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	

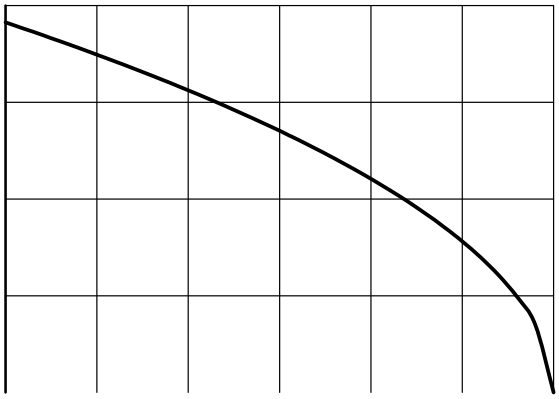
ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

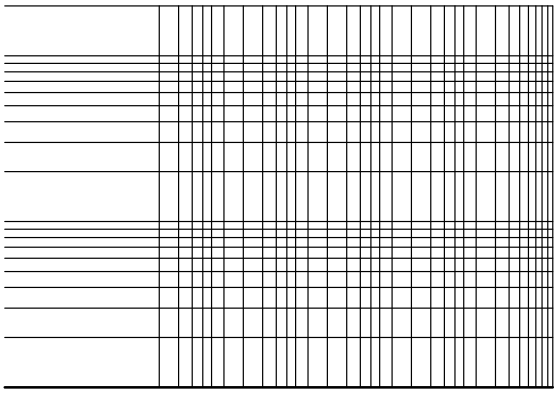
Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
OFF CHARACTERISTICS							
Drain ïto ïSource Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 1 mA		650	ï	ï	V
Drain ïto ïSource Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$	I_D = 20 mA, referenced to 25°C		ï	0.15	ï	V/°C
Zero Gate Voltage 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		1.8	2.8	4.3	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

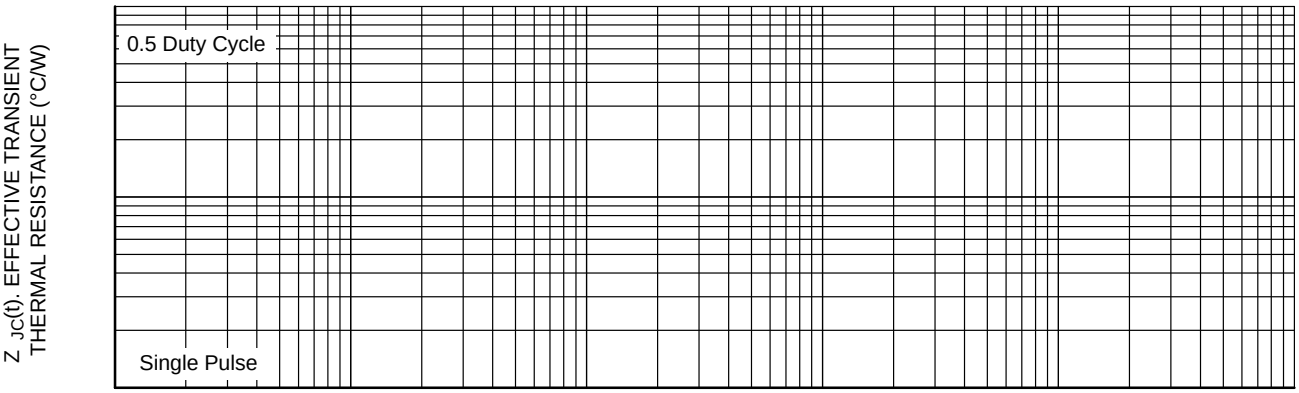


Figure 13. Junction ïto ïCase Thermal Response

PACKAGE DIMENSIONS

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