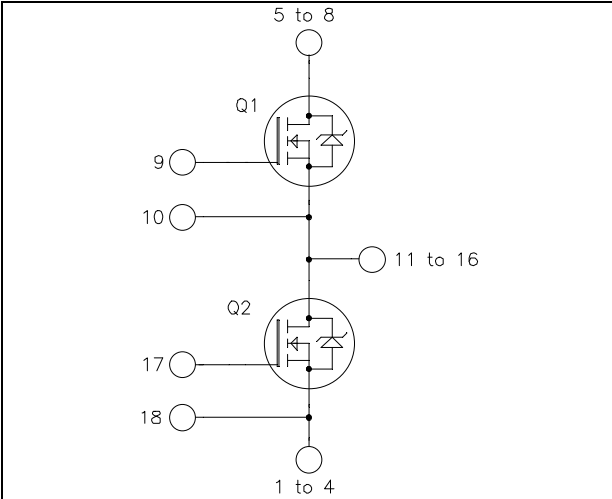


**Phase leg  
Super Junction MOSFET  
Power Module**

**$V_{DSS} = 600V$**   
 **$R_{DSon} = 24m\Omega \text{ max @ } T_j = 25^\circ C$**   
 **$I_D = 95A \text{ @ } T_c = 25^\circ C$**

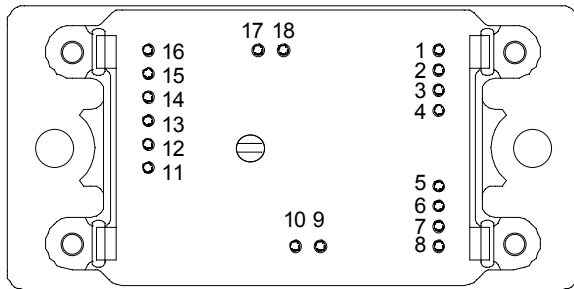


**Application**

- 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

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**

Symbol	Parameter	Max ratings	Unit
$V_{DSS}$	Drain - Source Breakdown Voltage	600	V
$I_D$	Continuous Drain Current	$T_c = 25^\circ C$	95
		$T_c = 80^\circ C$	70
$I_{DM}$	Pulsed Drain current	260	
$V_{GS}$	Gate - Source Voltage	$\pm 20$	V
$R_{DSon}$	Drain - Source ON Resistance	24	$m\Omega$
$P_D$	Maximum Power Dissipation	$T_c = 25^\circ C$	462
$I_{AR}$	Avalanche current (repetitive and non repetitive)	15	A
$E_{AR}$	Repetitive Avalanche Energy	3	mJ
$E_{AS}$	Single Pulse Avalanche Energy	1900	

**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**

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			350	μA
R <sub>DS(on)</sub>	Drain – Source on Resistance	V <sub>GS</sub> = 10V, I <sub>D</sub> = 47.5A			24	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 5mA	2.1	3	3.9	V
I <sub>GSS</sub>	Gate – Source Leakage Current	V <sub>GS</sub> = ±20 V, V <sub>DS</sub> = 0V			200	nA

**Dynamic Characteristics**

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0V ; V <sub>DS</sub> = 25V		14.4		nF
C <sub>oss</sub>	Output Capacitance	f = 1MHz		17		
Q <sub>g</sub>	Total gate Charge	V <sub>GS</sub> = 10V V <sub>Bus</sub> = 300V I <sub>D</sub> = 95A		300		nC
Q <sub>gs</sub>	Gate – Source Charge			68		
Q <sub>gd</sub>	Gate – Drain Charge			102		
T <sub>d(on)</sub>	Turn-on Delay Time	<b>Inductive Switching (125°C)</b> V <sub>GS</sub> = 10V V <sub>Bus</sub> = 400V I <sub>D</sub> = 95A R <sub>G</sub> = 2.5Ω		21		ns
T <sub>r</sub>	Rise Time			30		
T <sub>d(off)</sub>	Turn-off Delay Time			100		
T <sub>f</sub>	Fall Time			45		
E <sub>off</sub>	Turn-off Switching Energy	<b>Inductive switching</b> V <sub>GS</sub> = 10V ; V <sub>Bus</sub> = 400V I <sub>D</sub> = 95A ; R <sub>G</sub> = 2.5Ω	T <sub>j</sub> = 25°C	1040		μJ
			T <sub>j</sub> = 125°C	1270		
R <sub>thJC</sub>	Junction to Case Thermal Resistance				0.27	°C/W

**Source - Drain diode ratings and characteristics**

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I <sub>S</sub>	Continuous Source current (Body diode)		T <sub>c</sub> = 25°C		95	A
			T <sub>c</sub> = 80°C		70	
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> = 0V, I <sub>S</sub> = - 95A			1.2	V
dv/dt	Peak Diode Recovery ❶				4	V/ns
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> = - 95A V <sub>R</sub> = 350V di <sub>S</sub> /dt = 200A/μs	T <sub>j</sub> = 25°C		600	ns
Q <sub>rr</sub>	Reverse Recovery Charge		T <sub>j</sub> = 25°C		34	μC

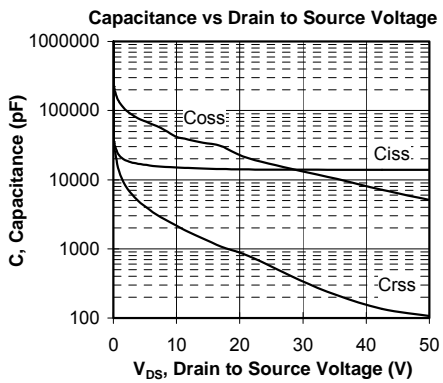
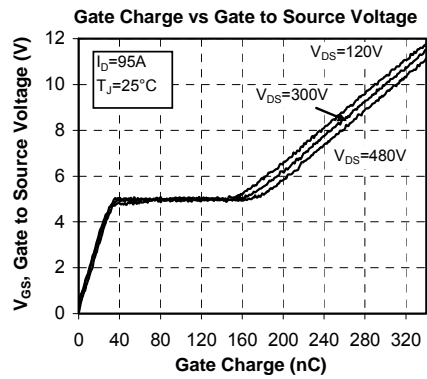
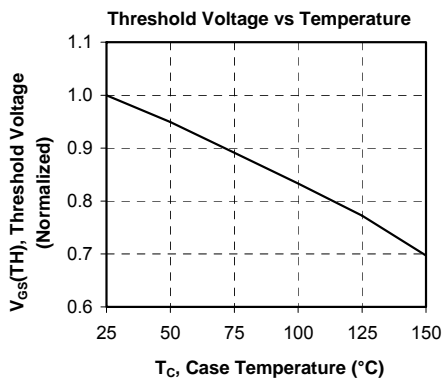
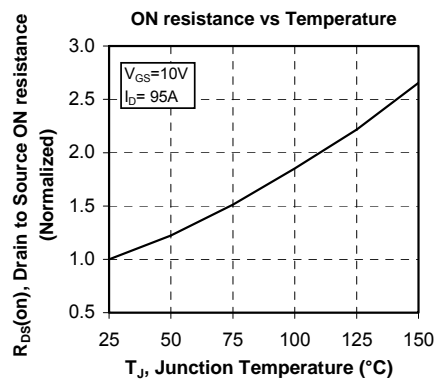
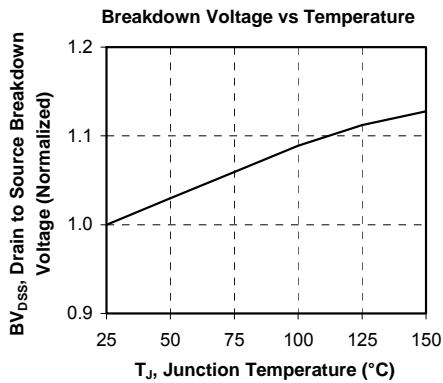
❶ dv/dt numbers reflect the limitations of the circuit rather than the device itself.

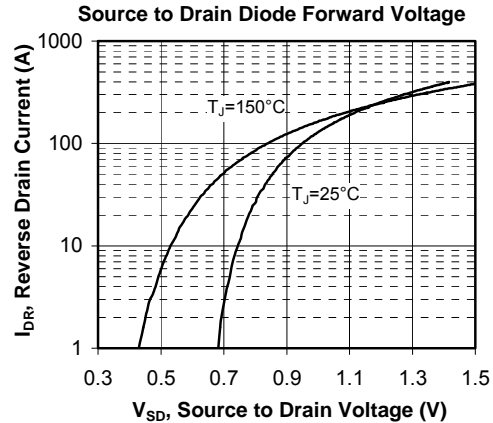
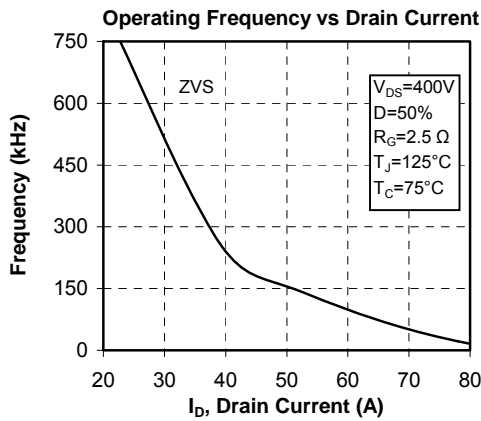
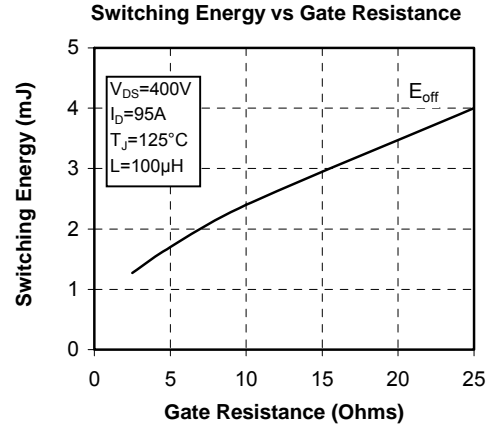
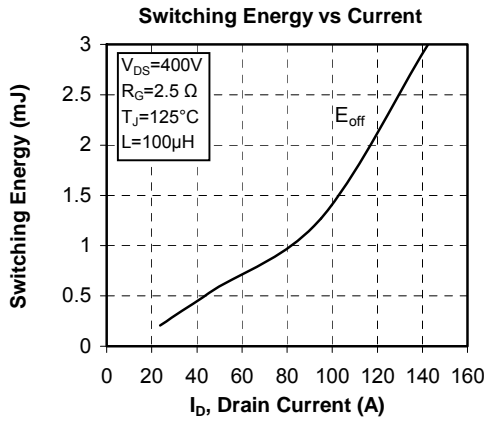
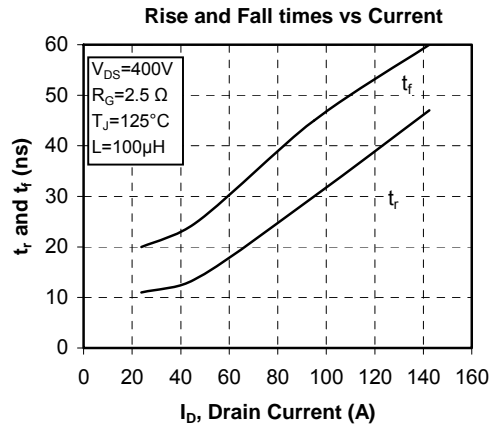
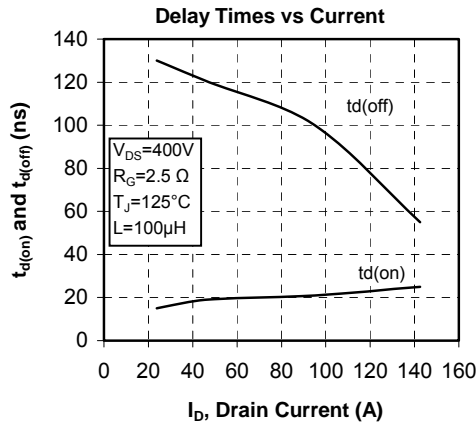
$$I_S \leq -95A \quad di/dt \leq 200A/\mu s \quad V_R \leq V_{DSS} \quad T_j \leq 150^\circ C$$

**Thermal and package characteristics**

Symbol	Characteristic	Min	Typ	Max	Unit	
V <sub>ISOL</sub>	RMS Isolation Voltage, any terminal to case t = 1 min, I <sub>isol</sub> < 1mA, 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







“COOLMOS™ comprise a new family of transistors developed by Infineon Technologies AG. “COOLMOS” is a trademark of Infineon Technologies AG”.

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