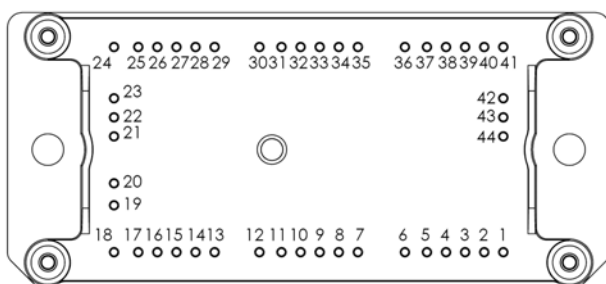
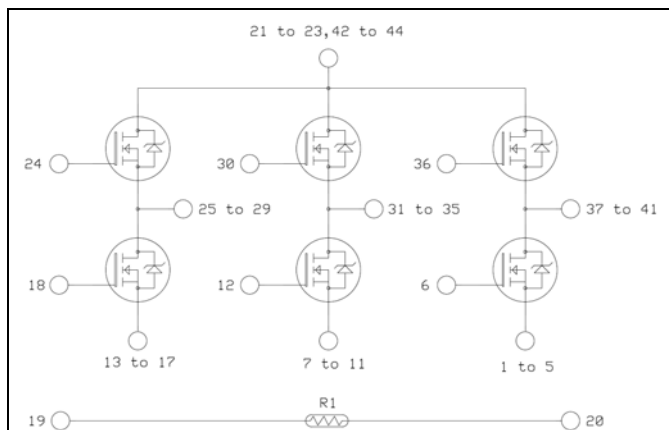


Three phase leg MOSFET Power Module

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



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	$T_c = 25^\circ C$	A
		$T_c = 80^\circ C$	
I_{DM}	Pulsed Drain current	430	
V_{GS}	Gate - Source Voltage	± 20	V
R_{DSon}	Drain - Source ON Resistance	9.7	$m\Omega$
P_D	Power Dissipation	$T_c = 25^\circ C$	W
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	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 250\mu A$	3		5	V
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 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	$f = 1\text{ MHz}$		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	$R_G = 2.7\Omega$		75		
R_{thJC}	Junction to Case Thermal Resistance				0.44	$^{\circ}C/W$

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	$I_S = 75A$ $V_R = 100V$	$T_j = 25^{\circ}C$	130		ns
			$T_j = 125^{\circ}C$	155		
Q_{rr}	Reverse Recovery Charge	$di_S/dt = 100A/\mu s$	$T_j = 25^{\circ}C$	633		nC
			$T_j = 125^{\circ}C$	944		

Temperature sensor NTC

Symbol	Characteristic	Min	Typ	Max	Unit
R_{25}	Resistance @ $25^{\circ}C$		22		$k\Omega$
$\Delta R_{25}/R_{25}$	Resistance tolerance			5	%
$\Delta B/B$	Beta tolerance			3	
$B_{25/100}$	$T_{25} = 298.16\text{ K}$		3980		K

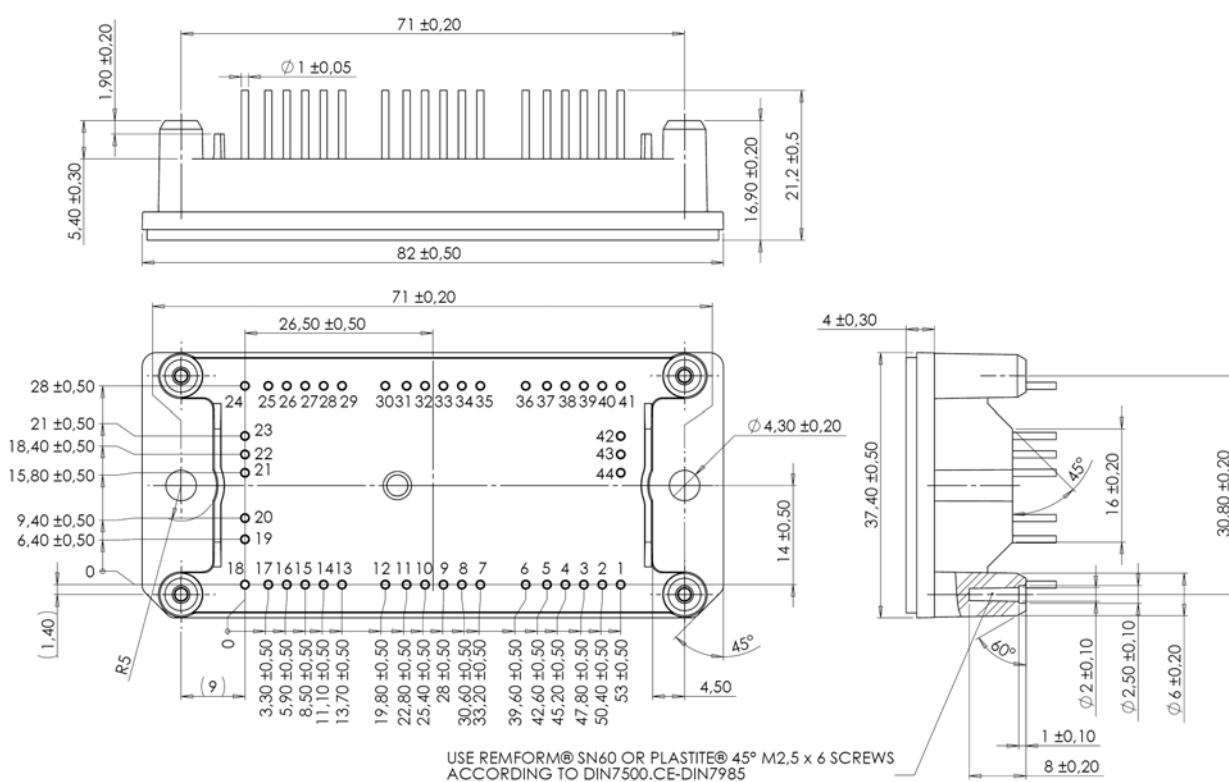
$$R_T = \frac{R_{25}}{\exp \left[B_{25/100} \left(\frac{1}{T_{25}} - \frac{1}{T} \right) \right]}$$

T: Thermistor temperature
Rr: Thermistor value at T

Thermal and package characteristics

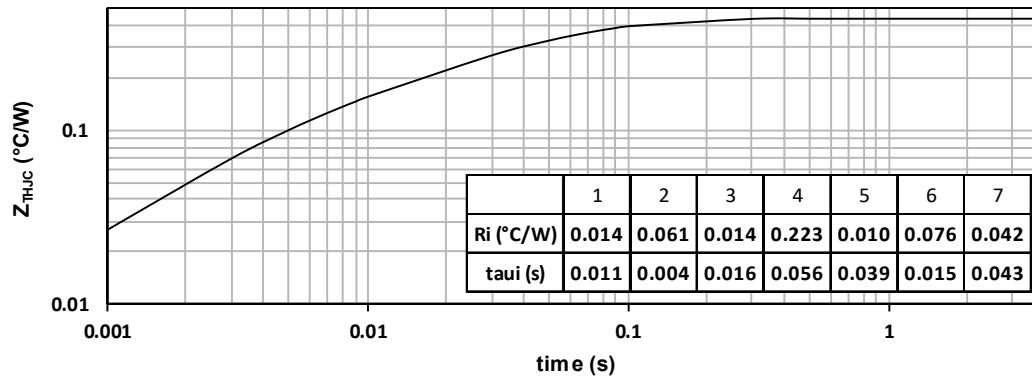
Symbol	Characteristic			Min	Max	Unit
V _{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, 50/60Hz			4000		V
T _J	Operating junction temperature range			-40	175	°C
T _{JOP}	Recommended junction temperature under switching conditions			-40	T _J max -25	
T _{STG}	Storage Temperature Range			-40	125	
T _C	Operating Case Temperature			-40	125	
Torque	Mounting torque	To heatsink	M4	2	3	N.m
Wt	Package Weight				120	g

Package outline (dimensions in mm)

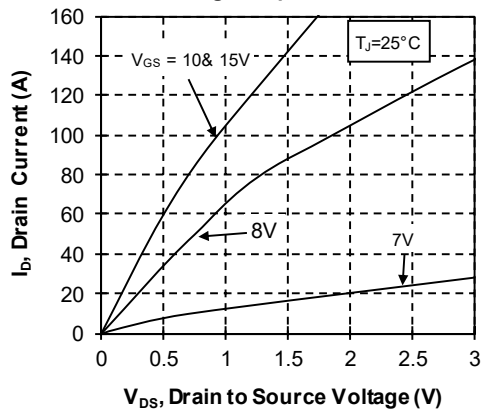


Typical Performance Curve

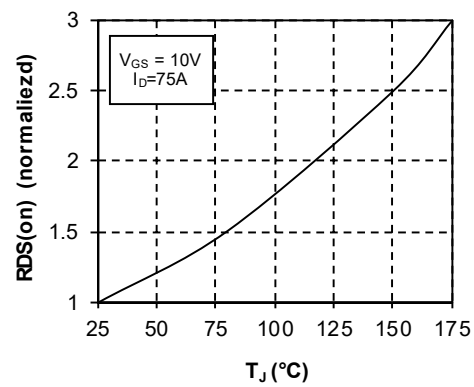
Maximum thermal impedance



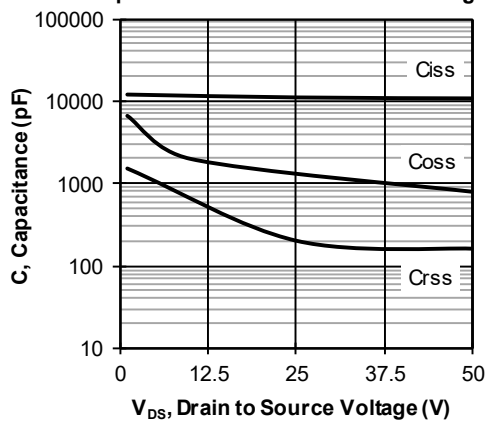
Low Voltage Output Characteristics



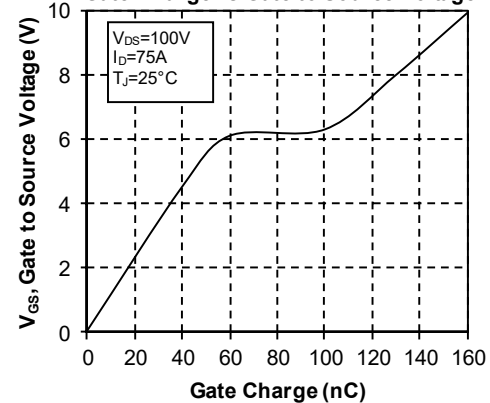
Drain Source On state resistance



Capacitance vs Drain to Source Voltage



Gate Charge vs Gate to Source Voltage



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