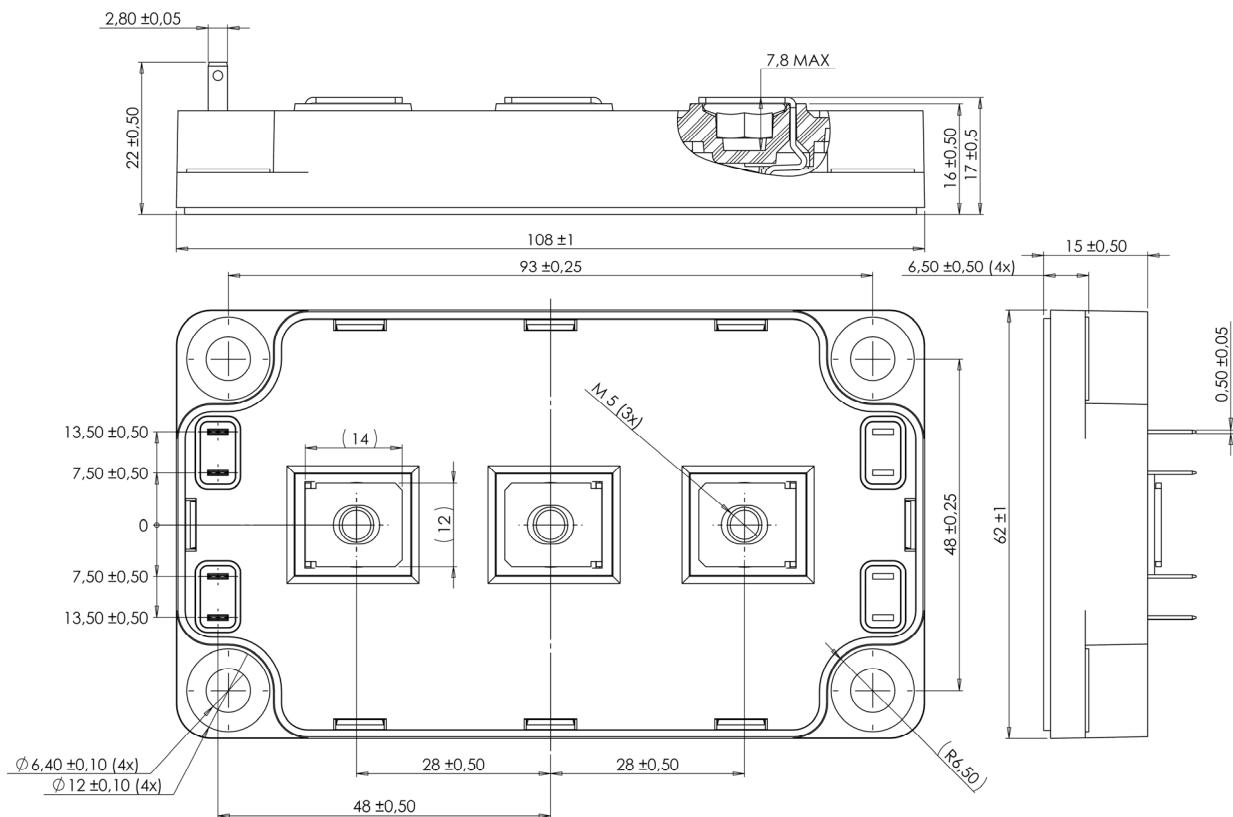
Series diode ratings and characteristics

Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit	
V_{RRM}	Maximum Repetitive Reverse Voltage			1200			V	
I_{RM}	Maximum Reverse Leakage Current	$V_R = 1200\text{V}$	$T_j = 25^\circ\text{C}$			150	μA	
			$T_j = 125^\circ\text{C}$			600		
I_F	DC Forward Current		$T_c = 100^\circ\text{C}$		120		A	
V_F	Diode Forward Voltage	$I_F = 120\text{A}$			2.5	3	V	
		$I_F = 240\text{A}$			3			
		$I_F = 120\text{A}$	$T_j = 125^\circ\text{C}$		1.8			
t_{rr}	Reverse Recovery Time	$I_F = 120\text{A}$ $V_R = 800\text{V}$ $di/dt = 400\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		265		ns	
			$T_j = 125^\circ\text{C}$		350			
Q_{rr}	Reverse Recovery Charge		$T_j = 25^\circ\text{C}$		1120		nC	
			$T_j = 125^\circ\text{C}$		5800			

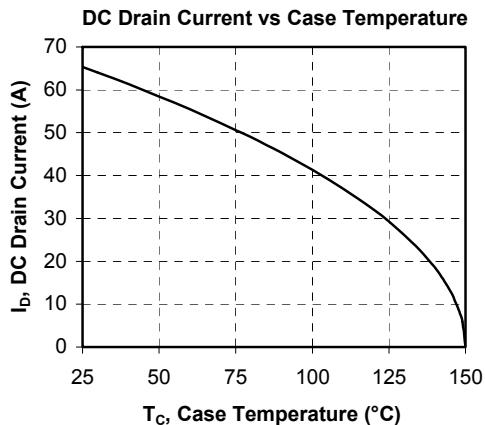
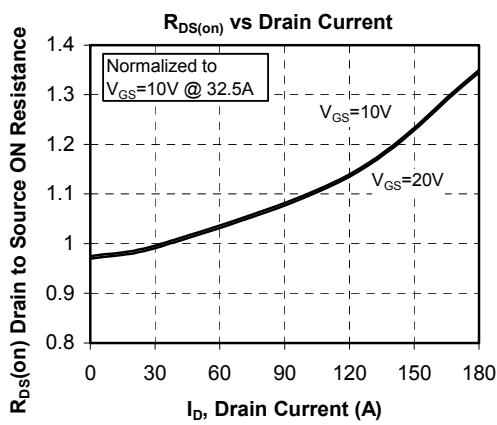
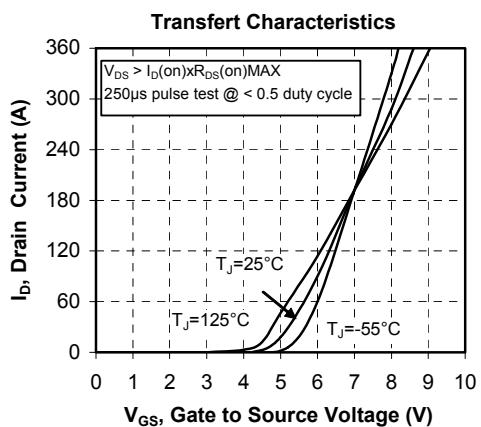
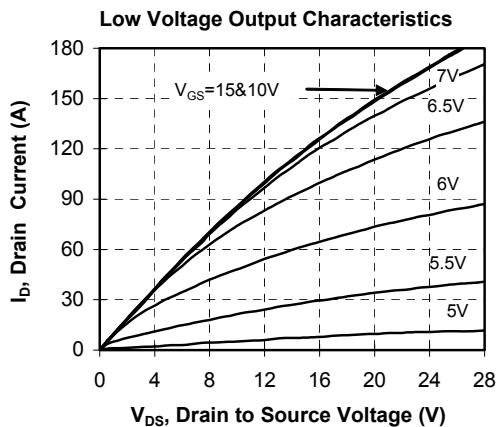
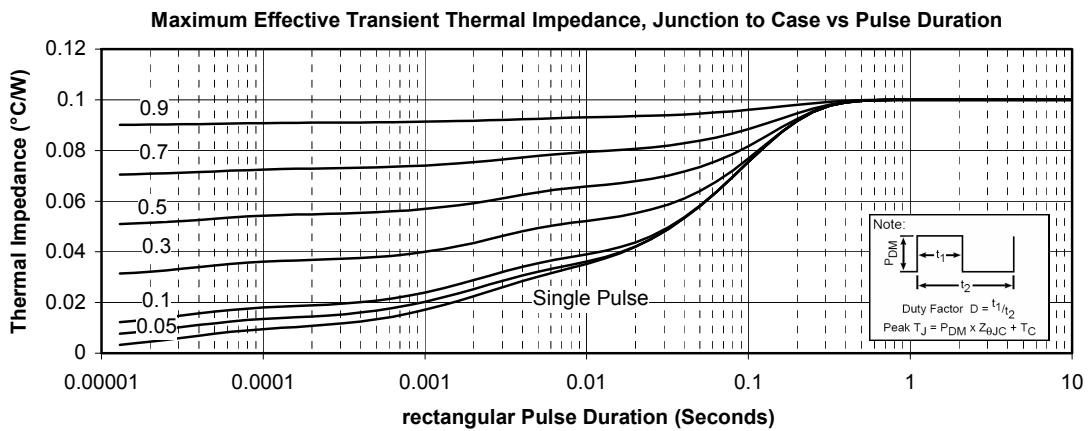
Thermal and package characteristics

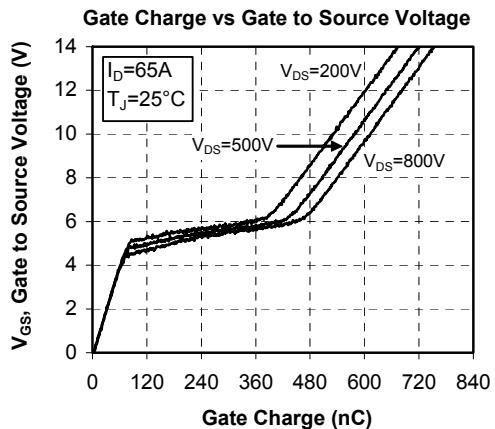
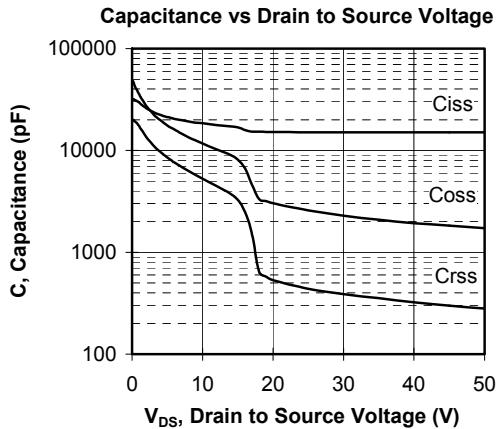
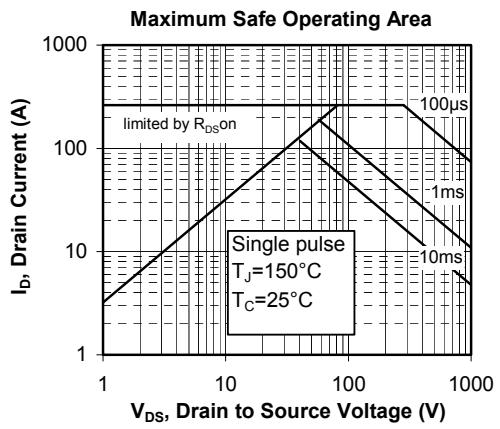
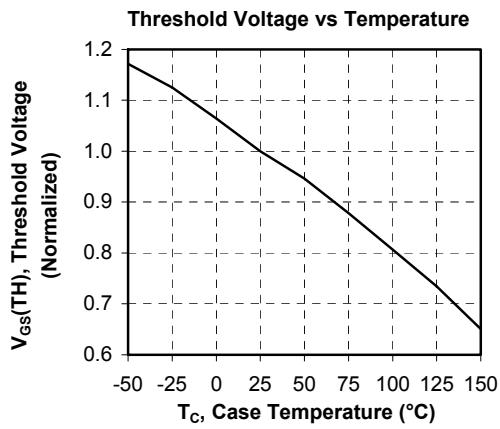
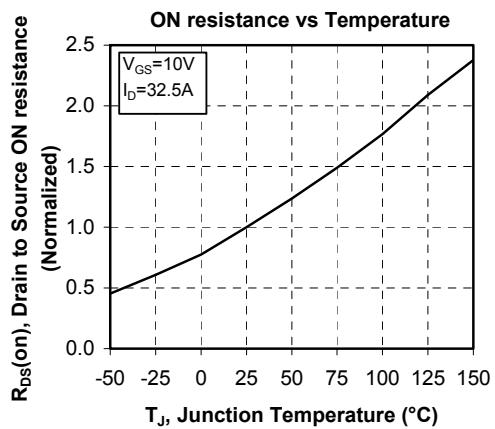
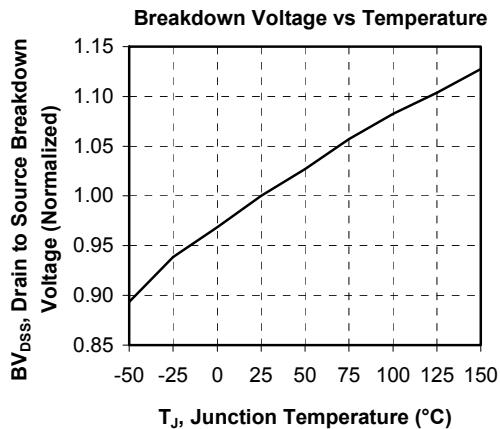
Symbol	Characteristic	Min	Typ	Max	Unit
R_{thJC}	Junction to Case Thermal Resistance	Transistor		0.10	°C/W
		Series diode		0.46	
V_{ISOL}	RMS Isolation Voltage, any terminal to case t=1 min, 50/60Hz	4000			V
T_J	Operating junction temperature range	-40		150	
T_{STG}	Storage Temperature Range	-40		125	°C
T_C	Operating Case Temperature	-40		100	
Torque	Mounting torque	To heatsink	M6	3	N.m
		For terminals	M5	2	
Wt	Package Weight			300	g

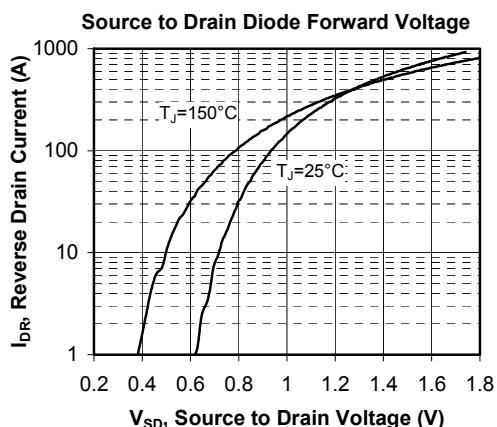
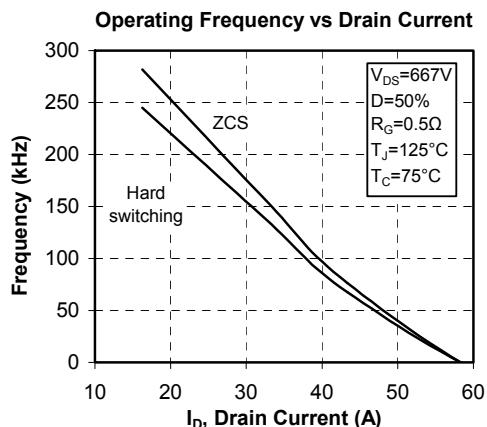
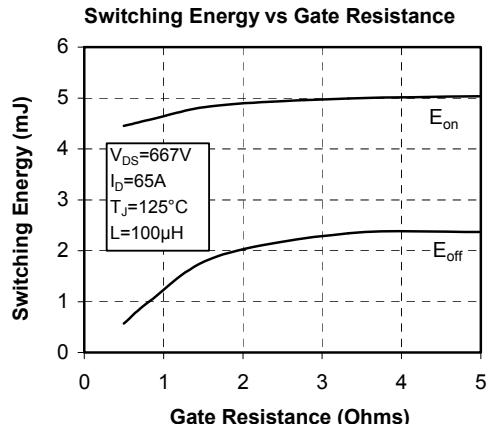
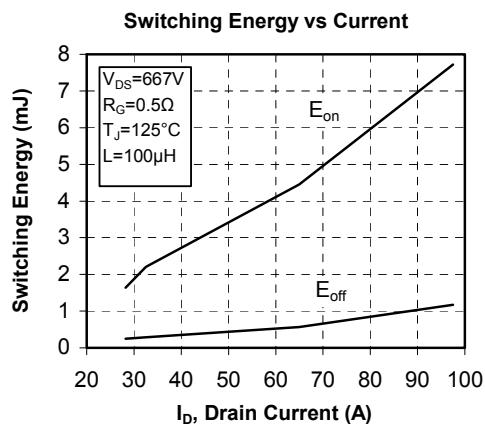
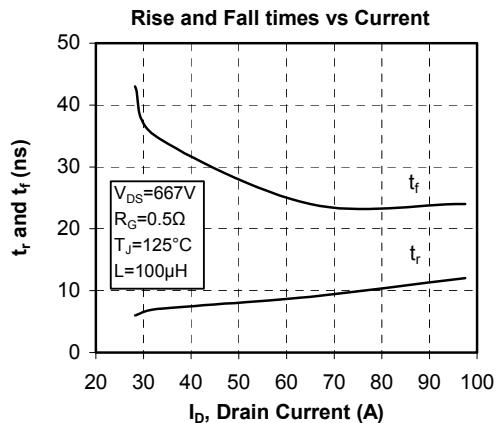
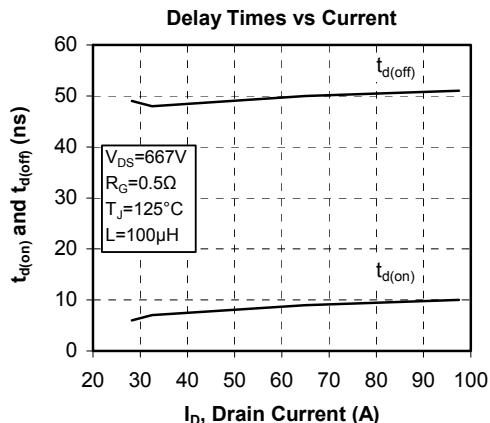
SP6 Package outline (dimensions in mm)



See application note APT0601 - Mounting Instructions for SP6 Power Modules on www.microsemi.com

Typical Performance Curve






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