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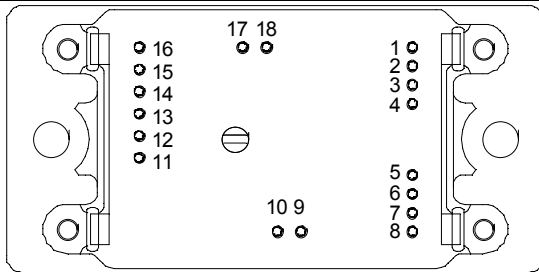
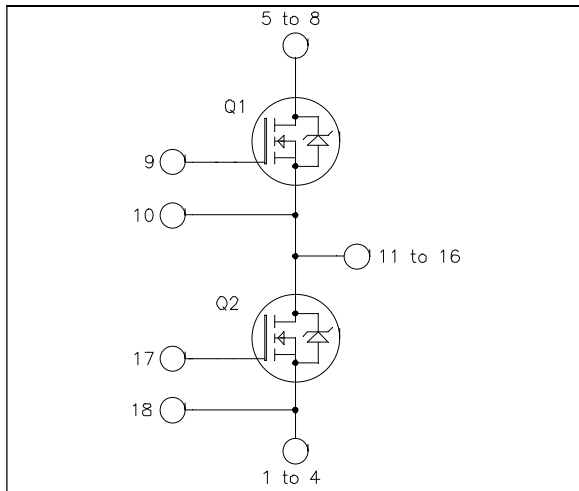
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**Phase leg
Super Junction MOSFET
Power Module**

$V_{DSS} = 600V$
 $R_{DSon} = 42m\Omega \text{ max @ } T_j = 25^\circ C$
 $I_D = 66A \text{ @ } T_c = 25^\circ C$



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
 - Fast intrinsic diode
- 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	600	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	66
		$T_c = 80^\circ C$	49
I_{DM}	Pulsed Drain current	200	
V_{GS}	Gate - Source Voltage	± 20	V
R_{DSon}	Drain - Source ON Resistance	42	$m\Omega$
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	416
I_{AR}	Avalanche current (repetitive and non repetitive)	20	A
E_{AR}	Repetitive Avalanche Energy	1	mJ
E_{AS}	Single Pulse Avalanche Energy	1800	

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	$V_{GS} = 0V, V_{DS} = 600V$			100	μA
$R_{DS(on)}$	Drain – Source on Resistance	$V_{GS} = 10V, I_D = 33A$			42	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 6mA$	3	4	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	$V_{GS} = 0V$		14.6		nF
C_{oss}	Output Capacitance	$V_{DS} = 25V$		3.47		
C_{rss}	Reverse Transfer Capacitance	$f = 1MHz$		0.082		
Q_g	Total gate Charge	$V_{GS} = 10V$ $V_{Bus} = 300V$ $I_D = 66A$		510		nC
Q_{gs}	Gate – Source Charge			86		
Q_{gd}	Gate – Drain Charge			270		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching @ 125°C		21		ns
T_r	Rise Time	$V_{GS} = 15V$		30		
$T_{d(off)}$	Turn-off Delay Time	$V_{Bus} = 400V$		240		
T_f	Fall Time	$I_D = 66A$ $R_G = 2.5\Omega$		52		
E_{off}	Turn-off Switching Energy	Inductive switching $V_{GS} = 15V ; I_D = 66A$ $V_{Bus} = 400V ; R_G = 2.5\Omega$	$T_j = 25^\circ C$	1.18		mJ
			$T_j = 125^\circ C$	1.45		
R_{thJC}	Junction to Case Thermal Resistance				0.3	$^\circ C/W$

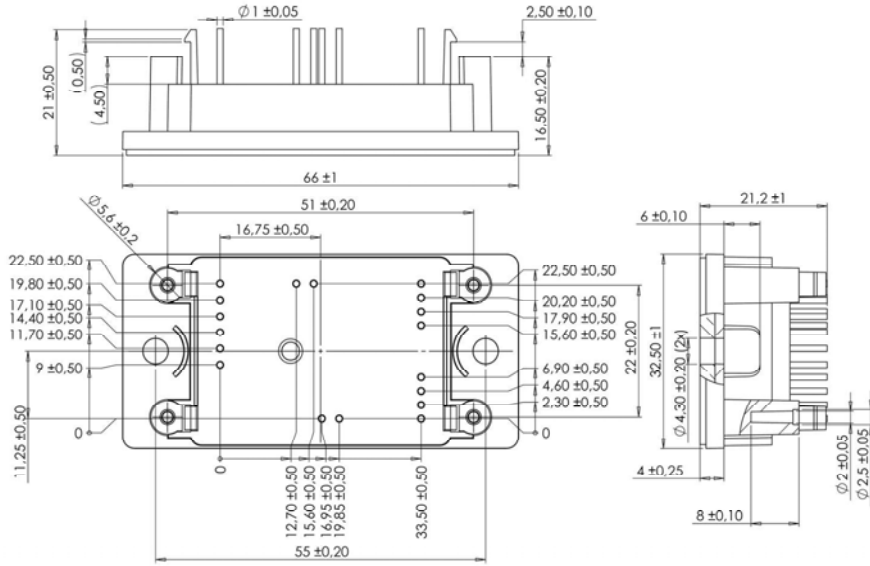
Source - Drain diode ratings and characteristics

<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)	$T_c = 25^\circ C$		66		A
		$T_c = 80^\circ C$		49		
V_{SD}	Diode Forward Voltage	$V_{GS} = 0V, I_S = -66A$			1.2	V
dv/dt	Peak Diode Recovery				40	V/ns
t_{rr}	Reverse Recovery Time	$I_S = -66A$ $V_R = 400V$	$T_j = 125^\circ C$	350		ns
Q_{rr}	Reverse Recovery Charge	$di_S/dt = 200A/\mu s$	$T_j = 125^\circ C$	5.4		μC

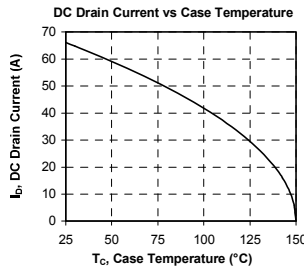
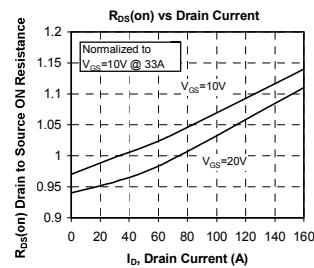
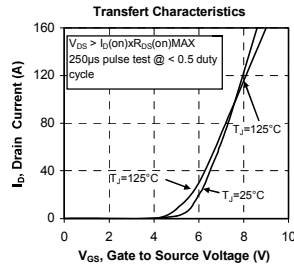
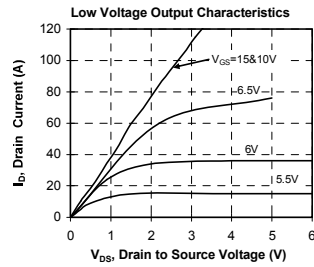
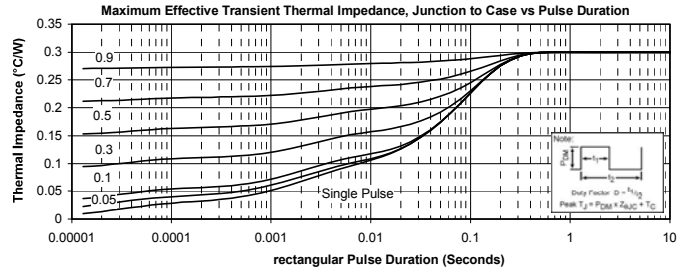
Thermal and package characteristics

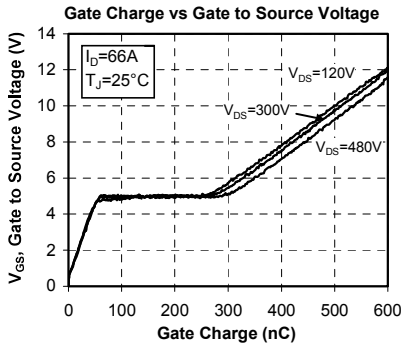
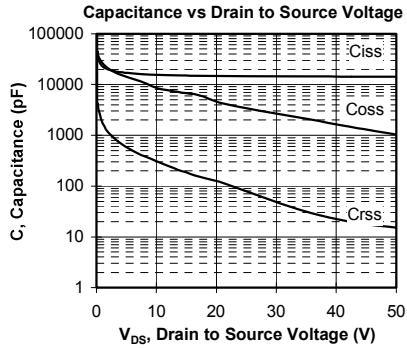
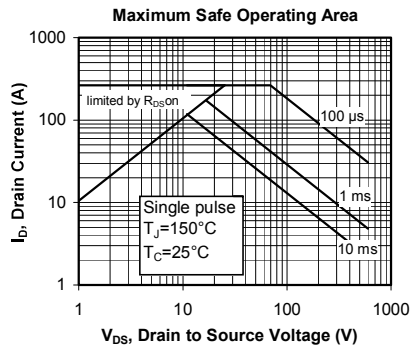
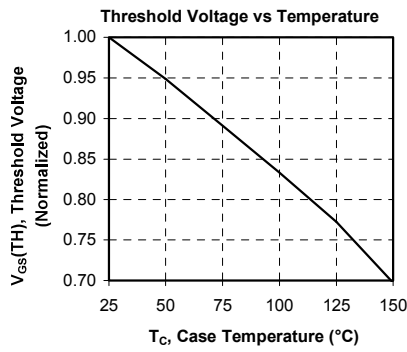
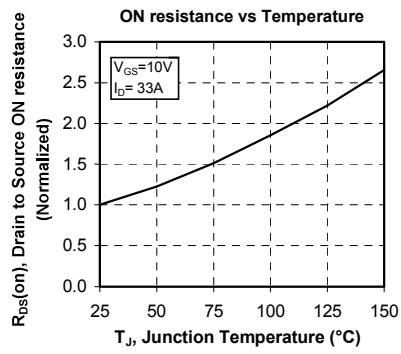
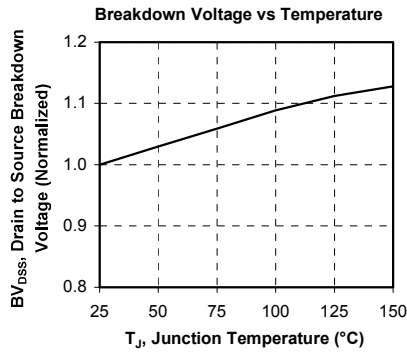
<i>Symbol</i>	<i>Characteristic</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>	
V_{ISOL}	RMS Isolation Voltage, any terminal to case $t = 1$ min, 50/60Hz	4000			V	
T_J	Operating junction temperature range	-40		150	$^\circ C$	
T_{STG}	Storage Temperature Range	-40		125		
T_C	Operating Case Temperature	-40		100		
Torque	Mounting torque	To heatsink	M4	2	3	N.m
Wt	Package Weight				75	g

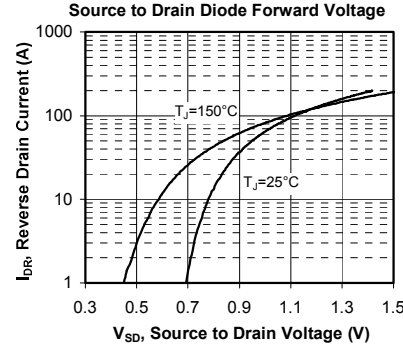
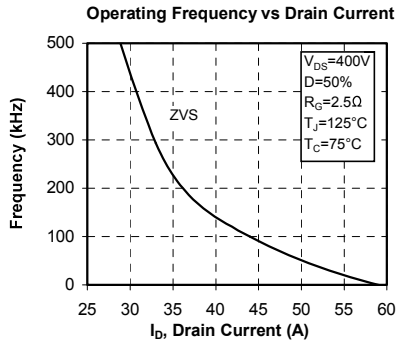
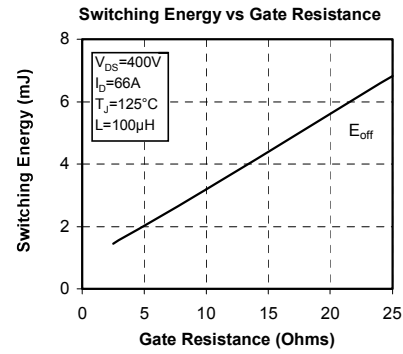
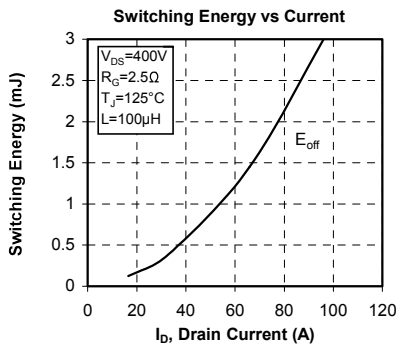
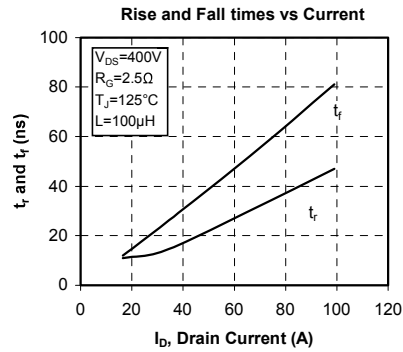
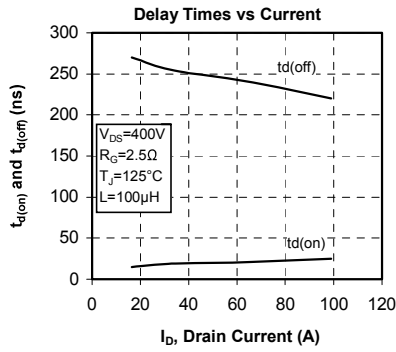
SP2 Package outline (dimensions in mm)



Typical Performance Curve







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