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

NVH4L015N065SC1

Features

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

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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 ($T_J = 25^\circ\text{C}$ unless otherwise specified)

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

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Table 2. ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise specified) (continued)

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

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TYPICAL CHARACTERISTICS

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TYPICAL CHARACTERISTICS (continued)

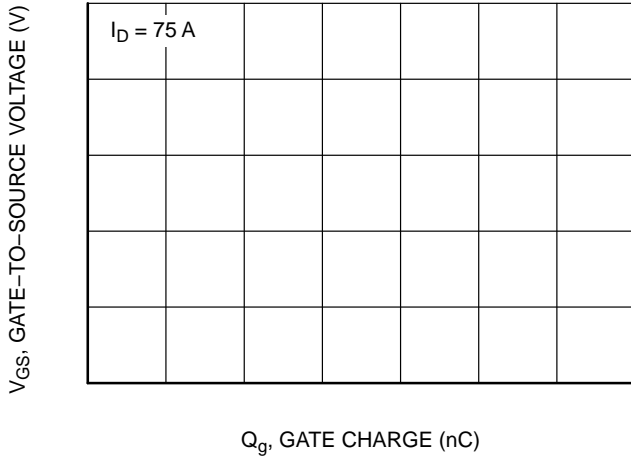


Figure 7. Gate-to-Source Voltage vs. Total Charge

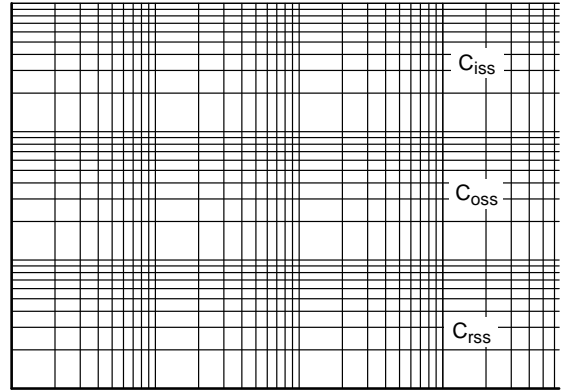


Figure 8. Capacitance vs. Drain-to-Source Voltage

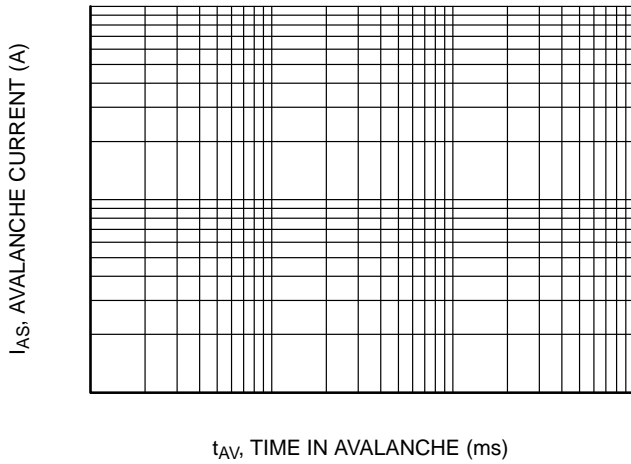


Figure 9. Unclamped Inductive Switching Capability

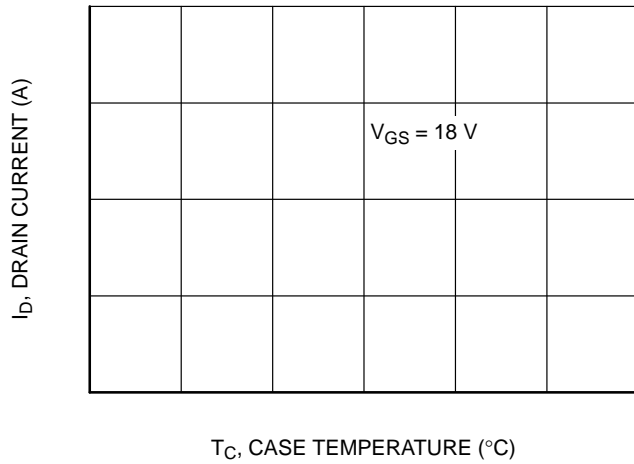


Figure 10. Maximum Continuous Drain Current vs. Case Temperature

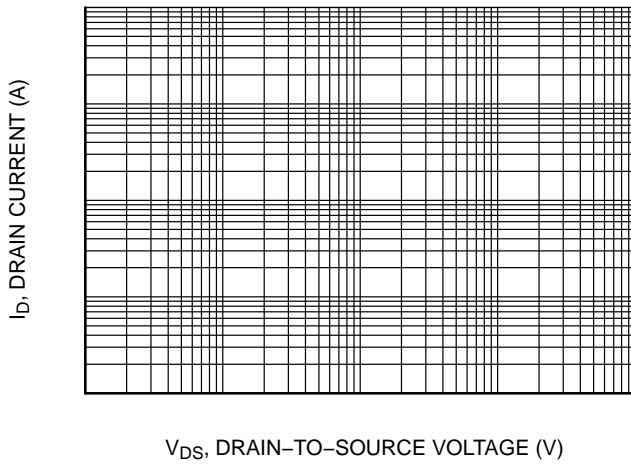


Figure 11. Safe Operating Area

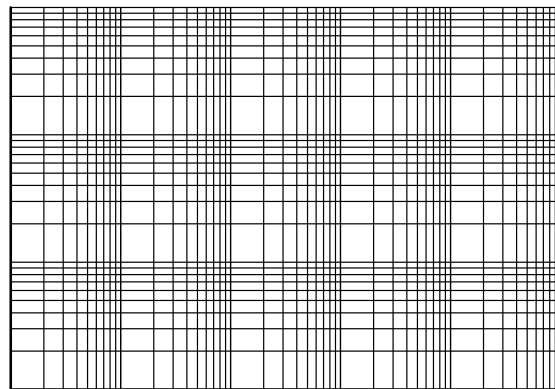


Figure 12. Single Pulse Maximum Power

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TYPICAL CHARACTERISTICS (continued)

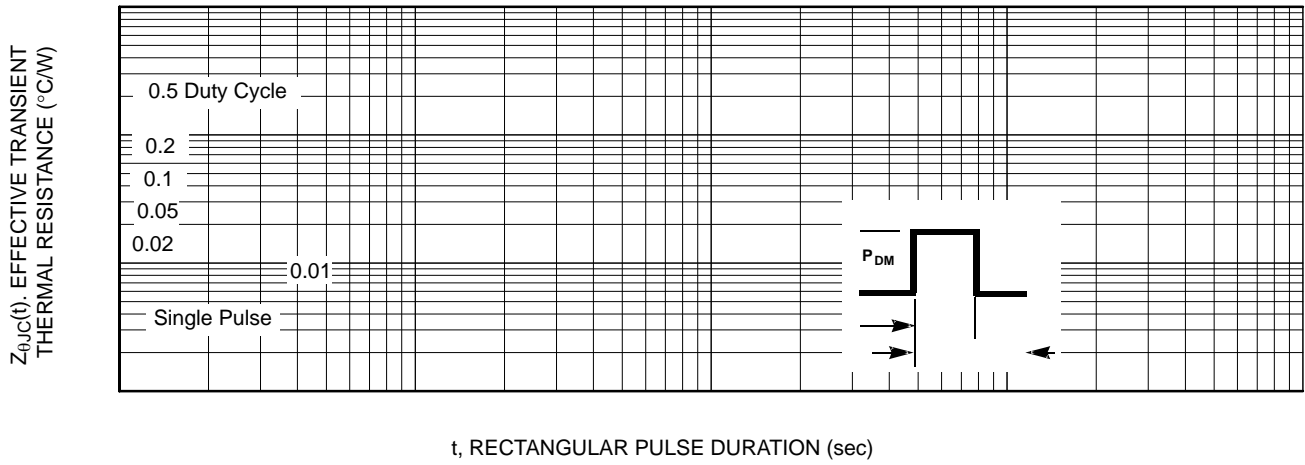


Figure 13. Junction-to-Case Thermal Response

TO-247-4LD
CASE 340CJ
ISSUE A

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A	E	A	B A2	E1	∅p1 D2
		Q			
E/2					D1
		D	∅		
			L1		
b2			A1		
b1 (3X)		L			
	1	4			
e1		b(4X)	c		
e 2X					
⊕ 0.254 (M) B A (M)					

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