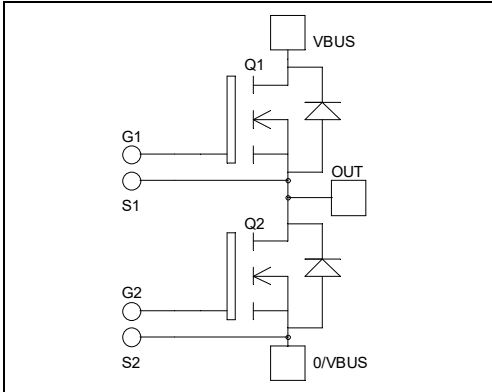


Phase leg MOSFET Power Module

$V_{DSS} = 100V$
 $R_{DSon} = 400\mu\Omega^* \text{ max @ } T_j = 25^\circ C$
 $I_D = 1410A^* \text{ @ } T_c = 25^\circ C$

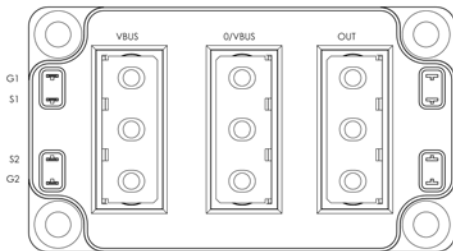


Application

- AC Switches
- Switched Mode Power Supplies
- Uninterruptible Power Supplies

Features

- MOSFET
 - Low R_{DSon}
 - Low input and Miller capacitance
 - Low gate charge
 - Fast intrinsic reverse diode
 - Avalanche energy rated
 - Very rugged
 - Switching frequency from 10 to 20 kHz
- Kelvin source for easy drive
- Very low stray inductance
- M5 power connectors
- AlN substrate for improved thermal performance
- 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 Voltage	100	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	1410*
		$T_c = 80^\circ C$	1125*
I_{DM}	Pulsed Drain current	4500	A
V_{GS}	Gate - Source Voltage	± 20	V
R_{DSon}	Drain - Source ON Resistance	400	$\mu\Omega$
P_D	Power Dissipation	$T_c = 25^\circ C$	1875
E_{AS}	Single Pulse Avalanche Energy	330	mJ

* Additional current limitation by external leads and switching frequency, see in the next electrical dynamic characteristics definitions

 **CAUTION:** These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

Electrical Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} = 0V, V _{DS} = 100V			250	μA
		V _{GS} = 0V, V _{DS} = 100V			2500	
R _{DS(on)}	Drain – Source on Resistance	V _{GS} = 10V I _D = 600A	Die level	330	400	μΩ
R _{pin to die} ❶				150		μΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} = V _{DS} , I _D = 2.5 mA	2		4	V
I _{GSS}	Gate – Source Leakage Current	V _{GS} = ±20 V, V _{DS} = 0V			±1	μA

❶ V_{DS} = I_D * (R_{DS(on)} + R_{pin to die})

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} = 50V f = 1 MHz		96.2		nF
C _{oss}	Output Capacitance			6.7		
C _{rss}	Reverse Transfer Capacitance			2.5		
Q _g	Total gate Charge	V _{GS} = 10V V _{Bus} = 50V I _D = 750A		1500		nC
Q _{gs}	Gate – Source Charge			350		
Q _{gd}	Gate – Drain Charge			430		
T _{d(on)}	Turn-on Delay Time	V _{GS} = -5/10V V _{Bus} = 40V I _D = 600A R _{Gon} = 27Ω ; R _{Goff} = 12Ω		1500		ns
T _r	Rise Time			550		
T _{d(off)}	Turn-off Delay Time			1600		
T _f	Fall Time			320		
R _{thJC}	Junction to Case Thermal Resistance				0.08	°C/W

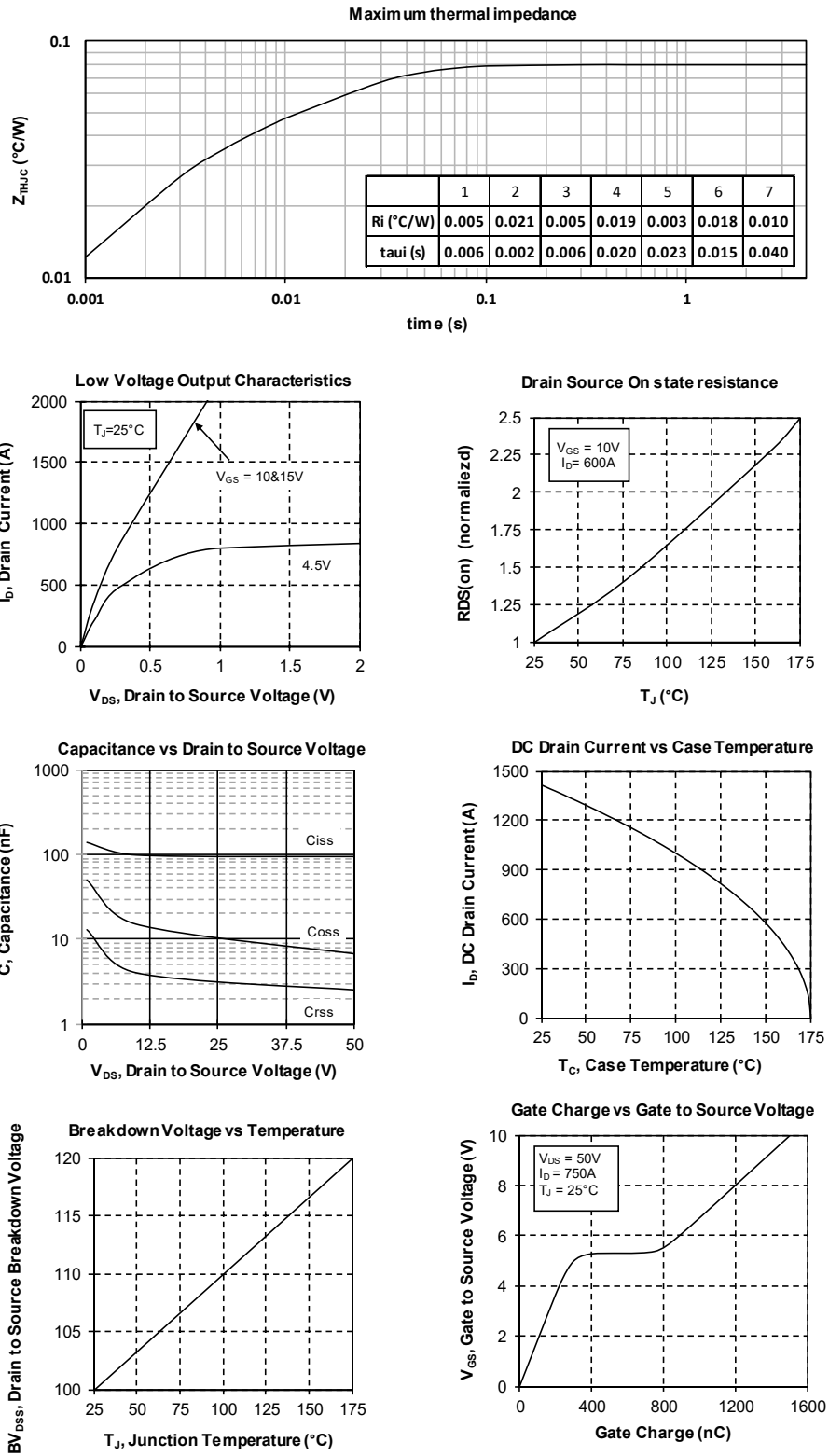
Source - Drain diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V _{SD}	Diode Forward Voltage	V _{GS} = 0V, I _S = 750A			1.3	V
t _{rr}	Reverse Recovery Time	I _S = 750A V _R = 85V di _S /dt = 1000A/μs	T _j = 25°C	50		ns
			T _j = 125°C	60		
Q _{rr}	Reverse Recovery Charge		T _j = 25°C	1		μC
			T _j = 125°C	1.4		

Thermal and package characteristics

Symbol	Characteristic	Min	Max	Unit		
V _{ISOL}	RMS Isolation Voltage, any terminal to case t = 1 min, 50/60Hz	4000		V		
T _J	Operating junction temperature range	-40	175	°C		
T _{JOP}	Recommended junction temperature under switching conditions	-40	T _{Jmax} -25			
T _{STG}	Storage Temperature Range	-40	125			
T _C	Operating Case Temperature	-40	125			
Torque	Mounting torque	To heatsink	M6	3	5	N.m
		For terminals	M5	2		
Wt	Package Weight			300		g

Typical Performance Curve



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