

**S • Ca (S C)**  
**MOSFET – E, S C,**  
**22 mΩ, 1200 V, M3S,**  
**TO-247-4L**

**NVH4L022N120M3S**

**Features**

- Typ.  $R_{DS(on)} = 22\text{ m}\Omega$  @  $V_{GS} = 18\text{ V}$
- Ultra Low Gate Charge ( $Q_{G(tot)} = 137\text{ nC}$ )
- High Speed Switching with Low Capacitance ( $C_{oss} = 146\text{ pF}$ )
- 100% Avalanche Tested
- AEC-Q101 Qualified and PPAP Capable
- 

Continuous Drain Current (Notes 1, 3)	Steady State	$T_C = 25^\circ\text{C}$	$I_D$	89	A
Power Dissipation (Note 1)			$P_D$	348	W
Continuous Drain Current (Notes 1, 3)	Steady State	$T_C = 100^\circ\text{C}$	$I_D$	62	A
Power Dissipation (Note 1)			$P_D$	174	W
Pulsed Drain Current (Note 2)	$T_C = 25^\circ\text{C}$		$I_{DM}$	275	A
Operating Junction and Storage Temperature Range			$T_J, T_{stg}$	-55 to +175	$^\circ\text{C}$
Source Current (Body Diode) $T_C = 25^\circ\text{C}$ $V_{GS} = -3\text{ V}$ (Note 1)			$I_S$	72	A
Single Pulse Drain-to-Source Avalanche Energy ( $I_{L(pk)} = 23.1\text{ A}$ , $L = 1\text{ mH}$ ) (Note 4)			$E_{AS}$	267	mJ
Maximum Lead Temperature for Soldering (1/25" from case for 10 s)			$T_L$	270	$^\circ\text{C}$

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**Table 1. THERMAL CHARACTERISTICS**

Parameter	Symbol	Max	Unit
Junction-to-Case – Steady State (Note 1)	$R_{\theta JC}$	0.43	°C/W
Junction-to-Ambient – Steady State (Note 1)	$R_{\theta JA}$	40	

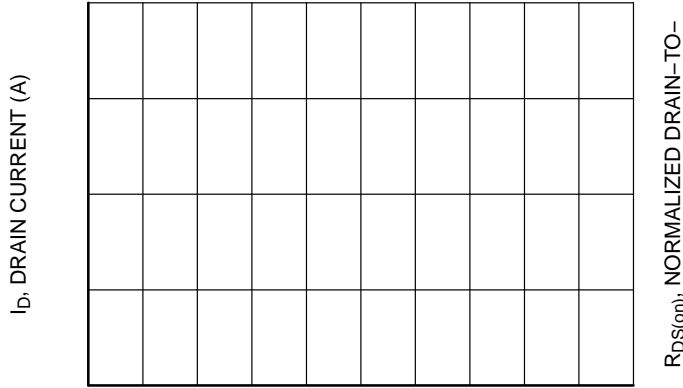
**Table 2. ELECTRICAL CHARACTERISTICS** ( $T_J = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
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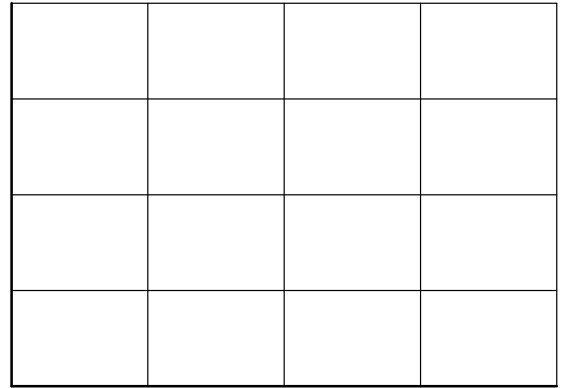


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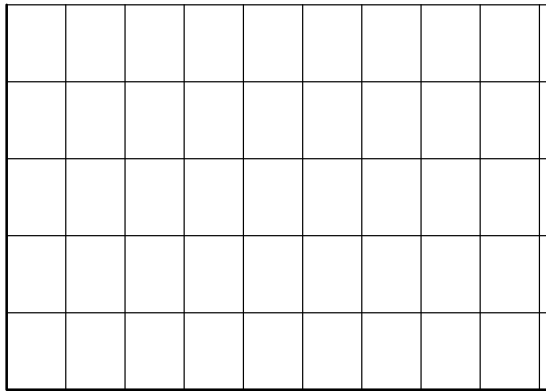
## TYPICAL CHARACTERISTICS



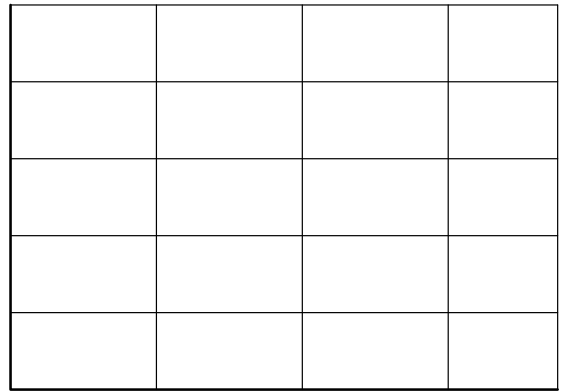
$V_{DS}$ , DRAIN-TO-SOURCE VOLTAGE (V)  
**Figure 1. On-Region Characteristics**



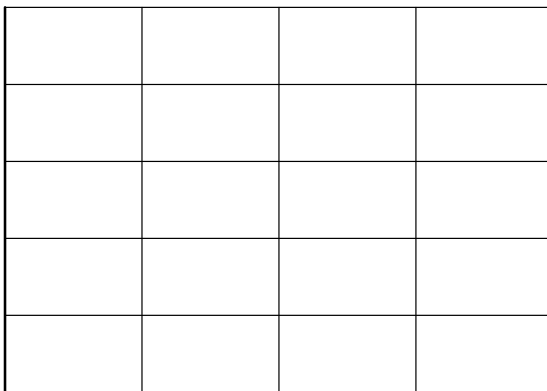
$I_D$ , DRAIN CURRENT (A)  
**Figure 2. Normalized On-Resistance vs. Drain Current and Gate Voltage**



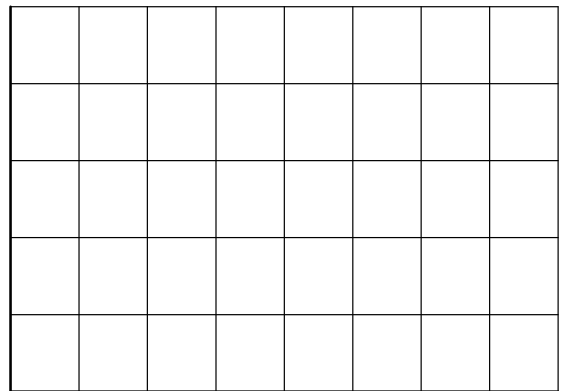
$T_J$ , JUNCTION TEMPERATURE (°C)  
**Figure 3. On-Resistance Variation with Temperature**



$V_{GS}$ , GATE-TO-SOURCE VOLTAGE (V)  
**Figure 4. On-Resistance vs. Gate-to-Source Voltage**



$V_{GS}$ , GATE-TO-SOURCE VOLTAGE (V)  
**Figure 5. Transfer Characteristics**



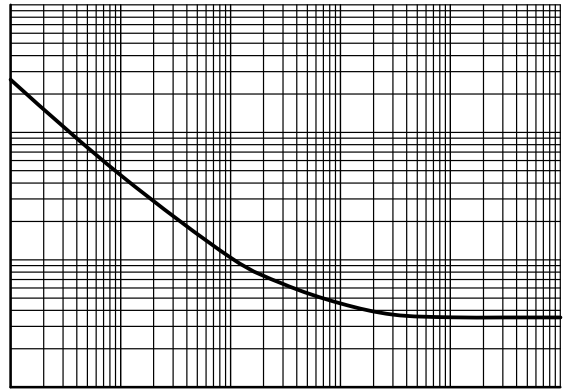
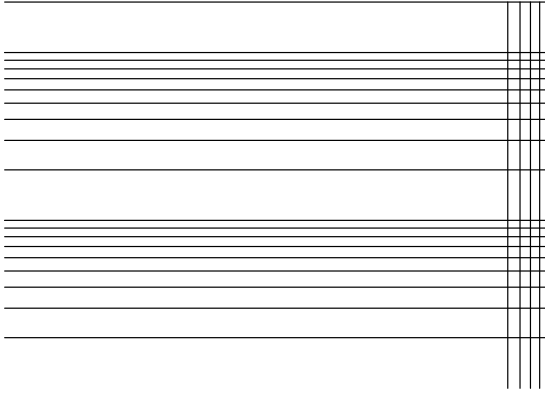
$I_D$ , DRAIN CURRENT (A)  
**Figure 6. Switching Loss vs. Drain Current**

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## TYPICAL CHARACTERISTICS

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## TYPICAL CHARACTERISTICS (continued)





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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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