MOSFET - SiC Power, Single N-Channel, TO247-3L

650 V, 57 m

THERMAL RESISTANCE MAXIMUM RATINGS

Parameter	Symbol	Max	Unit
Junction ïto ïCase ï Steady State (Note 1)	R_{JC}	1.01	°C/W
Junction ïto ïAmbient ï Steady State (Note 1)	R_{JA}	40	

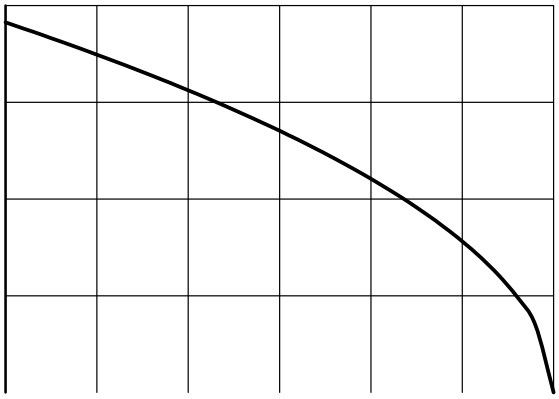
ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

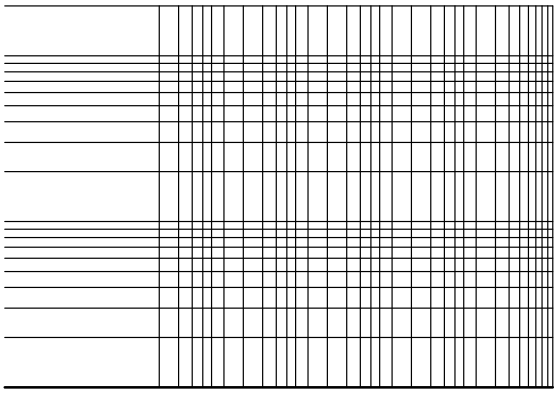
Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
OFF CHARACTERISTICS							
Drain ïto ïSource Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 1 mA		650	ï	ï	V
Drain ïto ïSource Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$	I_D = 20 mA, referenced to 25°C		ï	0.15	ï	V/°C
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 0 V, V_{DS} = 650 V	T_J = 25°C	ï	ï	10	A
			T_J = 175°C	ï	ï	1	mA
Gate ïto ïSource Leakage Current	I_{GSS}	V_{GS} = +18/ ï5 V, V_{DS} = 0 V		ï	ï	250	nA
ON CHARACTERISTICS (Note 2)							
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 5 mA		ï5	28	ï	V
Recommended Gate Voltage	V_{GOP}			ï5	ï	+18	V
Drain ïto ïSource On Resistance	$R_{DS(on)}$	V_{GS} = 15 V, I_D = 15 A, T_J = 25°C		ï	75	ï	m
		V_{GS} = 18 V, I_D = 15 A, T_J = 25°C		ï	57	85	
		V_{GS} = 18 V, I_D = 15 A, T_J = 175°C		ï	68	ï	
Forward Transconductance	g_{FS}	V_{DS} = 10 V, I_D = 15 A		ï	9	ï	S
CHARGES, CAPACITANCES & GATE RESISTANCE							
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1 MHz, V_{DS} = 325 V		ï	1196	ï	pF
Output Capacitance	C_{OSS}			ï	107	ï	
Reverse Transfer Capacitance	C_{RSS}			ï	9	ï	
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = ï5/18 V, V_{DS} = 520 V, I_D = 15 A		ï	61	ï	nC
Gate ïto ïSource Charge	Q_{GS}			ï	19	ï	
Gate ïto ïDrain Charge	Q_{GD}			ï	18	ï	

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified) (continued)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
DRAIN ïSOURCE DIODE CHARACTERISTICS						
Reverse Recovery Time	t_{RR}	V_{GS} = ï5/18 V, I_{SD} = 15 A, dI_S/dt = 1000 A/ s	ï	16	ï	ns
Reverse Recovery Charge	Q_{RR}		ï	68	ï	nC
Reverse Recovery Energy	E_{REC}		ï	11	ï	J
Peak Reverse Recovery Current	I_{RRM}		ï	8.7	ï	A
Charge time	Ta		ï	8.4	ï	

TYPICAL CHARACTERISTICS





TYPICAL CHARACTERISTICS

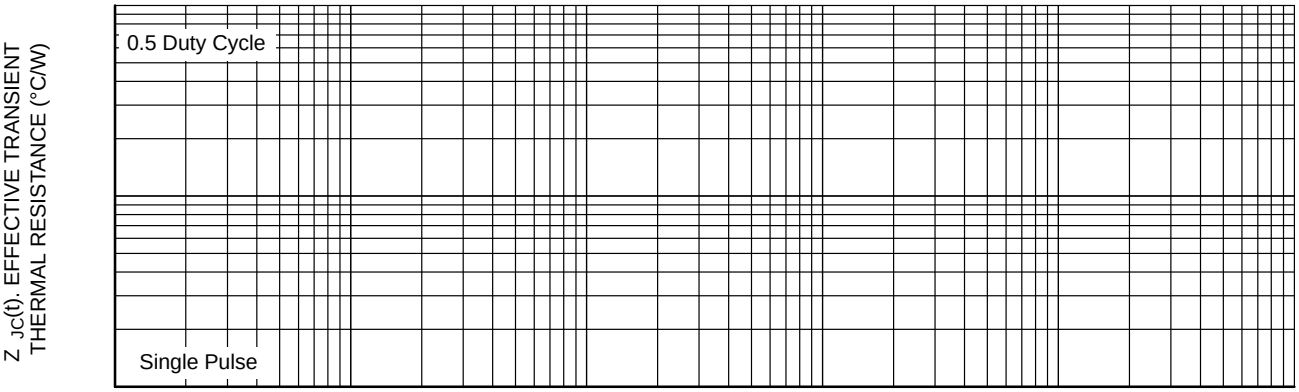


Figure 13. Junction ïto ïCase Thermal Response

PACKAGE DIMENSIONS

onsemi , onsemi , and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba “onsemi ” or its affiliates and/or subsidiaries in the United States and/or other countries. onsemi owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of onsemi’s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent ïMarking.pdf. onsemi reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided “as ïis” and onsemi makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using onsemi products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by onsemi . “Typical” parameters which may be provided in onsemi data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including “Typicals” must be validated for each customer application by customer’s technical experts. onsemi does not convey any license under any of its intellectual property rights nor the rights of others. onsemi products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use onsemi products for any such unintended or unauthorized application, Buyer shall indemnify and hold onsemi and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that onsemi was negligent regarding the design or manufacture of the part. onsemi is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT :
Email Requests to: orderlit@onsemi.com

onsemi Website: www.onsemi.com

TECHNICAL SUPPORT
North American Technical Support:
Voice Mail: 1 800 ï282 ï9855 Toll Free USA/Canada
Phone: 011 421 33 790 2910

Europe, Middle East and Africa Technical Support:
Phone: 00421 33 790 2910
For additional information, please contact your local Sales Representative