

Silicon Carbide (SiC)  
MOSFET – EliteSiC,  
 80 mohm, 1200 V, M1,  
 D2PAK-7L

NTBG080N120SC1

**Features**

- Typ.  $R_{DS(on)} = 80\text{ m}\Omega$
- Ultra Low Gate Charge (Typ.  $Q_{G(tot)} = 56\text{ nC}$ )
- Low Effective Output Capacitance (Typ.  $C_{oss} = 79\text{ pF}$ )
- 100% Avalanche Tested
- $T_J = 175^\circ\text{C}$
- This Device is Halide Free and RoHS Compliant with exemption 7a, Pb-Free 2LI (on second level interconnection)

**Typical Applications**

- UPS
- DC-DC Converter
- Boost Inverter

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	$V_{DSS}$	1200	V
Gate-to-Source Voltage	$V_{GS}$	-15/+25	V

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**Table 1. THERMAL CHARACTERISTICS**

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-to-Case (Note 1)	$R_{\theta JC}$	0.84	°C/W
Thermal Resistance Junction-to-Ambient (Note 1)	$R_{\theta JA}$	40	°C/W

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
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**OFF 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						

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>DRAIN SOURCE DIODE CHARACTERISTICS</b>						
Reverse Recovery Time	$t_{RR}$	$V_{GS} = -5/20\text{ V}$ , $I_{SD} = 20\text{ A}$ , $di_S/dt = 1000\text{ A}/\mu\text{s}$		16.2		ns
Reverse Recovery Charge	$Q_{RR}$			61.6		nC
Reverse Recovery Energy	$E_{REC}$			4.1		$\mu\text{J}$
Peak Reverse Recovery Current	$I_{RRM}$			7.6		A

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.

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## TYPICAL CHARACTERISTICS

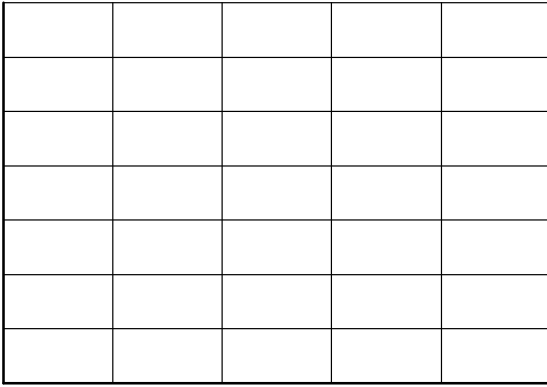


Figure 1. On Region Characteristics

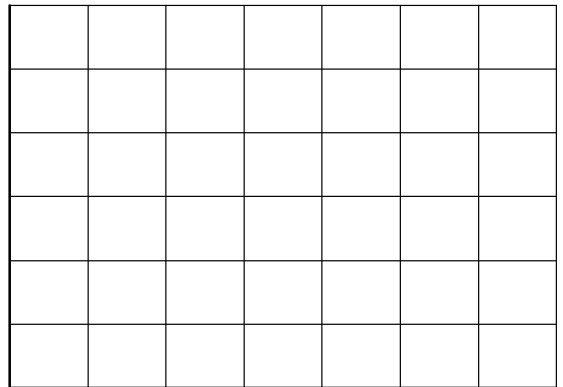
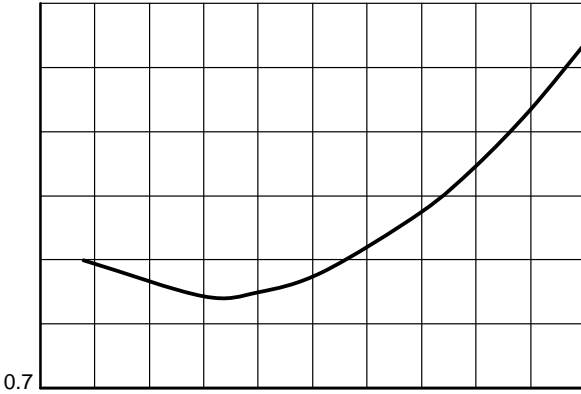


Figure 2. Normalized On Resistance vs. Drain Current and Gate Voltage



$T_J$ , JUNCTION TEMPERATURE ( $^{\circ}\text{C}$ )

Figure 3. On Resistance Variation with Temperature

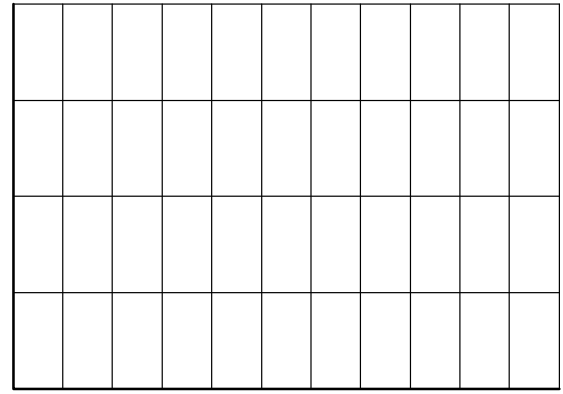
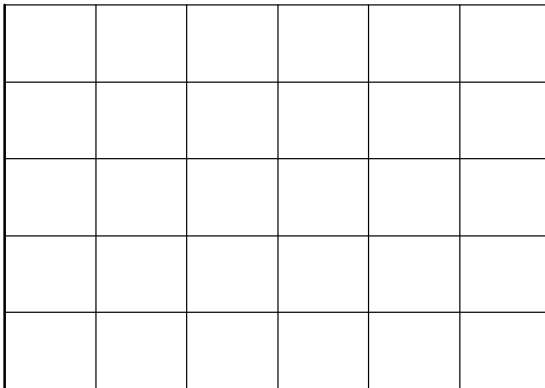


Figure 4. On Resistance vs. Gate to Source Voltage



$V_{GS}$ , GATE-TO-

Figure 5. Transfer Characteristics

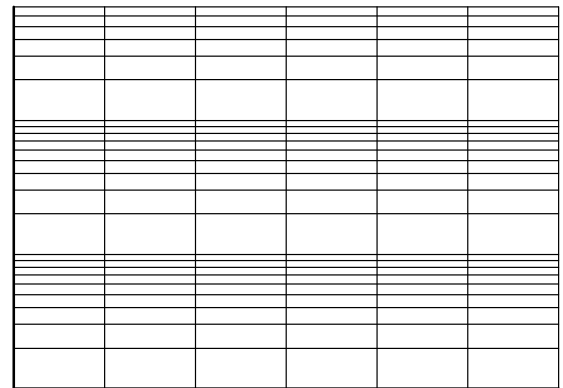


Figure 6. Diode Forward Voltage vs. Current

**NTBG080N120SC1**



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

DATE 16 AUG 2019

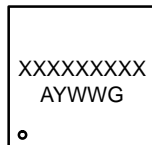
A

c2

H

C

**GENERIC  
MARKING DIAGRAM\***



XXXX = Specific Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week  
G = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.

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