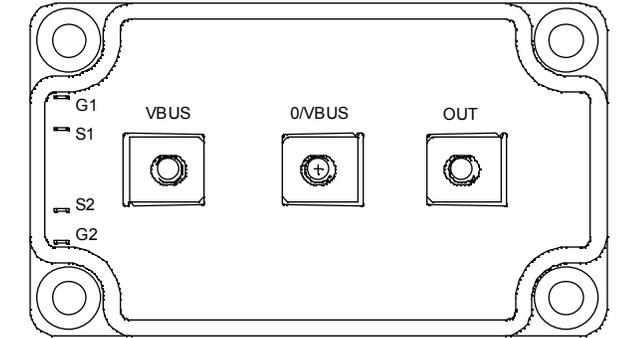
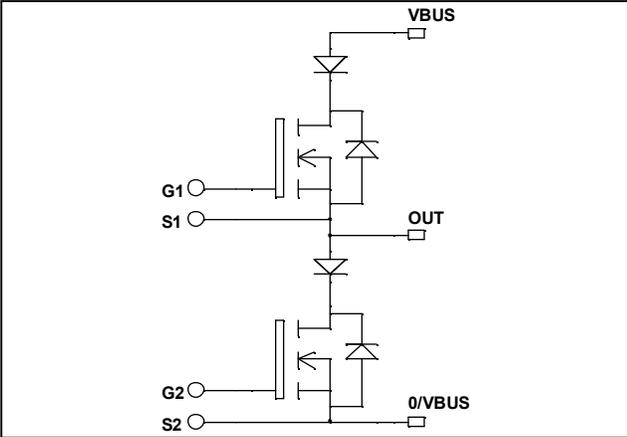


Phase leg
with Series diodes
MOSFET Power Module

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



Application

- Zero Current Switching resonant mode

Features

- Power MOS 7[®] MOSFETs
 - Low R_{DSon}
 - Low input and Miller capacitance
 - Low gate charge
 - Fast intrinsic reverse diode
 - Avalanche energy rated
 - Very rugged
- Kelvin source for easy drive
- Very low stray inductance
 - Symmetrical design
 - M5 power connectors
- High level of integration

Benefits

- Outstanding performance at high frequency operation
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Low profile
- RoHS Compliant

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{DSS}	Drain - Source Breakdown Voltage	1000	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	65
		$T_c = 80^\circ C$	49
I_{DM}	Pulsed Drain current	240	A
V_{GS}	Gate - Source Voltage	± 30	V
R_{DSon}	Drain - Source ON Resistance	156	$m\Omega$
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	1250
I_{AR}	Avalanche current (repetitive and non repetitive)	24	A
E_{AR}	Repetitive Avalanche Energy	30	mJ
E_{AS}	Single Pulse Avalanche Energy	1300	

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	$V_{GS} = 0\text{V}, V_{DS} = 1000\text{V}$			600	μA
		$V_{GS} = 0\text{V}, V_{DS} = 800\text{V}$			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

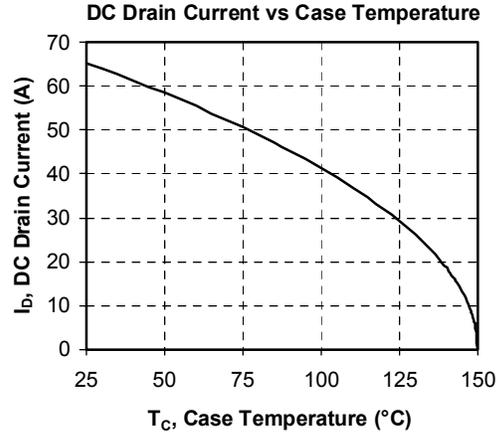
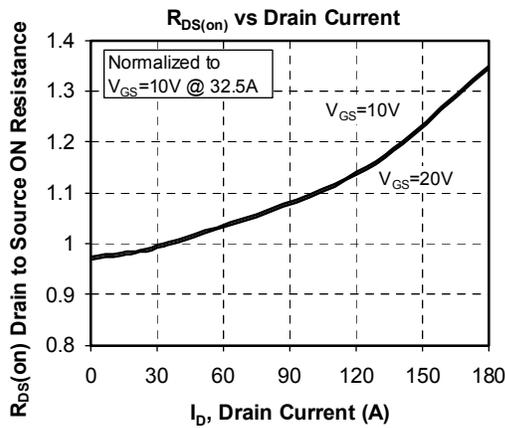
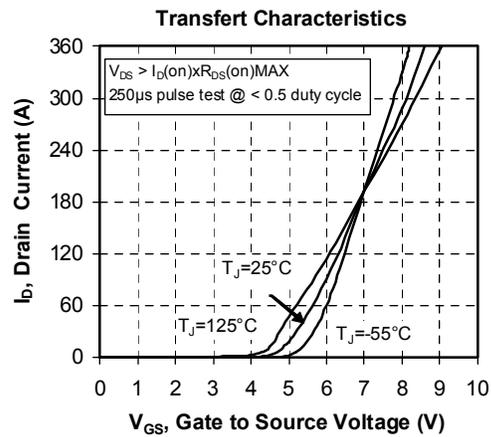
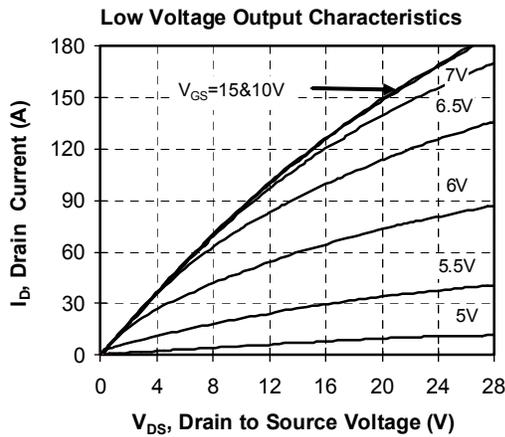
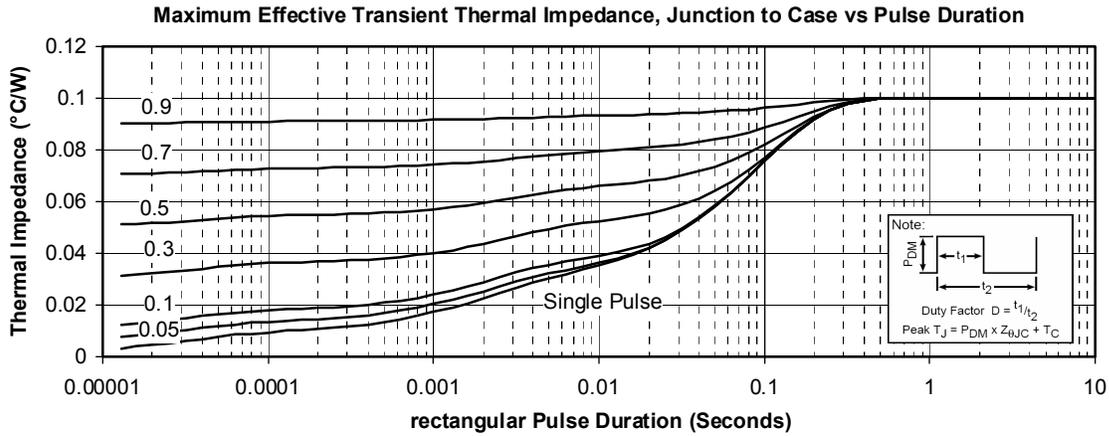
Dynamic Characteristics

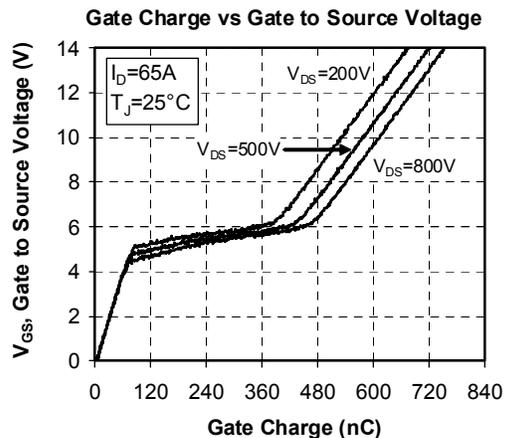
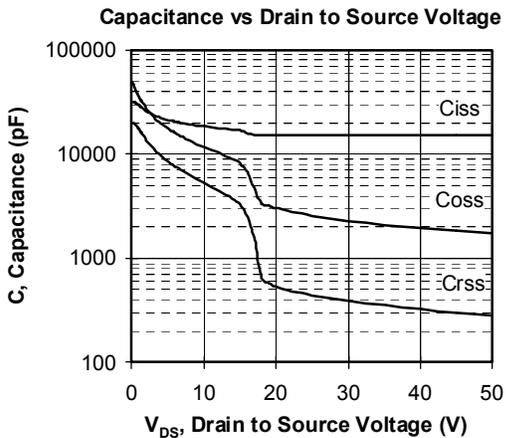
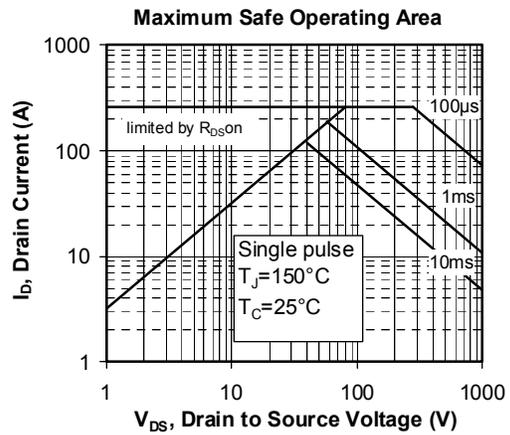
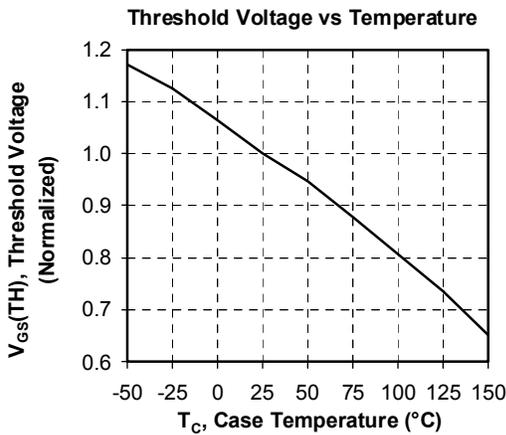
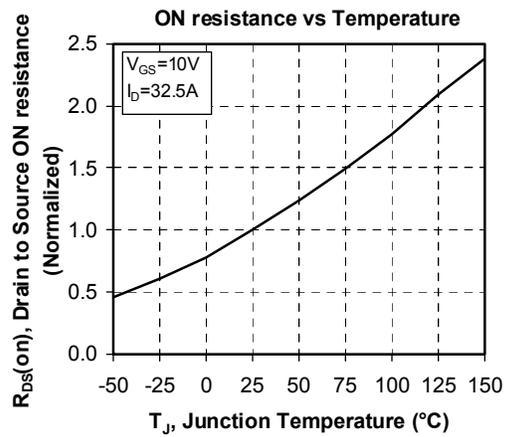
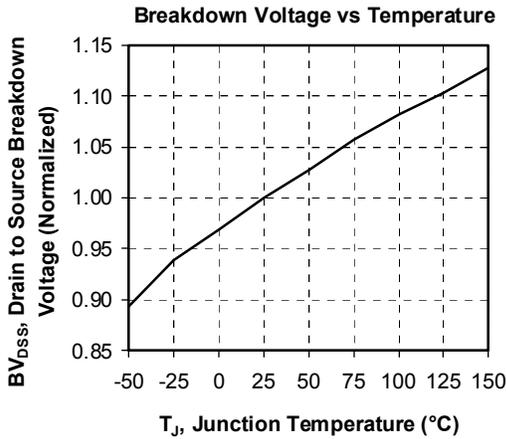
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$		15.2		nF
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$		2.6		
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		0.42		
Q_g	Total gate Charge	$V_{GS} = 10\text{V}$		562		nC
Q_{gs}	Gate – Source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

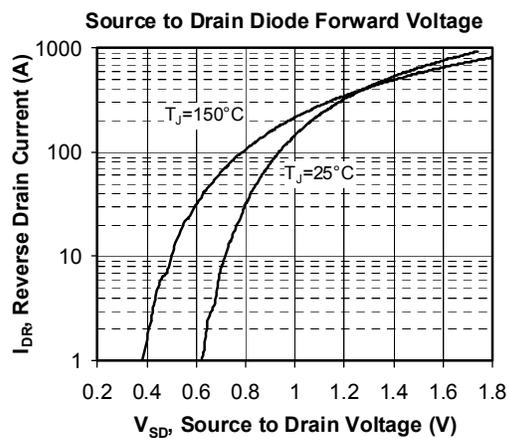
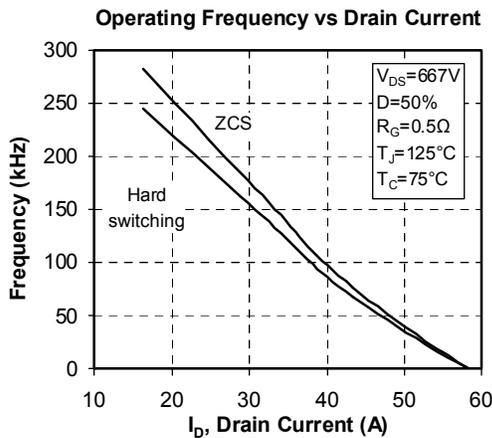
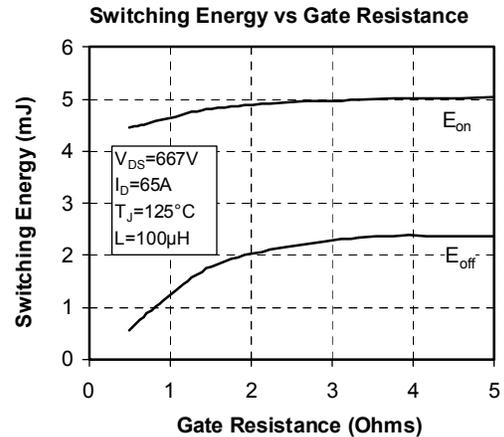
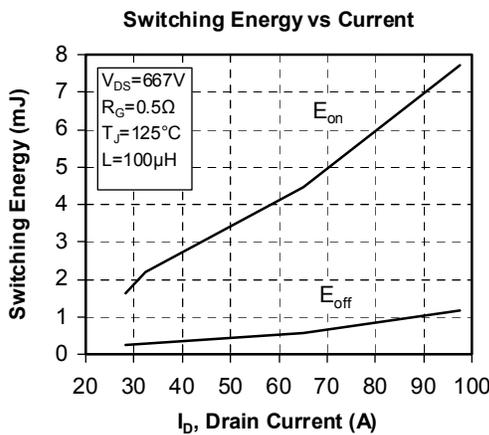
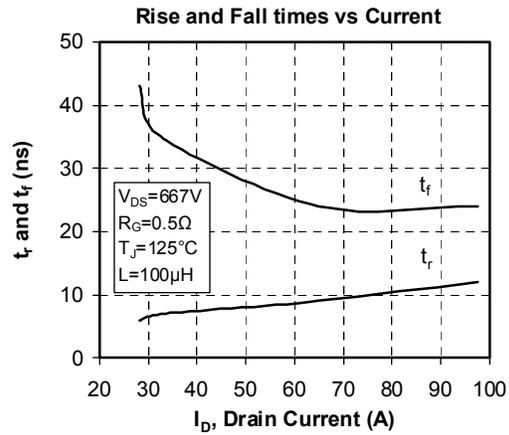
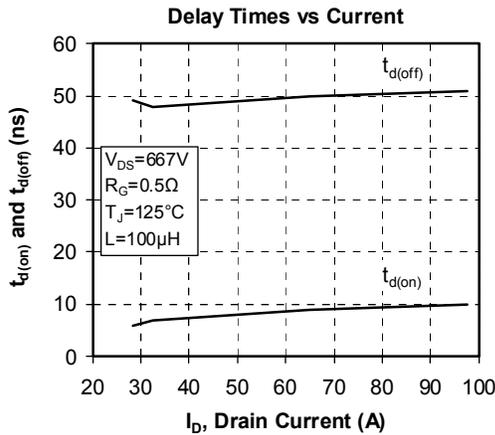
Series diode ratings and characteristics

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			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	$I_F = 120\text{A}$ $V_R = 800\text{V}$	$T_j = 25^\circ\text{C}$	265		ns
			$T_j = 125^\circ\text{C}$	350		
Q_{rr}	Reverse Recovery Charge	$di/dt = 400\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	1120		nC
			$T_j = 125^\circ\text{C}$	5800		

Typical Performance Curve







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