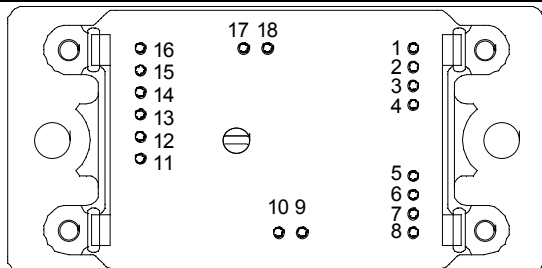
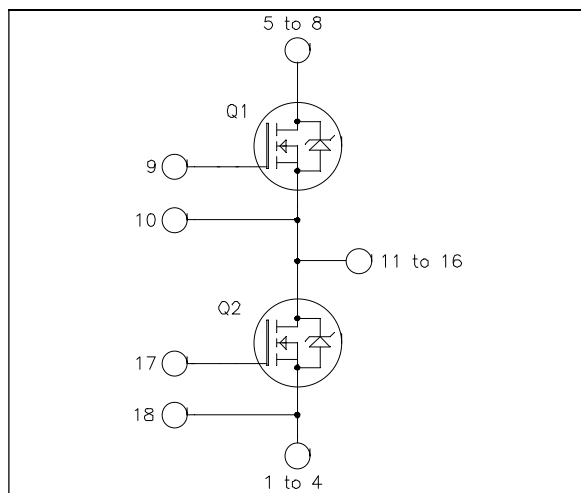


Phase leg Super Junction MOSFET Power Module

$V_{DSS} = 900V$

$R_{DSon} = 60m\Omega \text{ max @ } T_j = 25^\circ C$

$I_D = 59A \text{ @ } T_c = 25^\circ C$



Pins 1/2/3/4 ; 5/6/7/8 ; 11/12/13/14/15/16 must be shorted together

Application

- Welding converters
- Switched Mode Power Supplies
- Uninterruptible Power Supplies
- Motor control

Features

- CoolMOS™
 - Ultra low R_{DSon}
 - Low Miller capacitance
 - Ultra low gate charge
 - Avalanche energy rated
 - Very rugged
- Very low stray inductance
- Kelvin source for easy drive
- 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

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

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{DSS}	Drain - Source Breakdown Voltage	900	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	59
		$T_c = 80^\circ C$	44
I_{DM}	Pulsed Drain current	150	A
V_{GS}	Gate - Source Voltage	± 20	V
R_{DSon}	Drain - Source ON Resistance	60	$m\Omega$
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	462
I_{AR}	Avalanche current (repetitive and non repetitive)	8.8	A
E_{AR}	Repetitive Avalanche Energy	2.9	mJ
E_{AS}	Single Pulse Avalanche Energy	1940	

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

Electrical Characteristics

<i>Symbol</i>	<i>Characteristic</i>	<i>Test Conditions</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0V, V_{DS} = 900V$			200	μA
$R_{DS(on)}$	Drain – Source on Resistance	$V_{GS} = 10V, I_D = 52A$		50	60	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 6mA$	2.5	3	3.5	V
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$			200	nA

Dynamic Characteristics

<i>Symbol</i>	<i>Characteristic</i>	<i>Test Conditions</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>
C_{iss}	Input Capacitance	$V_{GS} = 0V; V_{DS} = 100V$ $f = 1MHz$		13.6		nF
C_{oss}	Output Capacitance			0.66		
Q_g	Total gate Charge	$V_{GS} = 10V$ $V_{Bus} = 400V$ $I_D = 52A$		540		nC
Q_{gs}	Gate – Source Charge			64		
Q_{gd}	Gate – Drain Charge			230		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C) $V_{GS} = 10V$ $V_{Bus} = 600V$ $I_D = 52A$ $R_G = 3.8\Omega$		70		ns
T_r	Rise Time			20		
$T_{d(off)}$	Turn-off Delay Time			400		
T_f	Fall Time			25		
E_{off}	Turn-off Switching Energy	Inductive switching $V_{GS} = 10V; I_D = 52A$ $V_{Bus} = 600V; R_G = 3.8\Omega$	$T_j = 25^\circ C$	1.5		mJ
			$T_j = 125^\circ C$	1.7		
R_{thJC}	Junction to Case Thermal Resistance				0.27	$^\circ C/W$

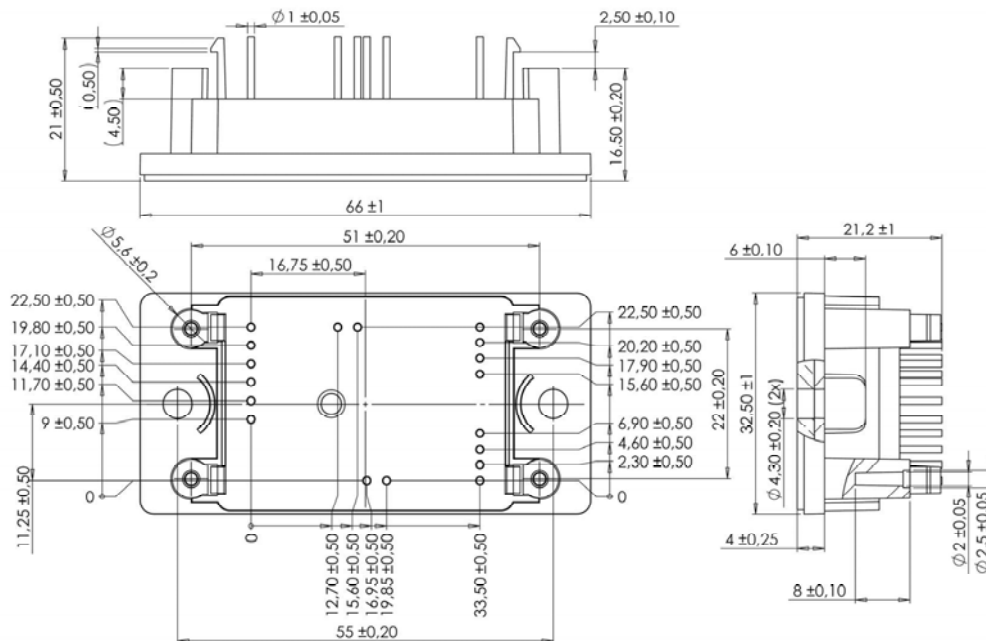
Source - Drain diode ratings and characteristics

<i>Symbol</i>	<i>Characteristic</i>	<i>Test Conditions</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>
I_S	Continuous Source current (Body diode)	$T_c = 25^\circ C$			59	A
		$T_c = 80^\circ C$			44	
V_{SD}	Diode Forward Voltage	$V_{GS} = 0V, I_S = -52A$		0.8	1.2	V
t_{rr}	Reverse Recovery Time	$I_S = -52A$ $V_R = 400V$	$T_j = 25^\circ C$	920		ns
Q_{rr}	Reverse Recovery Charge	$di_S/dt = 200A/\mu s$	$T_j = 25^\circ C$	60		μC

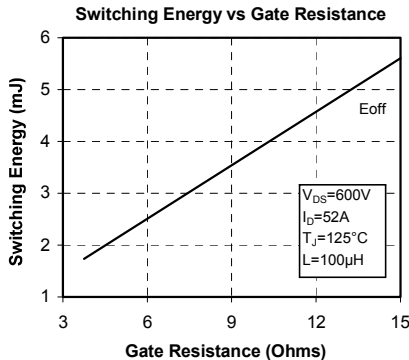
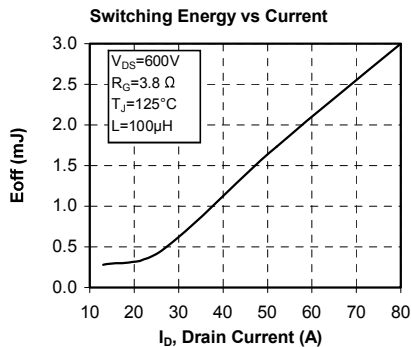
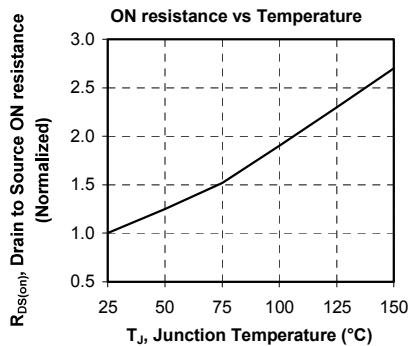
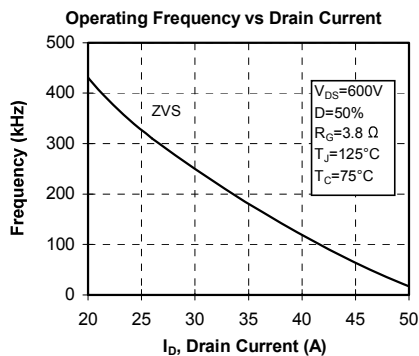
Thermal and package characteristics

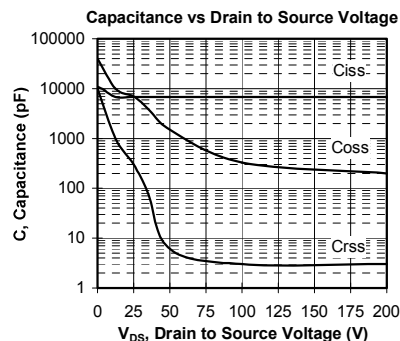
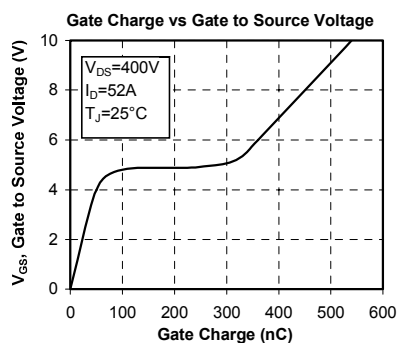
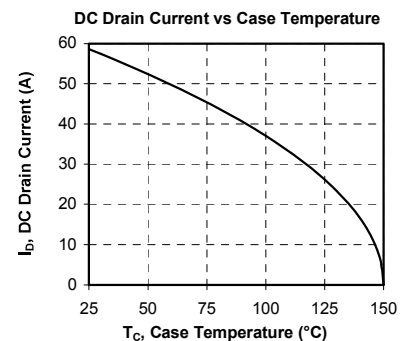
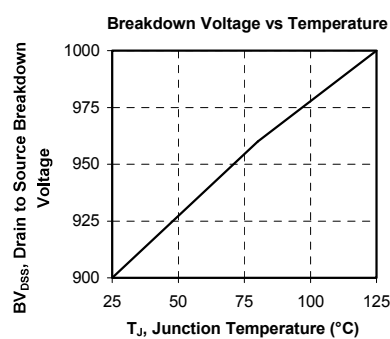
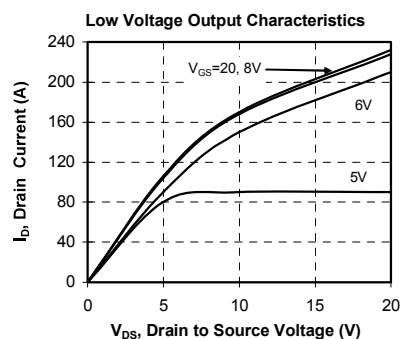
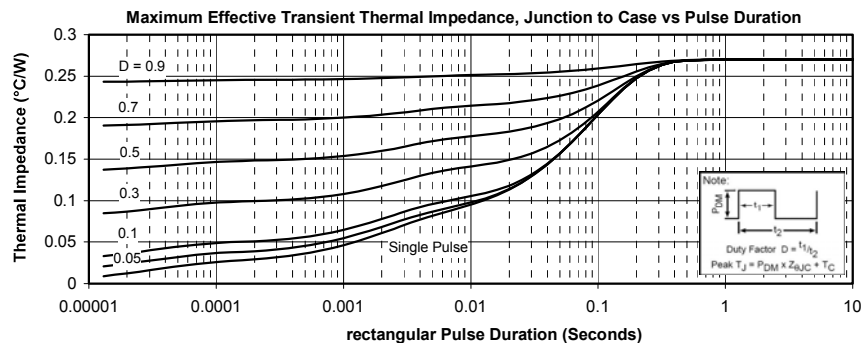
Symbol	Characteristic			Min	Typ	Max	Unit
V _{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, 50/60Hz			4000			V
T _J	Operating junction temperature range			-40		150	°C
T _{STG}	Storage Temperature Range			-40		125	
T _C	Operating Case Temperature			-40		100	
Torque	Mounting torque	To heatsink	M4	2		3	N.m
Wt	Package Weight					75	g

SP2 Package outline (dimensions in mm)



Typical CoolMOS Performance Curve





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