Silicon Carbide (SiC) MOSFET – 20 mohm, 1200 V, M1, TO-247-4L

NVH4L020N120SC1

Features

- Typ. $R_{DS(on)}$ = 20 mΩ
- Ultra Low Gate Charge ($Q_{G(tot)}$ = 220 nC)
- High Speed Switching with Low Capacitance (C_{oss} = 258 pF)
- 100% Avalanche Tested
- AEC−Q101 Qualified and PPAP Capable
- This Device is Halide Free and RoHS Compliant with exemption 7a, Pb−Free 2LI (on second level interconnection)

Typical Applications

- Automotive On Board Charger
- Automotive DC-DC Converter for EV/HEV
- Automotive Traction Inverter

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Parameter			Symbol	Value	Unit
Drain−to−Source Voltage			V_{DSS}	1200	V
Gate−to−Source Voltage			V_{GS}	−15/+25	V
Recommended Operation Values of Gate−to−Source Voltage		T_C < 175°C	V_{GSop}	−5/+20	V
Continuous Drain Current (Note 2)	Steady State	T_C = 25°C	I_D	101	A
Power Dissipation (Note 2)			P_D	500	W
Continuous Drain Current (Notes 1, 2)	Steady State	T_C = 100°C	I_D	71.4	A
Power Dissipation (Notes 1, 2) Steady					

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
DRAIN−SOURCE DIODE CHARACTERISTICS						
Reverse Recovery Time	t_{RR}	V_{GS} = −5/20 V, I_{SD} = 80 A, dI_S/dt = 1000 A/μs	–	30	–	ns
Reverse Recovery Charge	Q_{RR}		–	225	–	nC
Reverse Recovery Energy64 ref449.405 674.872 0 Tc(Q)Tj6.5 0 0.169Tm60 6793864.15753Tm-.0REC Tc(RR)TjET29.754 645.052 .90709 15.36						

TYPICAL CHARACTERISTICS (continued)

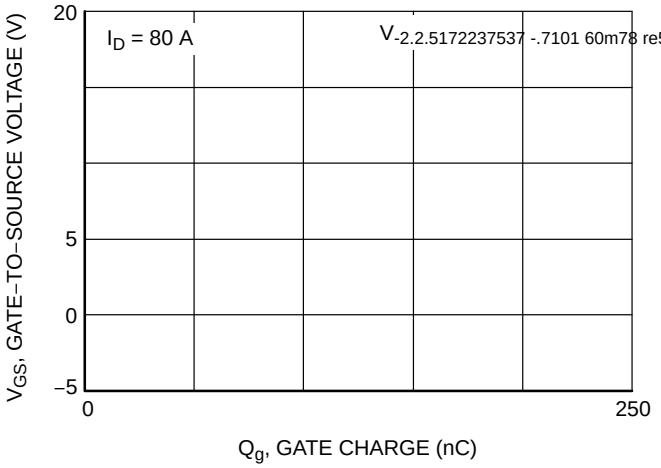


Figure 7. Gate−to−Source Voltage vs. Total Charge

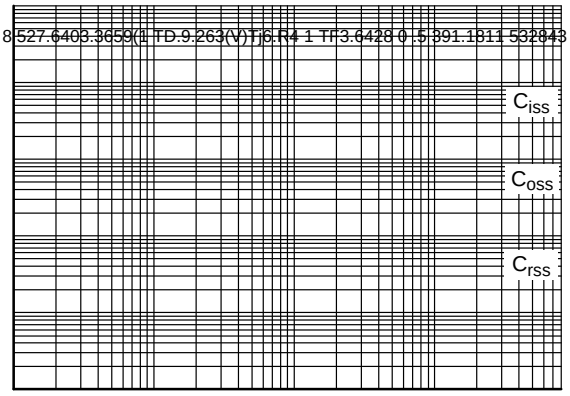


Figure 8. Capacitance vs. Drain−to−Source Voltage

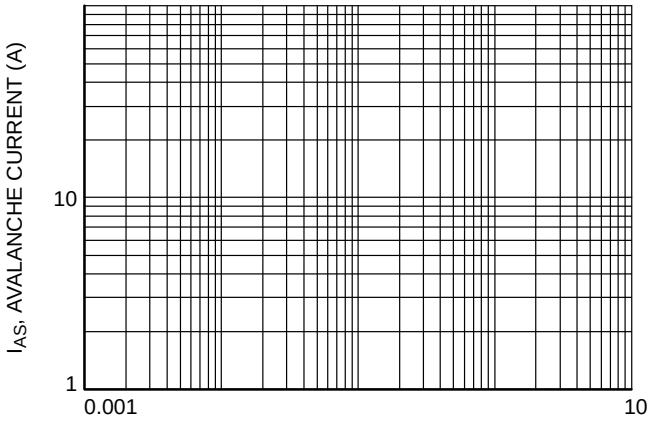


Figure 9. Unclamped Inductive Switching Capability

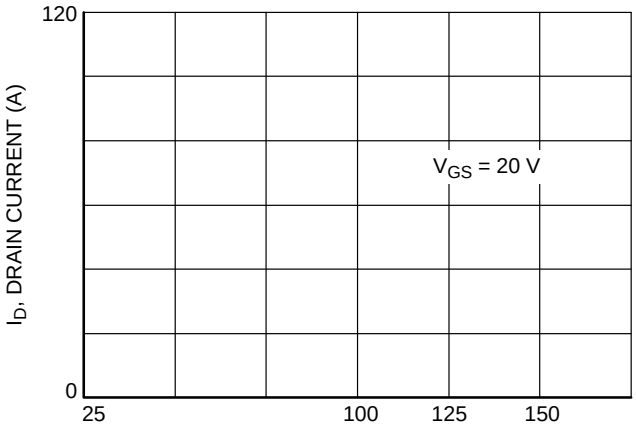


Figure 10. Maximum Continuous Drain Current vs. Case Temperature

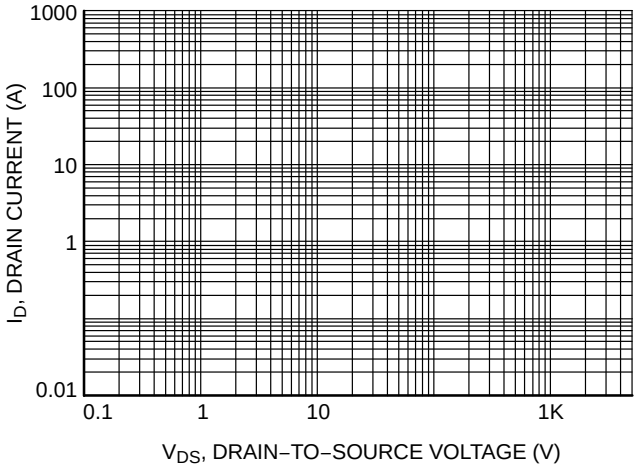


Figure 11. Safe Operating Area

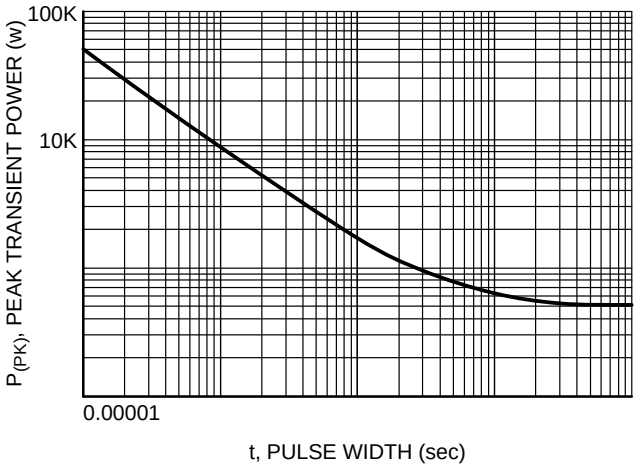
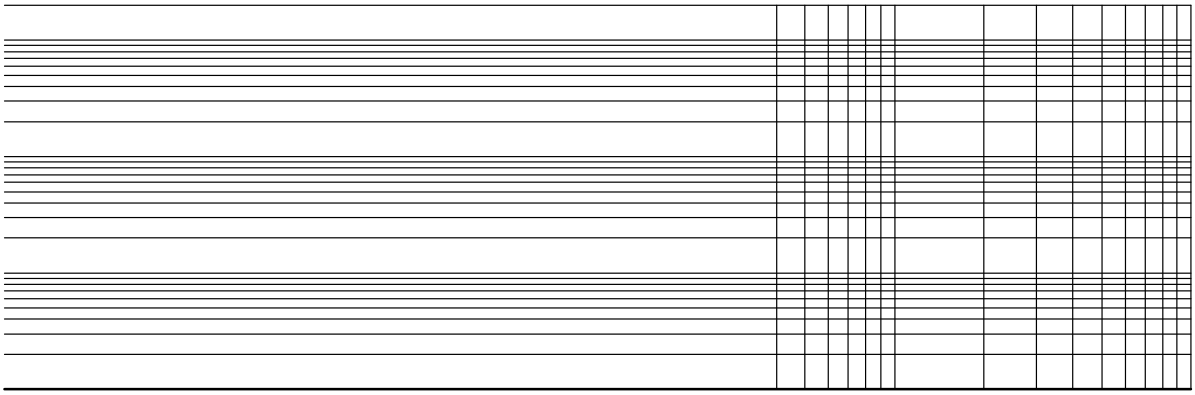


Figure 12. Single Pulse Maximum Power Dissipation

TYPICAL CHARACTERISTICS (continued)



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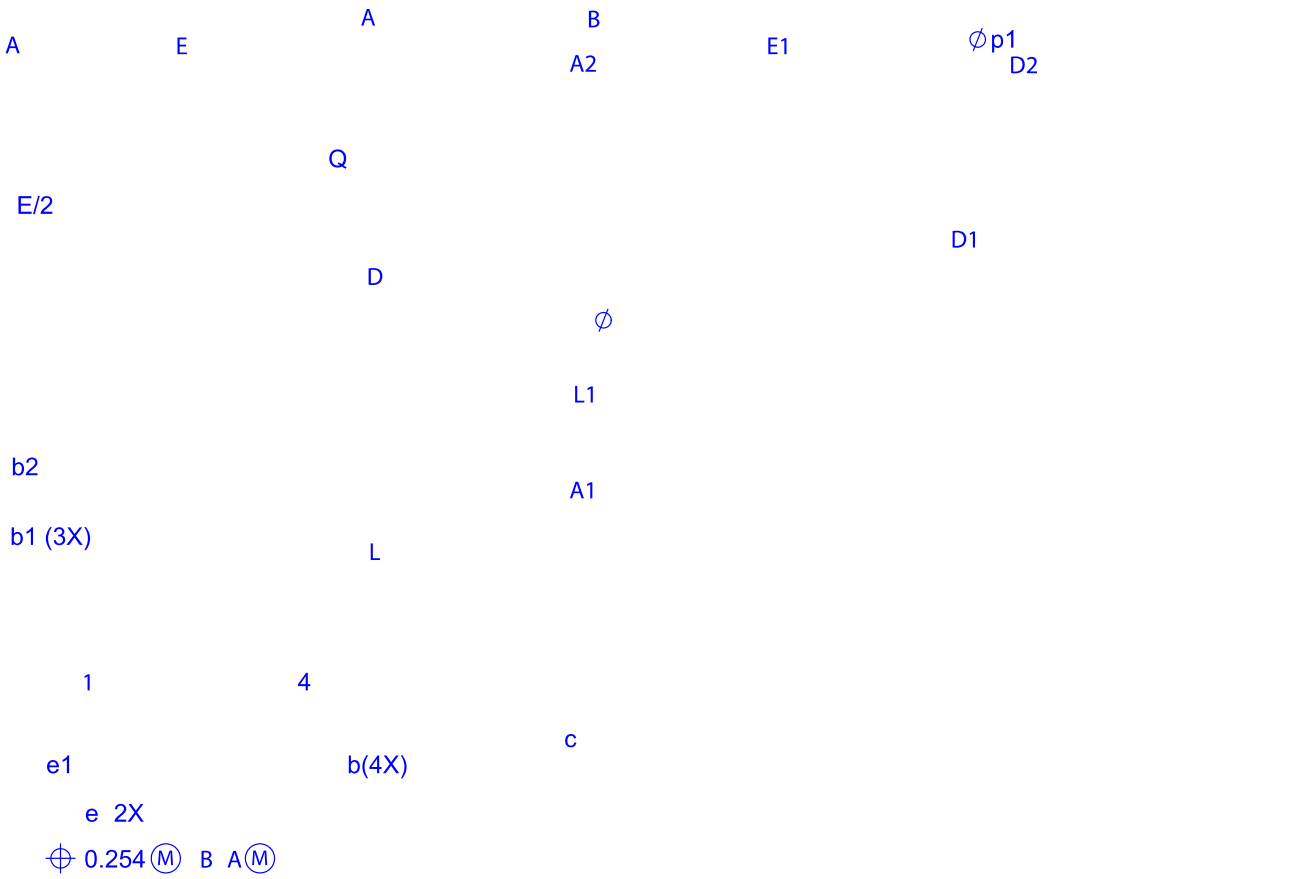

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