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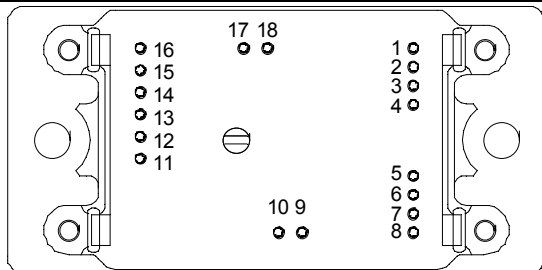
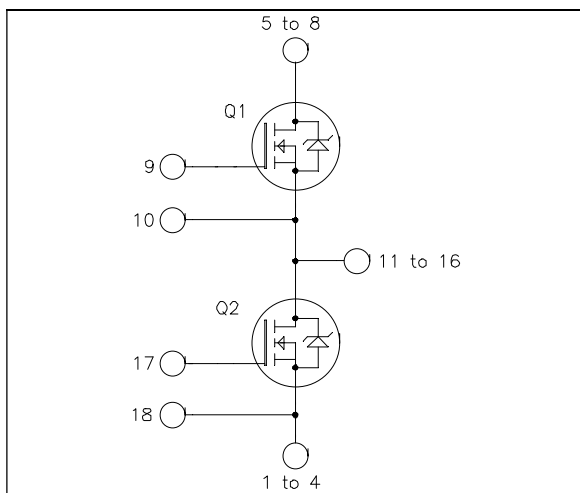
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**Phase leg  
Super Junction MOSFET  
Power Module**

**$V_{DSS} = 900V$**   
 **$R_{DSon} = 60m\Omega \text{ max @ } T_j = 25^\circ C$**   
 **$I_D = 59A \text{ @ } T_c = 25^\circ C$**



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

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

**Absolute maximum ratings**

<i>Symbol</i>	<i>Parameter</i>	<i>Max ratings</i>	<i>Unit</i>
$V_{DSS}$	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	
$V_{GS}$	Gate - Source Voltage	$\pm 20$	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](http://www.microsemi.com)

**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

**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	$\mu A$
$R_{DS(on)}$	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	<b>Inductive Switching (125°C)</b> $V_{GS} = 10V$ $V_{Bus} = 600V$ $I_D = 52A$ $R_G = 3.8\Omega$		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	<b>Inductive switching</b> $V_{GS} = 10V; I_D = 52A$ $V_{Bus} = 600V; R_G = 3.8\Omega$	$T_j = 25^\circ C$	1.5		mJ
			$T_j = 125^\circ C$	1.7		
$R_{thJC}$	Junction to Case Thermal Resistance				0.27	$^\circ C/W$

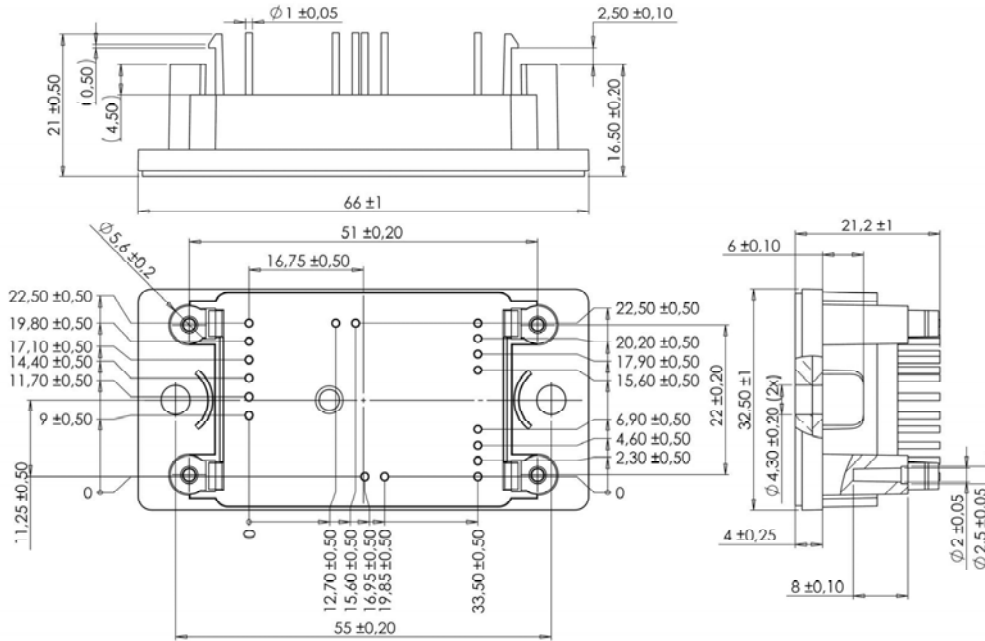
**Source - Drain diode ratings and characteristics**

<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	$I_S = - 52A$ $V_R = 400V$ $di_S/dt = 200A/\mu s$	$T_j = 25^\circ C$		920	ns
$Q_{rr}$	Reverse Recovery Charge		$T_j = 25^\circ C$		60	$\mu C$

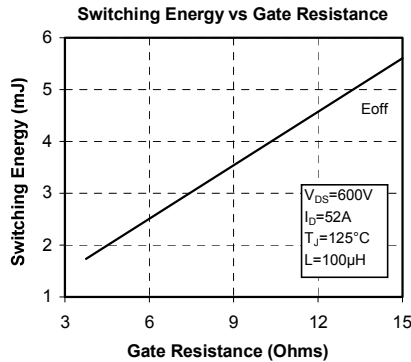
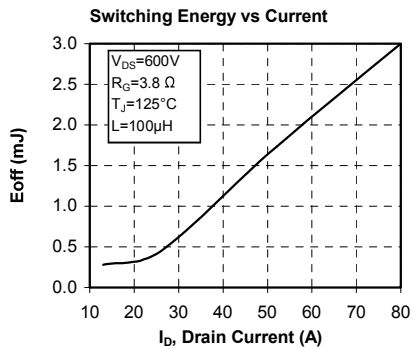
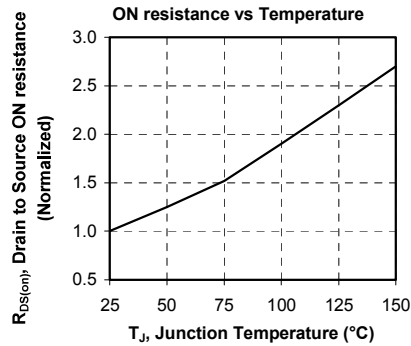
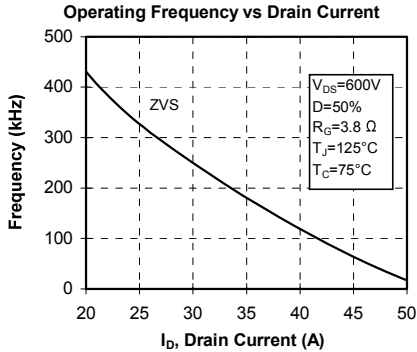
**Thermal and package characteristics**

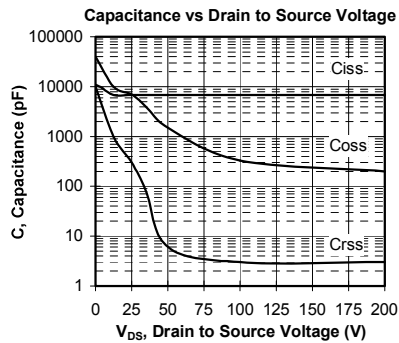
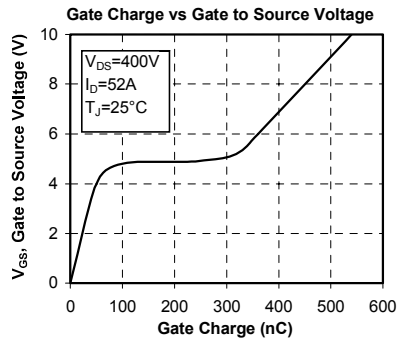
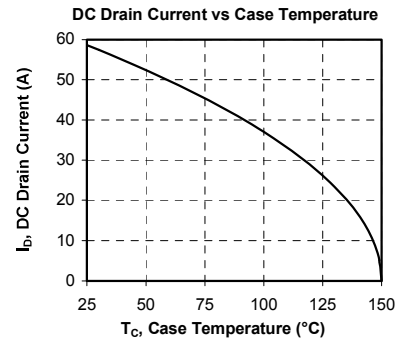
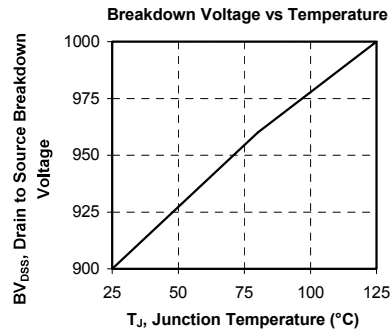
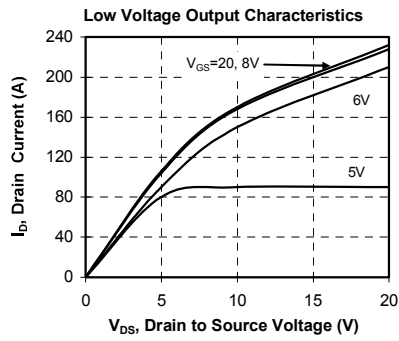
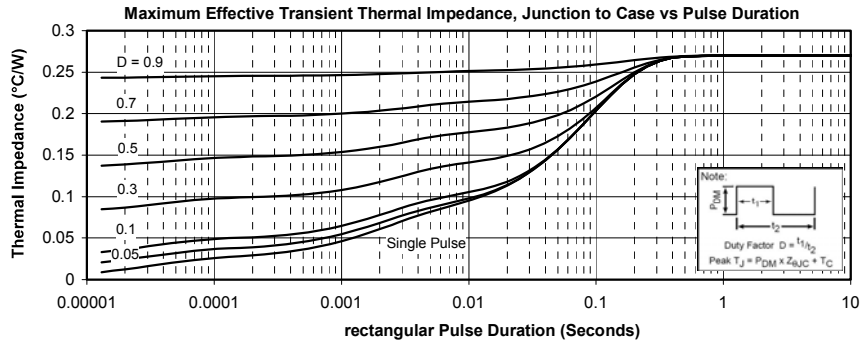
<i>Symbol</i>	<i>Characteristic</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>	
$V_{ISOL}$	RMS Isolation Voltage, any terminal to case $t = 1$ min, 50/60Hz	4000			V	
$T_J$	Operating junction temperature range	-40		150	$^\circ C$	
$T_{STG}$	Storage Temperature Range	-40		125		
$T_C$	Operating Case Temperature	-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





“COOLMOST™” comprise a new family of transistors developed by Infineon Technologies AG. “COOLMOS” is a trademark of Infineon Technologies AG<sup>3</sup>.

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