

Silicon Carbide (SiC)  
MOSFET – EliteSiC,  
29 mohm, 1200 V, M3S,  
D2PAK-7L  
NVBG030N120M3S

**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)

# NVBG030N120M3S

## THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Junction-to-Case – Steady State (Note 2)	$R_{\theta JC}$	0.43	°C/W
Junction-to-Ambient – Steady State (Notes 1, 2)	$R_{\theta JA}$	40	

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
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### 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 $25^\circ\text{C}$ (Note 7)	-	0.3	-	V/°C
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{GS} = 0\text{ V}, V_{DS} = 1200\text{ V}$	-	-	100	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS} = +22/-10\text{ V}, V_{DS} = 0\text{ V}$	-	-	$\pm 1$	$\mu\text{A}$

### ON-STATE CHARACTERISTICS

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-Source On Resistance	$R_{DS(on)}$	$V_{GS} = 18\text{ V}, I_D = 30\text{ A}, T_J = 25^\circ\text{C}$	-	29	39	$\text{m}\Omega$
		$V_{GS} = 18\text{ V}, I_D = 30\text{ A}, T_J = 175^\circ\text{C}$ (Note 7)	-	58	-	
Forward Transconductance	$g_{FS}$	$V_{DS} = 10\text{ V}, I_D = 30\text{ A}$ (Note 7)	-	2.0	2.5	$\text{S}$

### CHARGES, CAPACITANCES & GATE RESISTANCE

Input Capacitance

# NVBG030N120M3S

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
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### SOURCE-DRAIN DIODE CHARACTERISTICS

Reverse Recovery Time	$t_{RR}$	$V_{GS} = -3/18\text{ V}, I_{SD} = 30\text{ A},$ $dI$				
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## PACKAGE DIMENSIONS

D<sup>2</sup>PAK7 (TO-263-7L HV)  
CASE 418BJ  
ISSUE B

E1

B

A

c2

D1

H

C

A

