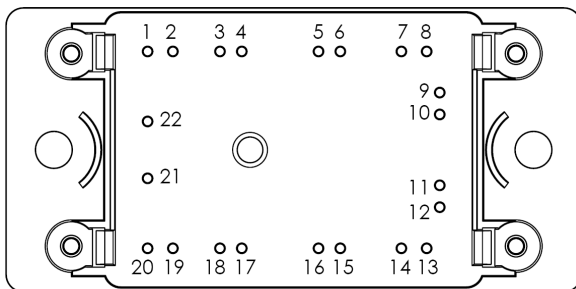
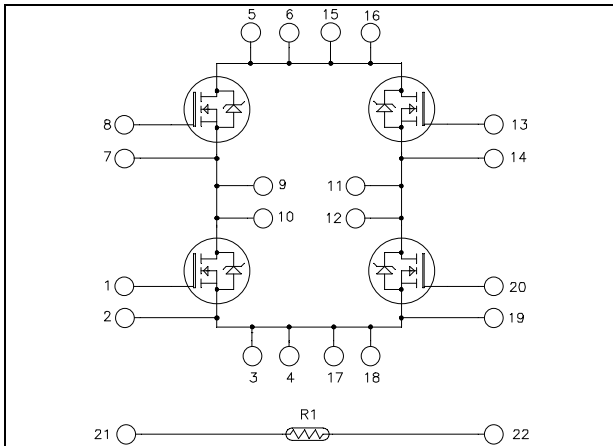


**Full bridge  
Super Junction MOSFET  
Power Module**

**$V_{DSS} = 600V$**   
 **$R_{DSon} = 83m\Omega$  max @  $T_j = 25^\circ C$**   
 **$I_D = 36A$  @  $T_c = 25^\circ C$**



Pins 5/6/15/16 ; 3/4/17/18 ; 9/10 ; 11/12 must be shorted together

### Application

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

### Features

- CoolMOST™
  - Ultra low  $R_{DSon}$
  - Low Miller capacitance
  - Ultra low gate charge
  - Avalanche energy rated
  - Fast intrinsic diode
  - Very rugged
- Very low stray inductance
- Internal thermistor for temperature monitoring
- High level of integration

### Benefits

- Outstanding performance at high frequency operation
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Solderable terminals both for power and signal for easy PCB mounting
- Low profile
- RoHS Compliant

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

### Absolute maximum ratings (per CoolMOST™)

Symbol	Parameter	Max ratings	Unit
$V_{DSS}$	Drain - Source Breakdown Voltage	600	V
$I_D$	Continuous Drain Current	$T_c = 25^\circ C$	36
		$T_c = 80^\circ C$	27
$I_{DM}$	Pulsed Drain current	100	A
$V_{GS}$	Gate - Source Voltage	$\pm 20$	V
$R_{DSon}$	Drain - Source ON Resistance	83	$m\Omega$
$P_D$	Maximum Power Dissipation	$T_c = 25^\circ C$	250
$I_{AR}$	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](http://www.microsemi.com)

**Electrical Characteristics** (per CoolMOST™)

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 600V			50	μA
		T <sub>j</sub> = 25°C				
		V <sub>GS</sub> = 0V, V <sub>DS</sub> = 600V			5	mA
		T <sub>j</sub> = 125°C				
R <sub>DS(on)</sub>	Drain – Source on Resistance	V <sub>GS</sub> = 10V, I <sub>D</sub> = 18A			83	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 3mA	3	4	5	V
I <sub>GSS</sub>	Gate – Source Leakage Current	V <sub>GS</sub> = ±20 V, V <sub>DS</sub> = 0V			±100	nA

**Dynamic Characteristics** (per CoolMOST™)

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0V		7290		pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> = 25V		1735		
C <sub>rss</sub>	Reverse Transfer Capacitance	f = 1MHz		41		
Q <sub>g</sub>	Total gate Charge	V <sub>GS</sub> = 10V		255		nC
Q <sub>gs</sub>	Gate – Source Charge	V <sub>Bus</sub> = 300V		43		
Q <sub>gd</sub>	Gate – Drain Charge	I <sub>D</sub> = 36A		135		
T <sub>d(on)</sub>	Turn-on Delay Time	<b>Inductive Switching @ 125°C</b> V <sub>GS</sub> = 15V V <sub>Bus</sub> = 400V I <sub>D</sub> = 36A R <sub>G</sub> = 5Ω		21		ns
T <sub>r</sub>	Rise Time			30		
T <sub>d(off)</sub>	Turn-off Delay Time			240		
T <sub>f</sub>	Fall Time			52		
E <sub>off</sub>	Turn-off Switching Energy	<b>Inductive switching</b> V <sub>GS</sub> = 15V, I <sub>D</sub> = 36A R <sub>G</sub> = 5Ω, V <sub>Bus</sub> = 400V	T <sub>j</sub> = 25°C		590	μJ
E <sub>off</sub>	Turn-off Switching Energy		T <sub>j</sub> = 125°C		725	
R <sub>thJC</sub>	Junction to Case Thermal Resistance				0.5	°C/W

**Source - Drain diode ratings and characteristics** (per CoolMOST™)

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I <sub>S</sub>	Continuous Source current (Body diode)		T <sub>c</sub> = 25°C		36	A
			T <sub>c</sub> = 80°C		27	
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> = 0V, I <sub>S</sub> = - 36A			1.2	V
dv/dt	Peak Diode Recovery				40	V/ns
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> = - 36A V <sub>R</sub> = 400V			350	ns
Q <sub>rr</sub>	Reverse Recovery Charge	di <sub>S</sub> /dt = 200A/μs			5.4	μC

## Temperature sensor NTC

Symbol	Characteristic	Min	Typ	Max	Unit
R <sub>25</sub>	Resistance @ 25°C		22		kΩ
ΔR <sub>25</sub> /R <sub>25</sub>	Resistance tolerance			5	%
ΔB/B	Beta tolerance			3	
B <sub>25/100</sub>	T <sub>25</sub> = 298.16 K		3980		K

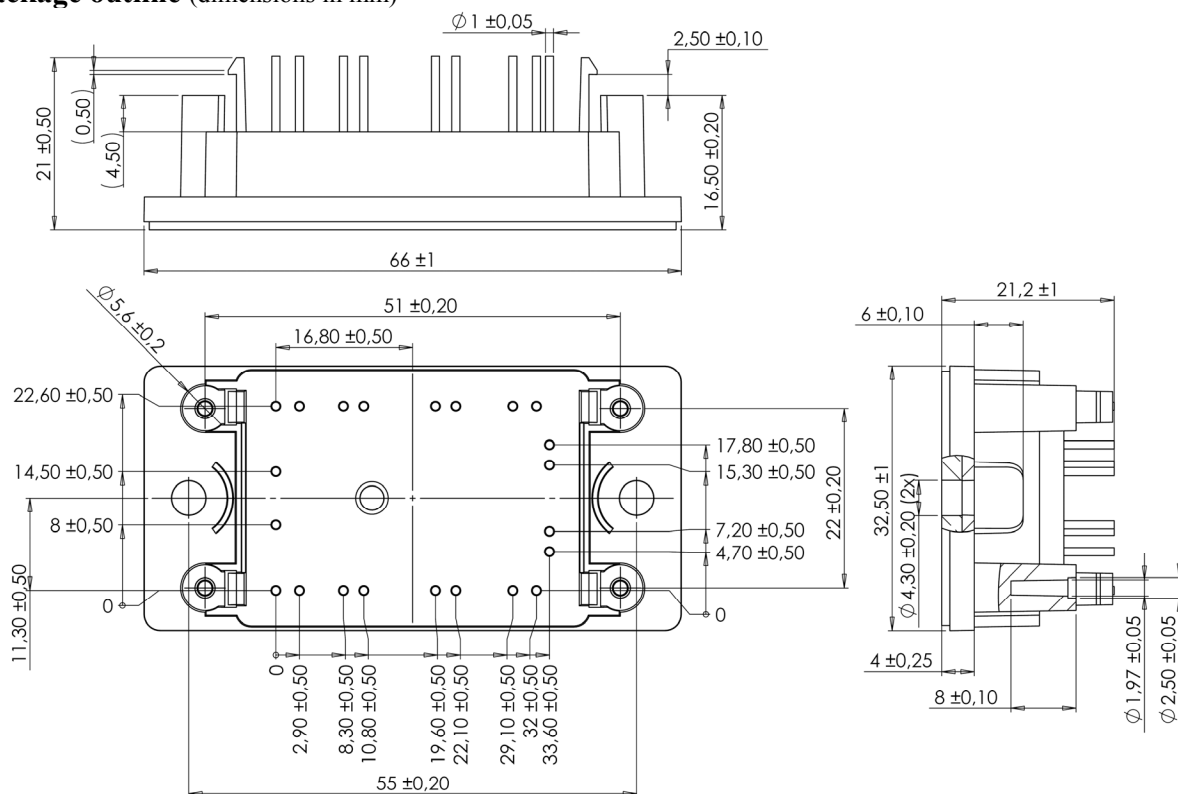
$$R_T = \frac{R_{25}}{\exp\left[B_{25/100}\left(\frac{1}{T_{25}} - \frac{1}{T}\right)\right]}$$

T: Thermistor temperature  
 R<sub>T</sub>: Thermistor value at T

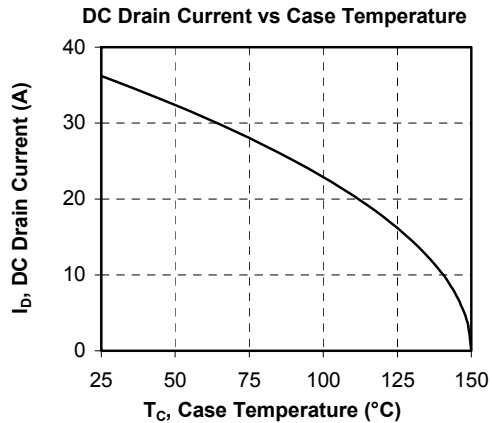
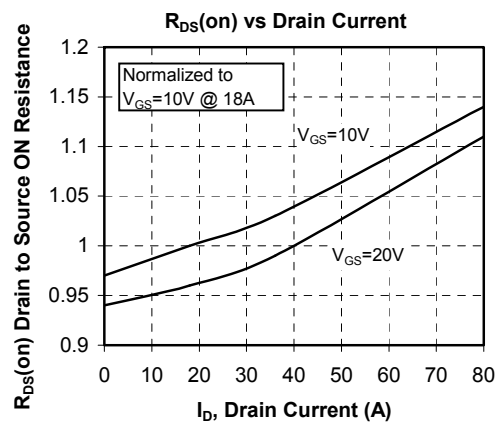
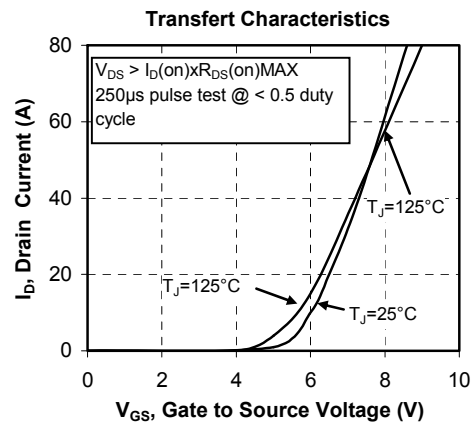
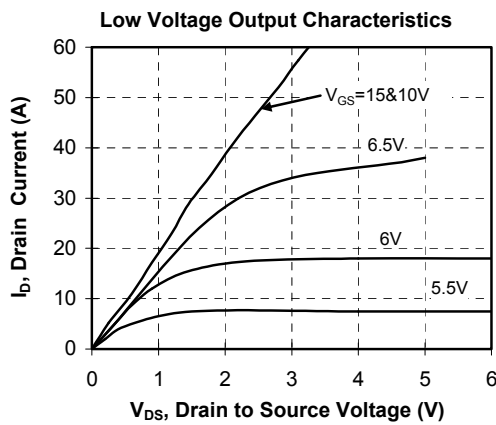
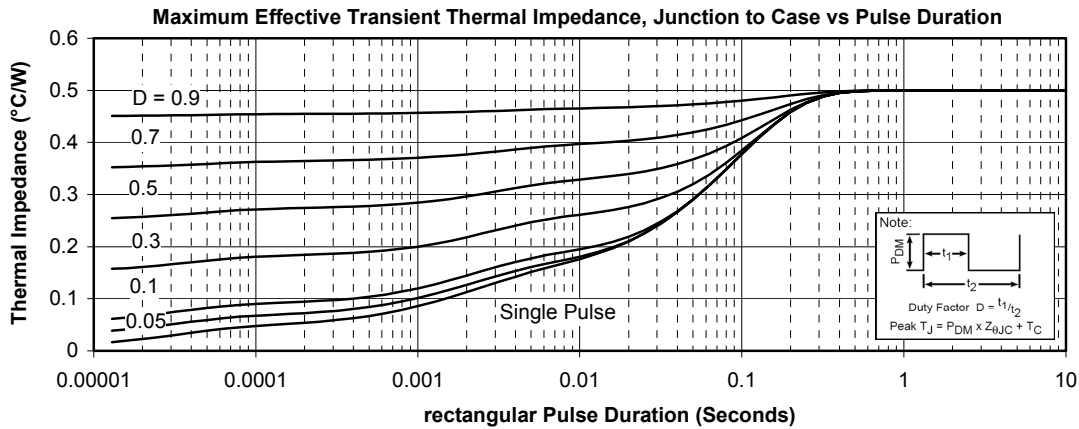
## Thermal and package characteristics

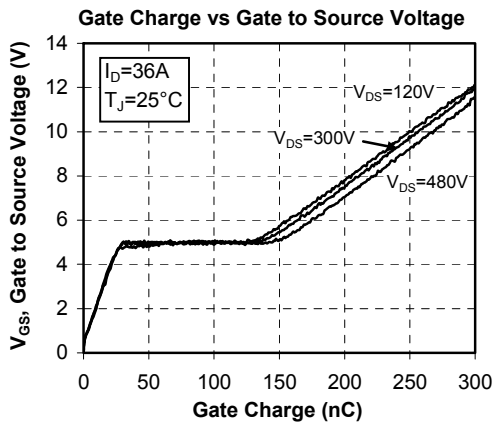
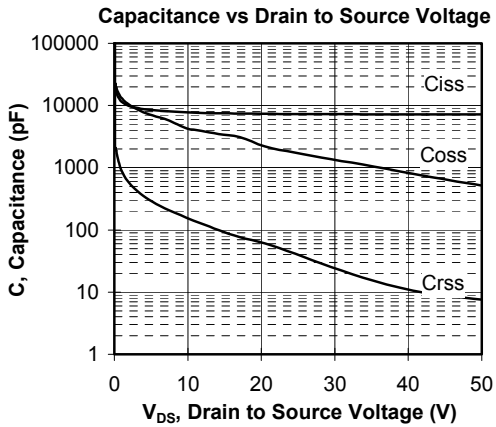
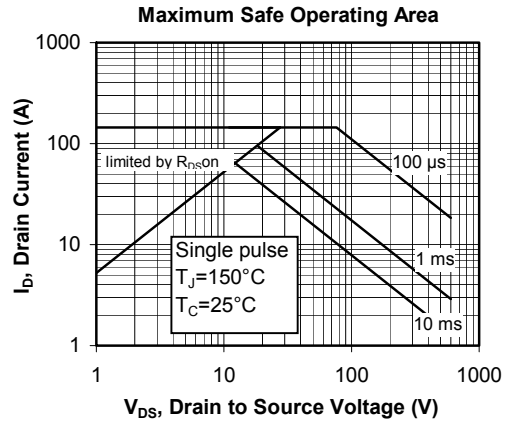
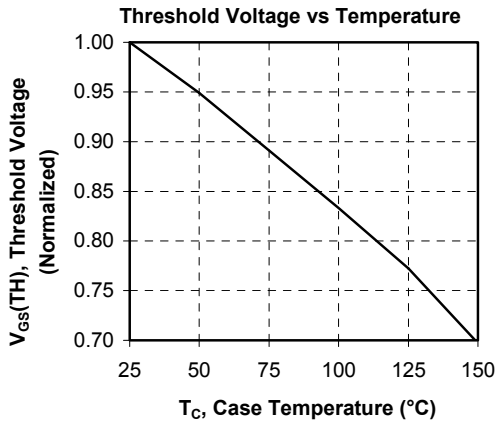
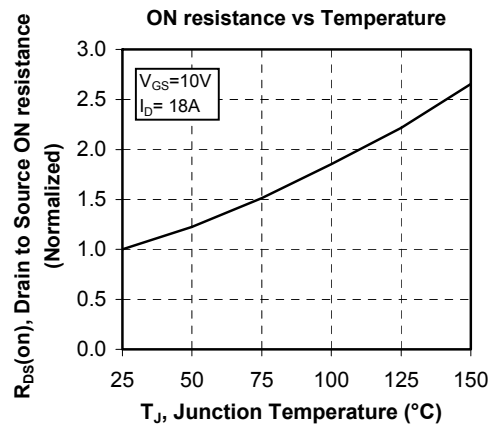
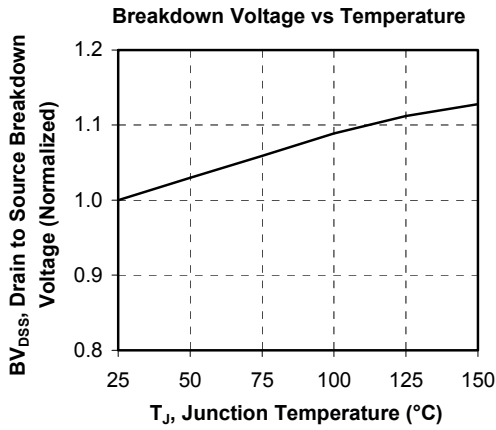
Symbol	Characteristic	Min	Typ	Max	Unit	
V <sub>ISOL</sub>	RMS Isolation Voltage, any terminal to case t=1 min, 50/60Hz	4000			V	
T <sub>J</sub>	Operating junction temperature range	-40		150	°C	
T <sub>STG</sub>	Storage Temperature Range	-40		125		
T <sub>C</sub>	Operating Case Temperature	-40		100		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

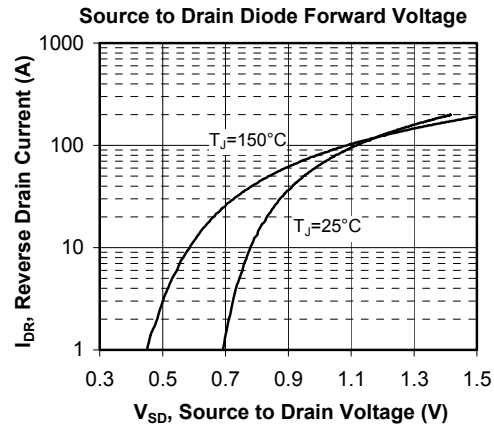
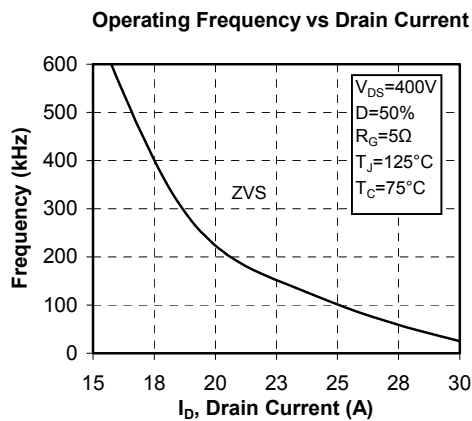
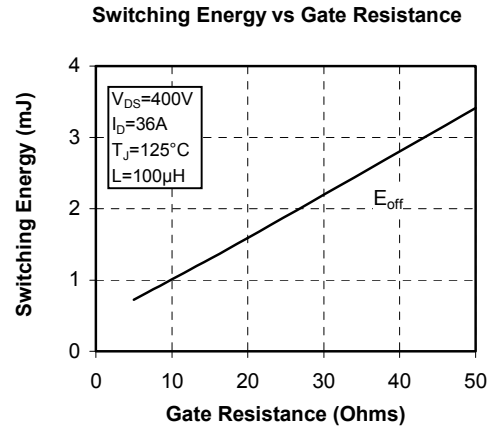
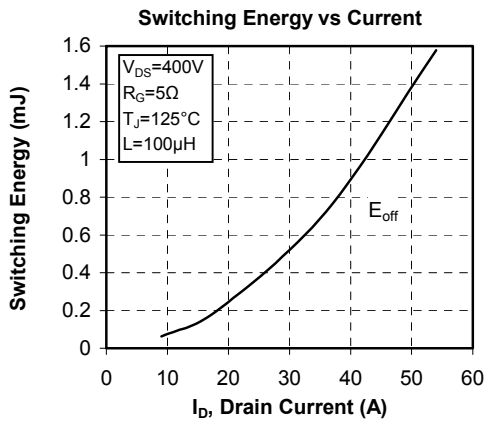
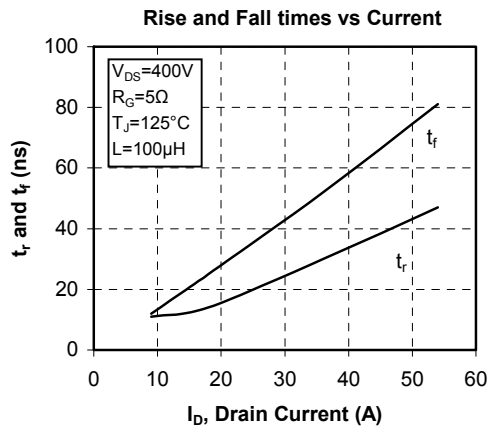
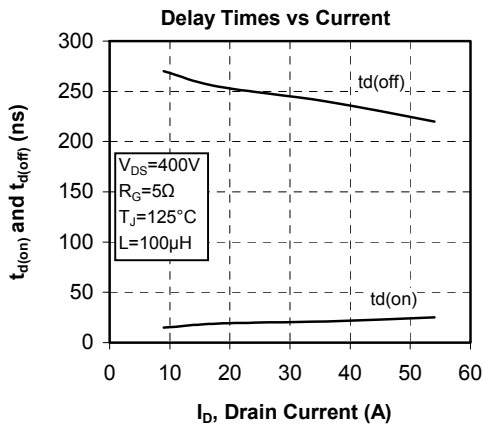
## Package outline (dimensions in mm)



## Typical Performance Curve (per CoolMOS™)







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