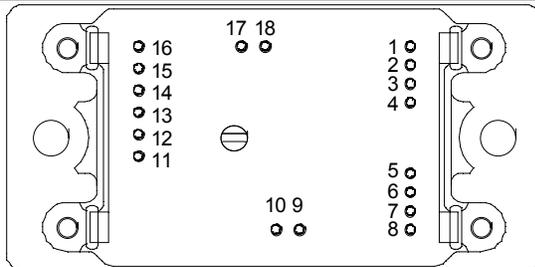
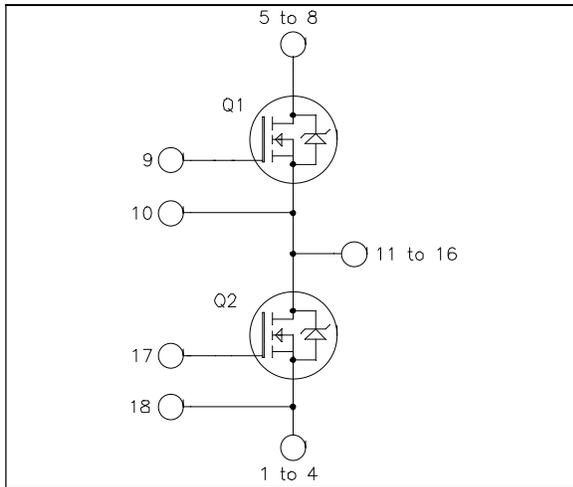


Phase leg Super Junction MOSFET Power Module

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



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	mΩ
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} = ±20 V, 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 V _{GS} = 15V V _{Bus} = 400V I _D = 66A R _G = 2.5Ω		21		ns
T _r	Rise Time			30		
T _{d(off)}	Turn-off Delay Time			240		
T _f	Fall Time			52		
E _{off}	Turn-off Switching Energy	Inductive switching V _{GS} = 15V ; I _D = 66A V _{Bus} = 400V ; R _G = 2.5Ω	T _j = 25°C	1.18		mJ
			T _j = 125°C	1.45		
R _{thJC}	Junction to Case Thermal Resistance				0.3	°C/W

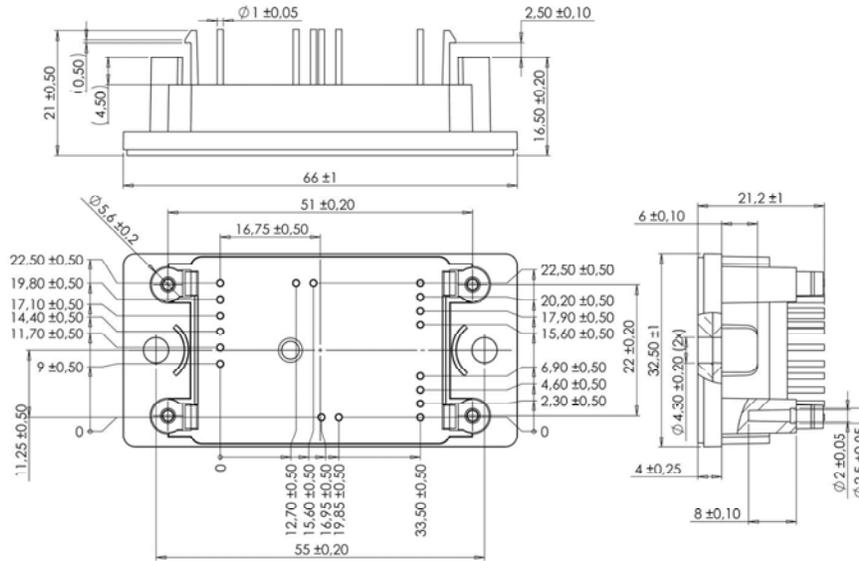
Source - Drain diode ratings and characteristics

<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°C	66		A
			T _c = 80°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°C	350		ns
Q _{rr}	Reverse Recovery Charge	di _S /dt = 200A/μs	T _j = 125°C	5.4		μC

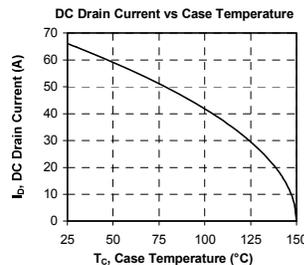
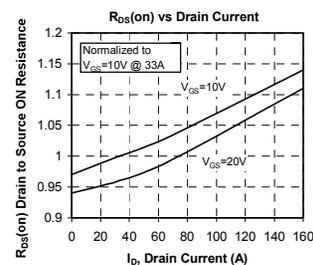
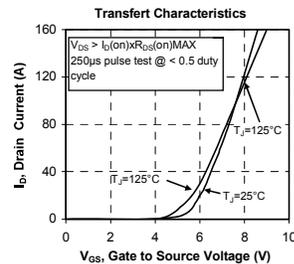
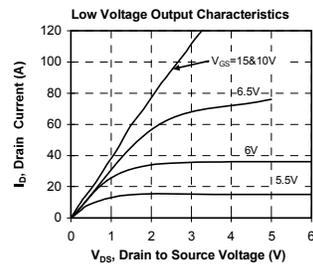
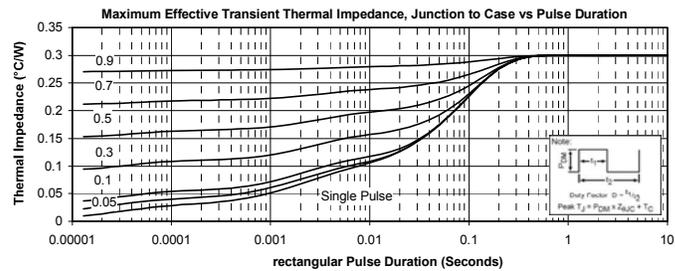
Thermal and package characteristics

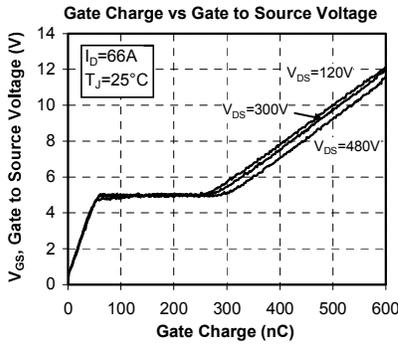
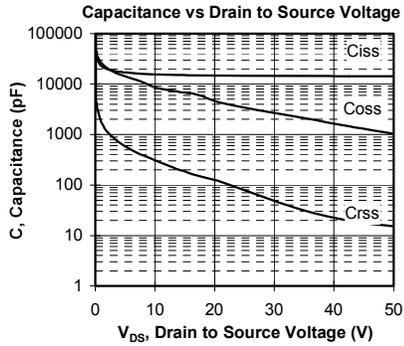
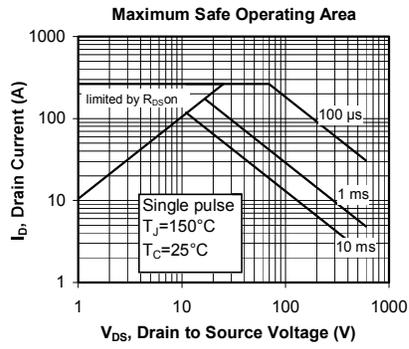
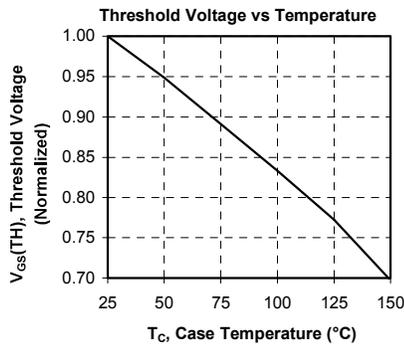
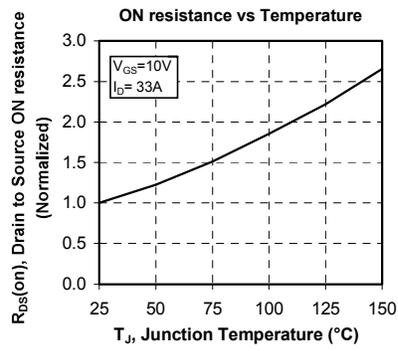
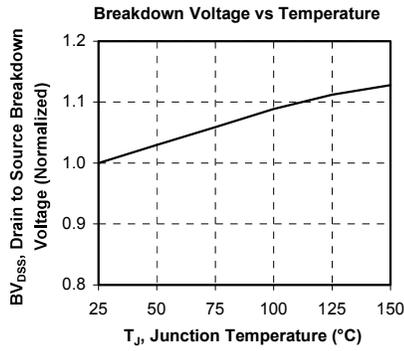
<i>Symbol</i>	<i>Characteristic</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>	
V _{ISOL}	RMS Isolation Voltage, any terminal to case t = 1 min, 50/60Hz	4000			V	
T _J	Operating junction temperature range	-40		150	°C	
T _{STG}	Storage Temperature Range	-40		125		
T _C	Operating Case Temperature	-40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

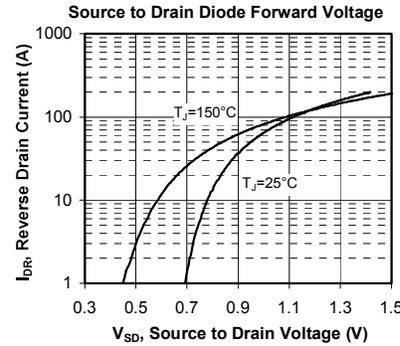
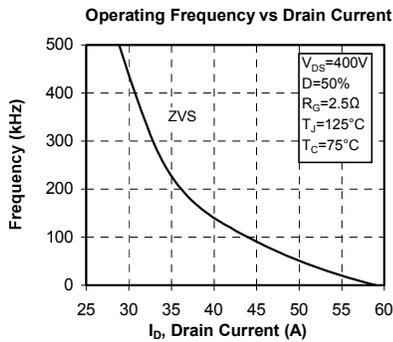
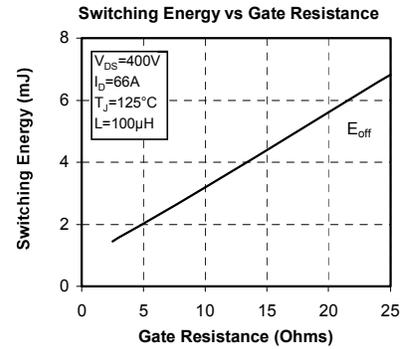
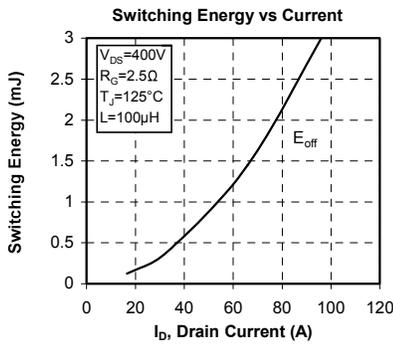
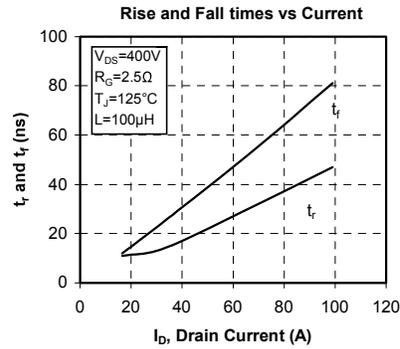
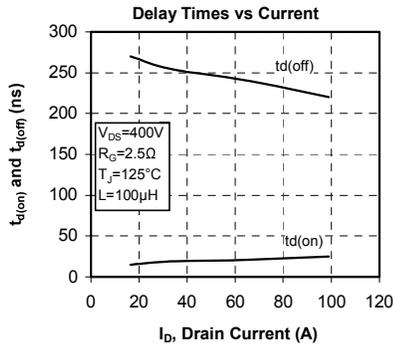
SP2 Package outline (dimensions in mm)



Typical Performance Curve







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