

S **Ca b** **(S C)**
MOSFET – E, S C,
29 m, 1200 V, M3S,
TO-247-4L

NVH4L030N120M3S

Features

- Typ. $R_{DS(on)} = 29\text{ m}\Omega$ @ $V_{GS} = 18\text{ V}$
- Ultra Low Gate Charge ($Q_{G(tot)} = 107\text{ nC}$)
- High Speed Switching with Low Capacitance ($C_{oss} = 106\text{ pF}$)
- 100% Avalanche Tested
- AEC Q101 Qualified and PPAP Capable

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Table 1. THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Junction-to-Case – Steady State (Note 1)	$R_{\theta JC}$	0.48	°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-STATE CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 1\text{ mA}$	1200	–	–	V
Drain-to-Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$	$I_D = 1\text{ mA}$, referenced to 25°C (Note 6)	–	0.3	–	V/°C
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS} = 0\text{ V}, V_{DS} = 1200\text{ V}$ $T_J = 25^\circ\text{C}$	–	–	100	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = +22/-10\text{ V}, V_{DS} = 0\text{ V}$	–	–	± 1	μA
ON-STATE CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 15\text{ mA}$	2.04	2.4	4.4	V
Recommended Gate Voltage	V_{GOP}		–3	–	+18	V

Drain-to–

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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}	$V_{GS} = -3/18\text{ V}, I_{SD} = 30\text{ A},$ $di_S/dt = 1000\text{ A}/\mu\text{s}, V_{DS} = 800\text{ V}$ (Note 6)	-	20	-	ns
Reverse Recovery Charge	Q_{RR}		-	114	-	nC
Reverse Recovery Energy	E_{REC}		-	10.5	-	μJ
Peak Reverse Recovery Current	I_{RRM}		-	11	-	A
Charge Time	T_A		-	11	-	ns
Discharge Time	T_B		-	8.5	-	ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

5. E_{ON}/E_{OFF} result is with body diode.

6. Defined by design, not subject to production test.

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TYPICAL CHARACTERISTICS

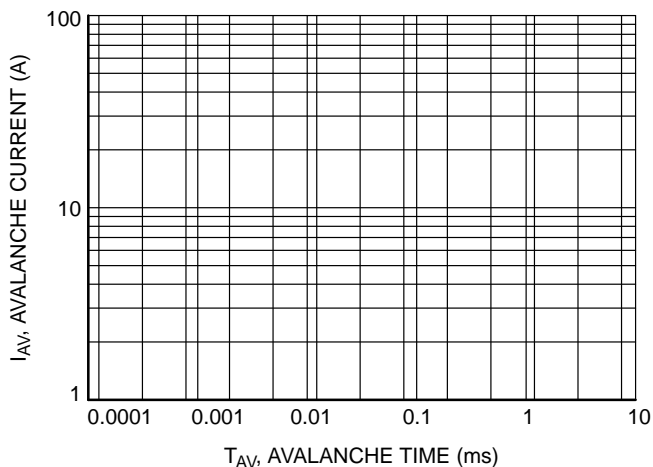


Figure 13. Unclamped Inductive Switching Capability

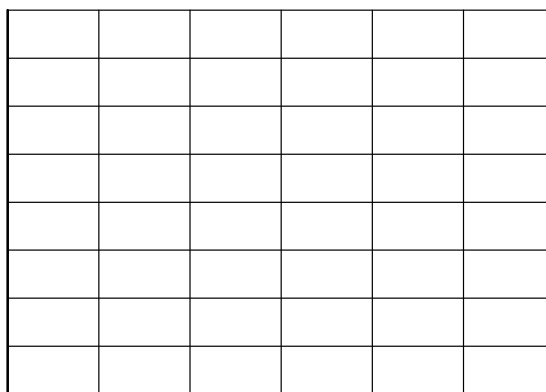


Figure 14. Maximum Continuous Drain Current vs. Case Temperature

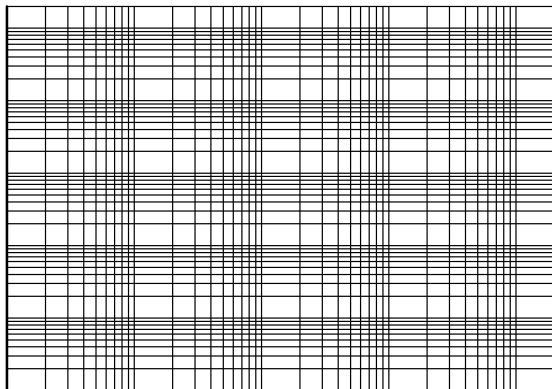


Figure 15. Safe Operating Area

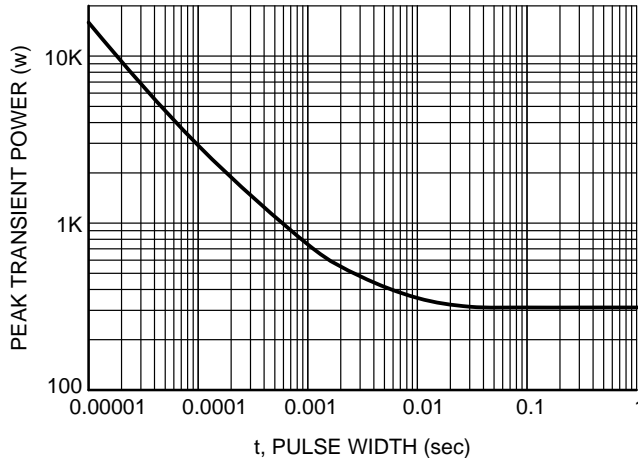


Figure 16. Single Pulse Maximum Power Dissipation

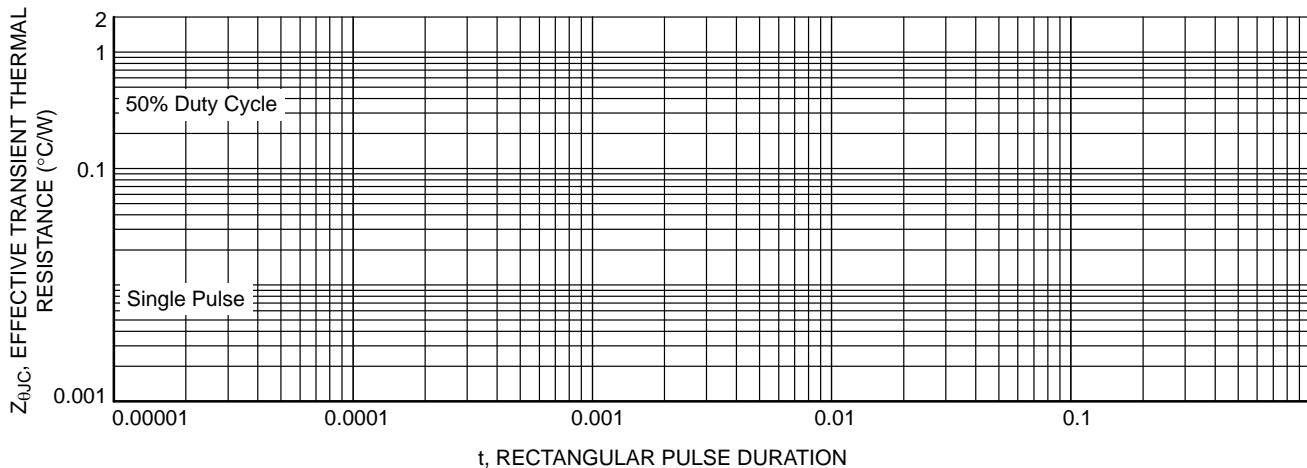


Figure 17. Junction-to-Case Transient Thermal Response

TO-247-4LD
CASE 340CJ
ISSUE A

DATE 16 SEP 2019

A E A B
A2 E1 \emptyset p1
D2

E/2 Q

D D1

\emptyset

L1

b2 A1

b1 (3X) L

1 4

e1 b(4X) c

e 2X

\oplus 0.254 (M) B A (M)

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