

Silicon Carbide (SiC)
MOSFET – 60 mohm, 900 V,
M2, TO-247-3L

NVHL060N090SC1

Features

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Typical Applications

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MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-to-Source Voltage		V_{DSS}	900	V
Gate-to-Source Voltage		V_{GS}	+22/-8	V
Recommended Operation Values of Gate-to-Source Voltage	$T_C < 175^\circ\text{C}$	V_{GSop}	+15/-5	V
Continuous Drain Current $R_{\theta JC}$	Steady State $T_C = 25^\circ\text{C}$	I_D	46	A
Power Dissipation $R_{\theta JC}$		P_D	221	W
Continuous Drain Current $R_{\theta JC}$	Steady State $T_C = 100^\circ\text{C}$	I_D		

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THERMAL RESISTANCE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Junction-to-Case (Note 1)	$R_{\theta JC}$	0.68	°C/W
Junction-to-Ambient (Note 1)	$R_{\theta JA}$	40	°C/W

1. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
2. Repetitive rating, limited by max junction temperature.
3. Peak current might be limited by transconductance.
4. E_{AS} of 162 mJ is based on starting $T_J = 25^\circ\text{C}$; $L = 1$ mH, $I_{AS} = 18$ A, $V_{DD} = 100$ V, $V_{GS} = 15$ V.

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ELECTRICAL CHARACTERISTICS (continued)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
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DRAIN SOURCE DIODE CHARACTERISTICS

Reverse Recovery Time	t_{RR}	$V_{GS} = -5/15\text{ V}, I_{SD} = 30\text{ A},$ $dI_S/dt = 1000\text{ A}/\mu\text{s}, V_{DS} = 720\text{ V}$		18		ns
Reverse Recovery Charge	Q_{RR}			84		nC
Reverse Recovery Energy	E					

TYPICAL CHARACTERISTICS

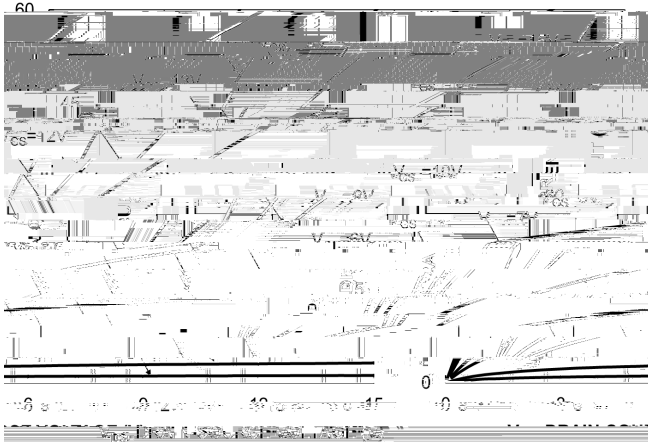


Figure 1. On Region Characteristics



Figure 2. Normalized On Resistance vs. Drain Current and Gate Voltage

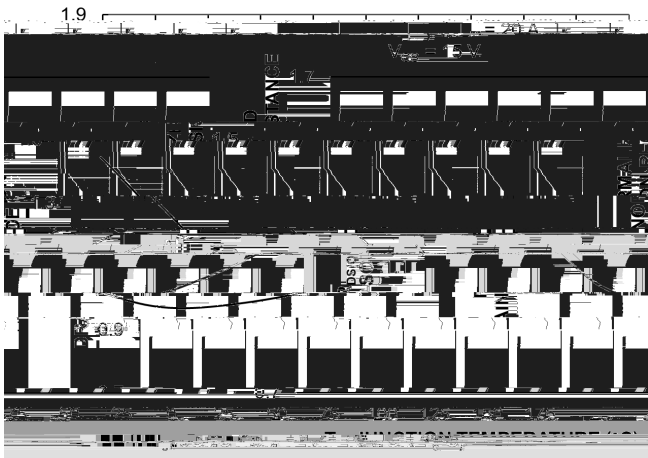


Figure 3. On Resistance Variation with Temperature

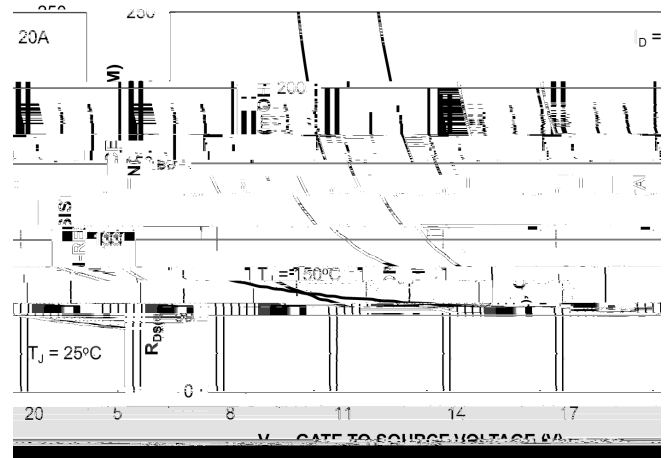


Figure 4. On Resistance vs. Gate to Source Voltage

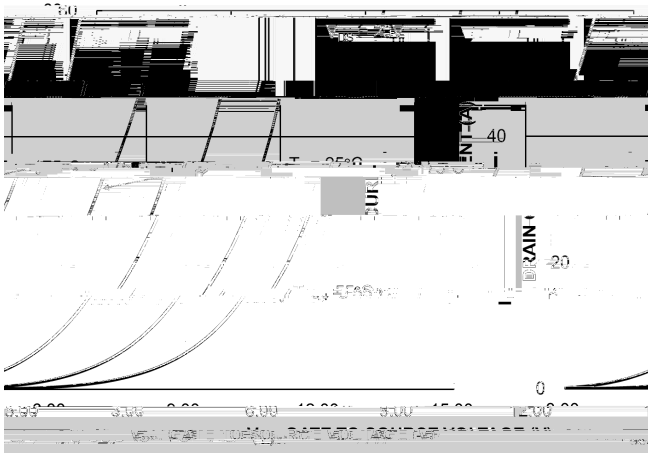


Figure 5. Transfer Characteristics

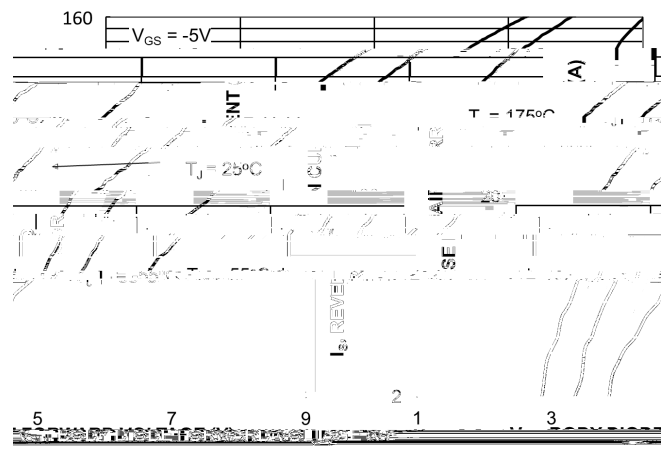


Figure 6. Diode Forward Voltage vs. Current

TYPICAL CHARACTERISTICS (continued)

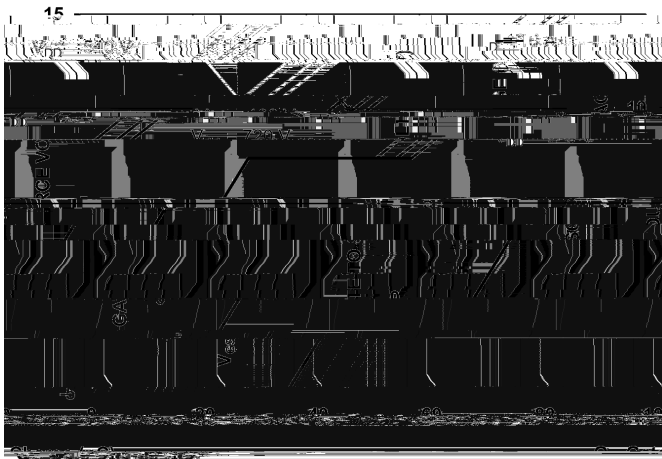


Figure 7. Gate to Source Voltage vs. Total Charge

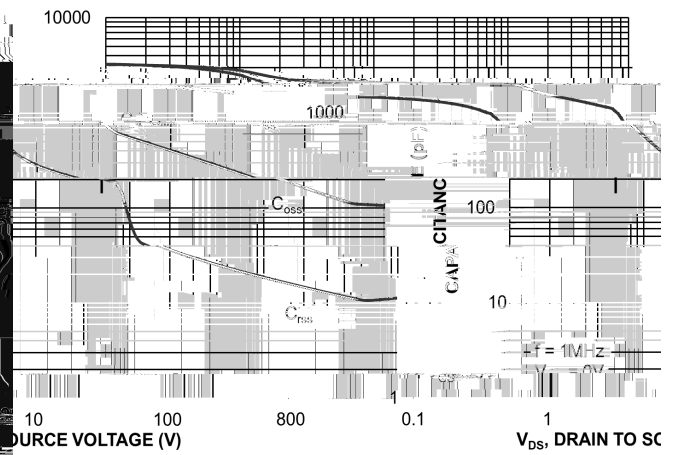


Figure 8. Capacitance vs. Drain to Source Voltage

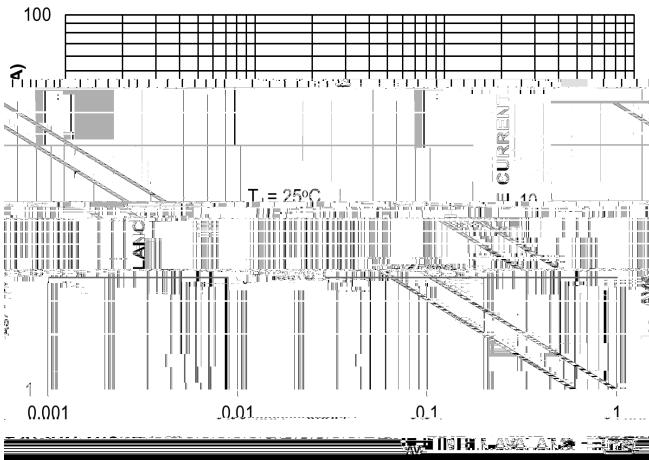


Figure 9. Unclamped Inductive Switching Capability

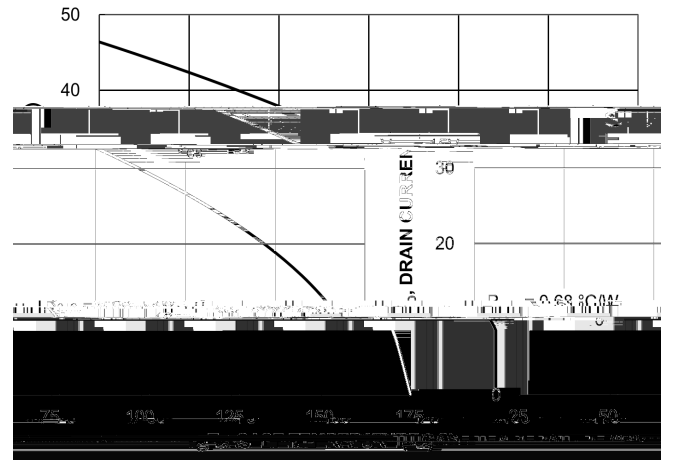


Figure 10. Maximum Continuous Drain Current vs. Case Temperature



Figure 11. Safe Operating Area

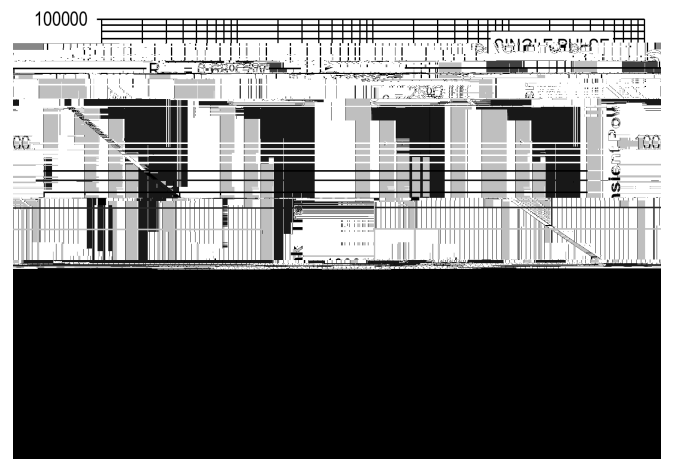


Figure 12. Single Pulse Maximum Power Dissipation

TYPICAL CHARACTERISTICS (continued)

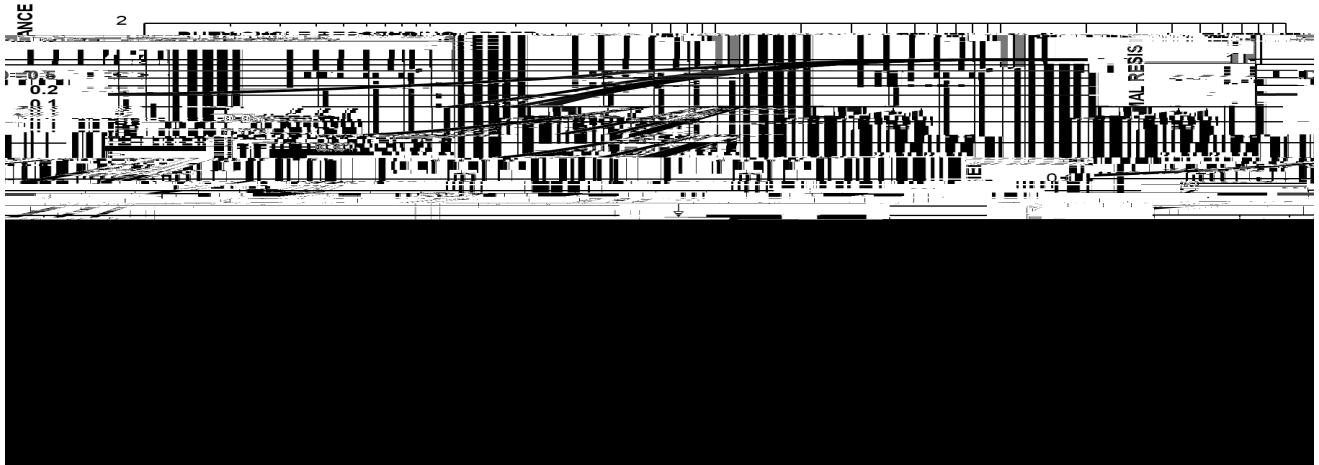
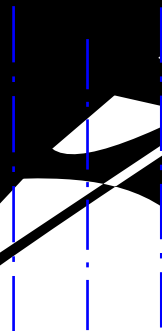
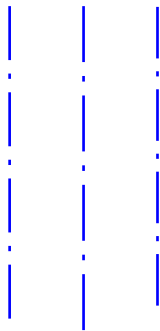
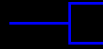
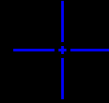
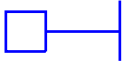


Figure 13. Junction to Ambient Thermal Response



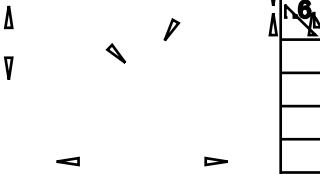
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