Silicon Carbide (SiC) MOSFET – 12 mohm, 650 V, M2, TO-247-4L

NVH4L015N065SC1

Features

- Typ. $R_{DS(on)}$ = 12 mΩ @ V_{GS} = 18 V
  Typ. $R_{DS(on)}$ = 15 mΩ @ V_{GS} = 15 V
- Ultra Low Gate Charge ($Q_{G(tot)}$ = 283 nC)
- High Speed Switching with Low Capacitance (C_{oss} = 430 pF)
- 100% Avalanche Tested
- AEC−

Table 1. THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Junction−to−Case − Steady State (Note 1)	$R_{\theta JC}$	0.3	°C/W
Junction−to−Ambient − Steady State (Note 1)	$R_{\theta JA}$	40	

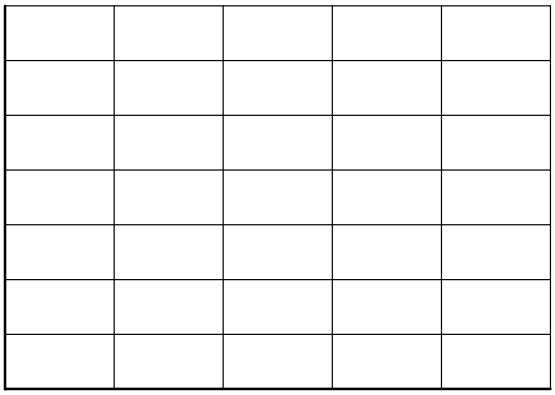
Table 2. ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

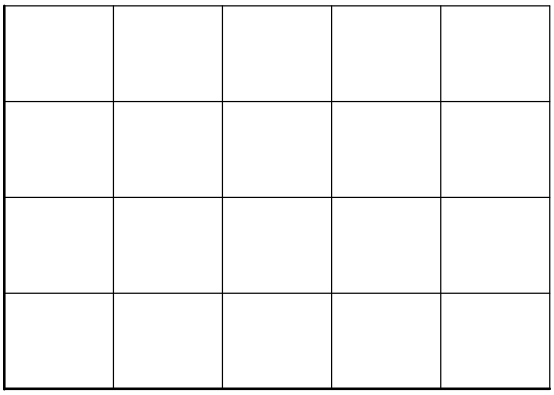
Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
OFF CHARACTERISTICS							
Drain−to−Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 1 mA		650	−	−	V
Drain−to−Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$	I_D = 20 mA, referenced to 25°C		−	0.12	−	V/°C
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 0 V, V_{DS} = 650 V	T_J = 25°C	−	−	10	μA
			T_J = 175°C	−	−	1	mA
Gate−to−Source Leakage Current	I_{GSS}	V_{GS} = +18/−5 V, V_{DS} = 0 V		−	−	250	nA
ON CHARACTERISTICS (Note 2)							
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 25 mA		1.8	2.5	4.3	V
Recommended Gate Voltage	V_{GOP}			−5	−	+18	V
Drain−to−Source On Resistance	$R_{DS(on)}$	V_{GS} = 15 V, I_D = 75 A, T_J = 25°C					

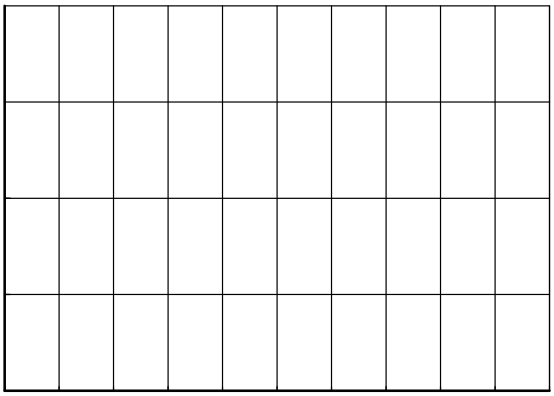
Table 2. ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified) (continued)

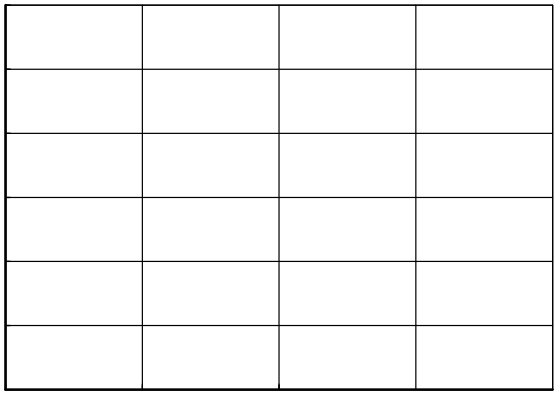
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
SOURCE−DRAIN DIODE CHARACTERISTICS						
Reverse Recovery Time	t_{RR}	V_{GS} = −5/18 V, I_{SD} = 75 A, dI_S/dt = 1000 A/μs	−	28	−	ns
Reverse Recovery Charge	Q_{RR}		−	234	−	nC
Reverse Recovery Energy						

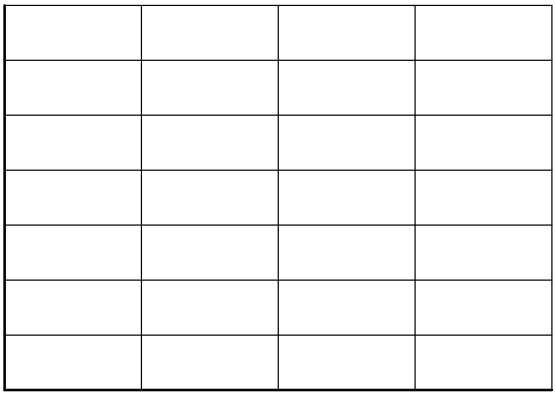
TYPICAL CHARACTERISTICS

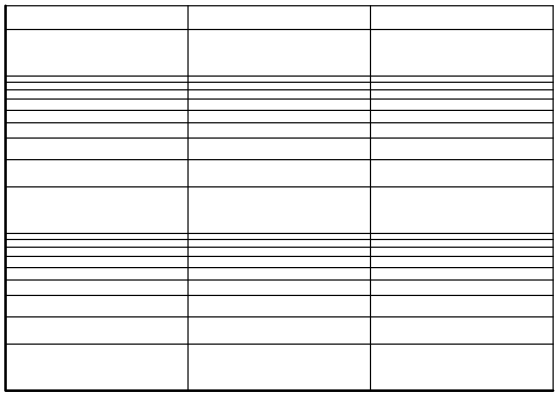












TYPICAL CHARACTERISTICS (continued)

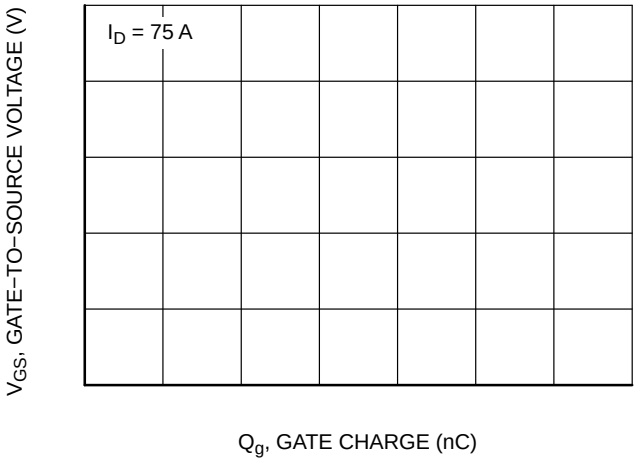


Figure 7. Gate−to−Source Voltage vs. Total Charge

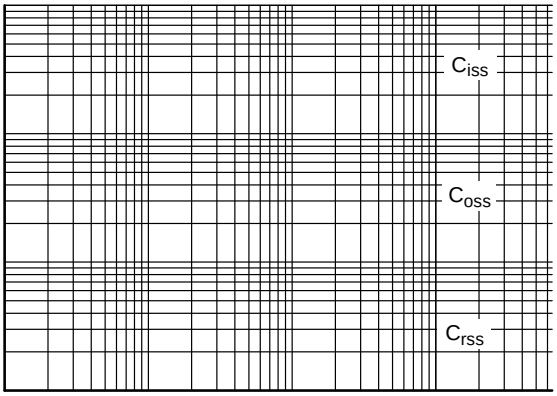


Figure 8. Capacitance vs. Drain−to−Source Voltage

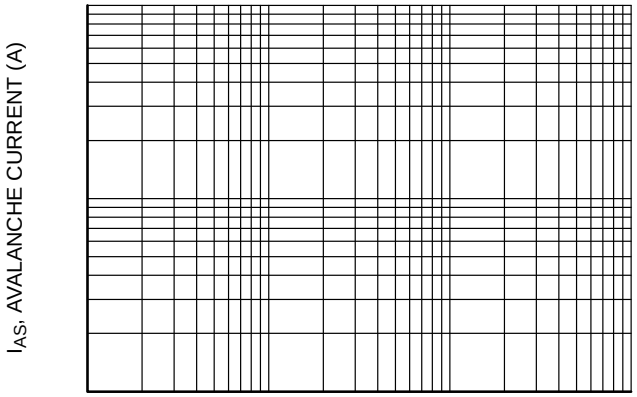


Figure 9. Unclamped Inductive Switching Capability

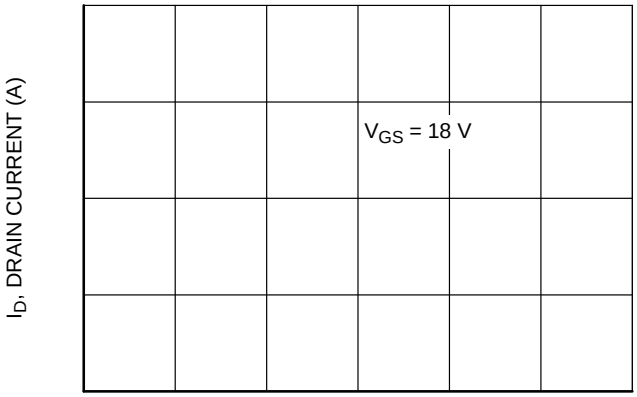


Figure 10. Maximum Continuous Drain Current vs. Case Temperature

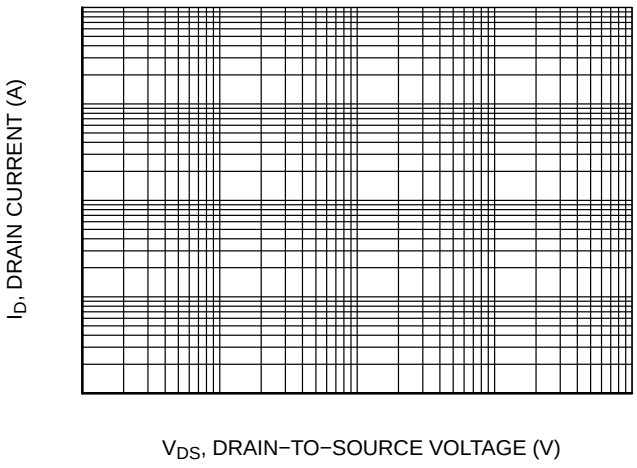


Figure 11. Safe Operating Area

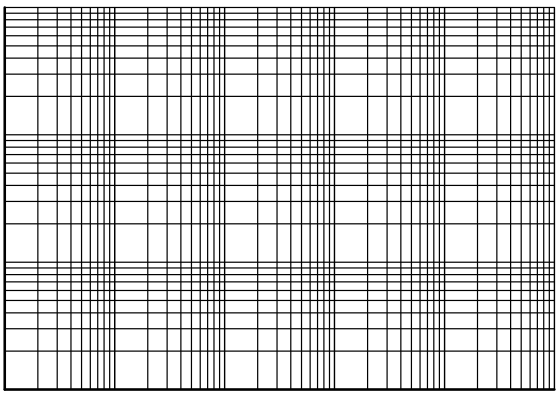


Figure 12. Single Pulse Maximum Power

TYPICAL CHARACTERISTICS (continued)

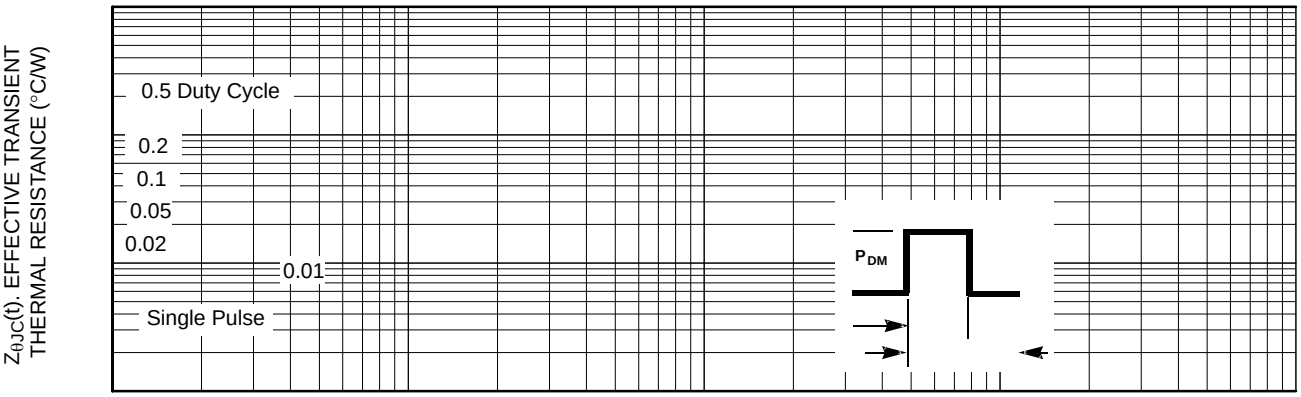


Figure 13. Junction−to−Case Thermal Response

TO−247−4LD
CASE 340CJ
ISSUE A

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