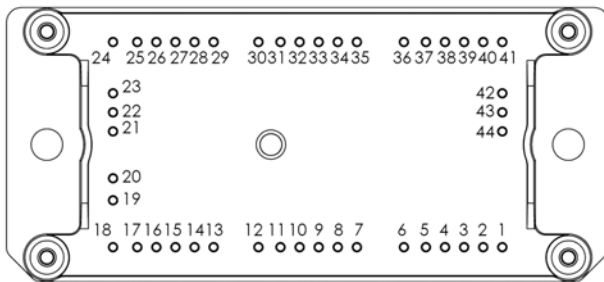
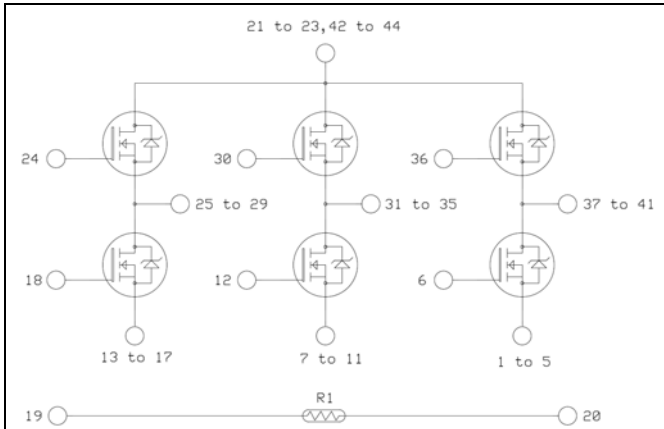


Three phase leg MOSFET Power Module

$V_{DSS} = 200V$
 $R_{DSon} = 9.7m\Omega \text{ max @ } T_j = 25^\circ C$
 $I_D = 108A \text{ @ } T_c = 25^\circ C$



All multiple inputs and outputs must be shorted together
 Example: 21/22/23 ; 25/26/27/28/29

Application

- Motor control

Features

- MOSFET
 - Low R_{DSon}
 - Low input and Miller capacitance
 - Low gate charge
 - Fast intrinsic reverse diode
 - Avalanche energy rated
 - Very rugged

- Low stray inductance
- High level of integration
- Internal thermistor for temperature monitoring

Benefits

- Stable temperature behavior
- Very rugged
- 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 (Per switch)

Symbol	Parameter	Max ratings	Unit
V_{DSS}	Drain - Source Voltage	200	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	108
		$T_c = 80^\circ C$	83
I_{DM}	Pulsed Drain current	430	A
V_{GS}	Gate - Source Voltage	± 20	V
R_{DSon}	Drain - Source ON Resistance	9.7	$m\Omega$
P_D	Power Dissipation	$T_c = 25^\circ C$	341
E_{AS}	Single Pulse Avalanche Energy	760	mJ

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

Electrical Characteristics (Per switch)

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} = 0V, V _{DS} = 200V			50	μA
R _{DS(on)}	Drain – Source on Resistance	V _{GS} = 10V ; I _D = 81A		8	9.7	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} = V _{DS} , I _D = 250μA	3		5	V
I _{GSS}	Gate – Source Leakage Current	V _{GS} = ±20 V, V _{DS} = 0V			±140	nA

Dynamic Characteristics (Per switch)

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C _{iss}	Input Capacitance	V _{GS} = 0V		10.7		nF
C _{oss}	Output Capacitance	V _{DS} = 50V		0.81		
C _{rss}	Reverse Transfer Capacitance	f = 1 MHz		0.16		
Q _g	Total gate Charge	V _{GS} = 10V		161		nC
Q _{gs}	Gate – Source Charge	V _{Bus} = 100V		54		
Q _{gd}	Gate – Drain Charge	I _D = 75A		52		
T _{d(on)}	Turn-on Delay Time	V _{GS} = 10V		41		ns
T _r	Rise Time	V _{Bus} = 130V		105		
T _{d(off)}	Turn-off Delay Time	I _D = 75A		64		
T _f	Fall Time	R _G = 2.7Ω		75		
R _{thJC}	Junction to Case Thermal Resistance				0.44	°C/W

Source - Drain diode ratings and characteristics (Per switch)

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V _{SD}	Diode Forward Voltage	V _{GS} = 0V, I _S = 81A			1.3	V
t _{rr}	Reverse Recovery Time	I _S = 75A V _R = 100V		130		ns
		T _j = 25°C		155		
Q _{rr}	Reverse Recovery Charge	di _S /dt = 100A/μs		633		nC
		T _j = 125°C		944		

Temperature sensor NTC

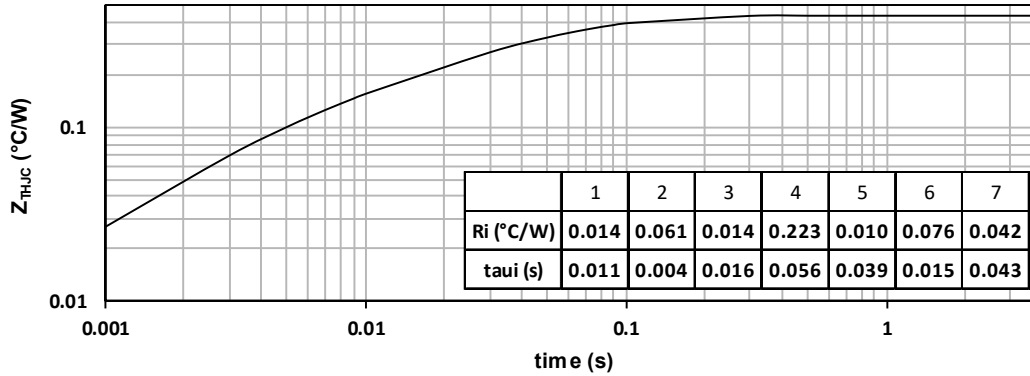
Symbol	Characteristic	Min	Typ	Max	Unit
R ₂₅	Resistance @ 25°C		22		kΩ
ΔR ₂₅ /R ₂₅	Resistance tolerance			5	%
ΔB/B	Beta tolerance			3	
B _{25/100}	T ₂₅ = 298.16 K		3980		K

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

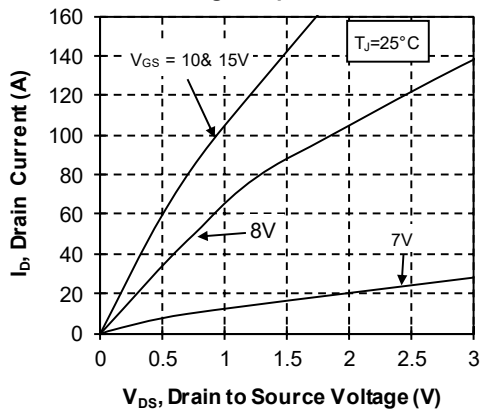
T: Thermistor temperature
R_T: Thermistor value at T

Typical Performance Curve

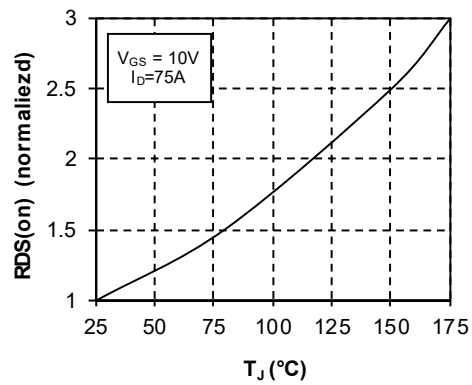
Maximum thermal impedance



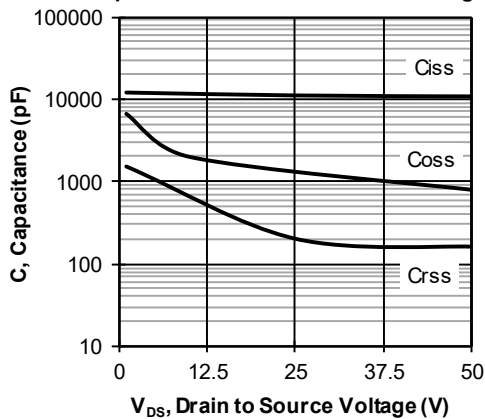
Low Voltage Output Characteristics



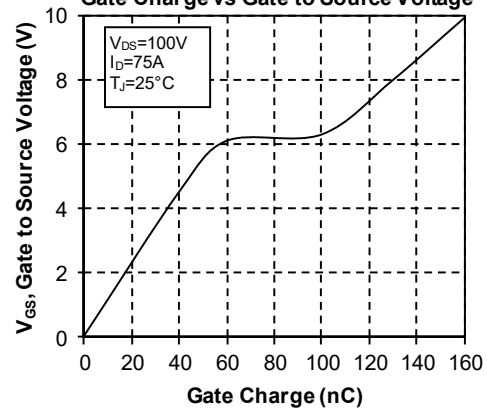
Drain Source On state resistance



Capacitance vs Drain to Source Voltage



Gate Charge vs Gate to Source Voltage



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