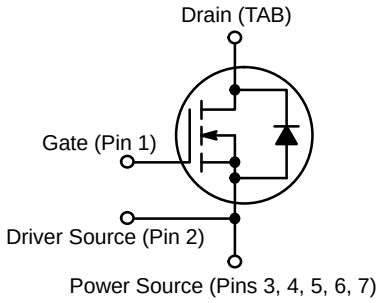
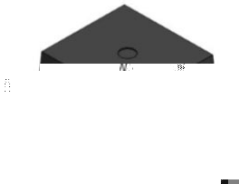
Silicon Carbide (SiC) MOSFET – EliteSiC, 40 mohm, 1200 V, M3S, D2PAK-7L

NTBG040N120M3S

$V_{(BR)DSS}$	$R_{DS(ON)}$ MAX	I_D MAX
1200 V	54 mΩ @ 18 V	57 A



N−CHANNEL MOSFET



D2PAK−7L
CASE 418BJ

Features

- Typ. $R_{DS(on)}$ = 40 mΩ @ V_{GS} = 18 V
- Ultra Low Gate Charge ($Q_{G(TOT)}$ = 75 nC)
- High Speed Switching with Low Capacitance (C_{OSS} = 80 pF)
- 100% Avalanche Tested
- This Device is Halide Free and RoHS Compliant with Exemption 7a, Pb−Free 2LI (on Second Level Interconnection)

Typical Applications

- Solar Inverters
- Electric Vehicle Charging Stations
- Uninterruptible Power Supplies (UPS)
- Energy Storage Systems
- Switch Mode Power Supplies (SMPS)

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Parameter			Symbol	Value	Unit
Drain−to−Source Voltage			V_{DSS}	1200	V
Gate−to−Source Voltage			V_{GS}	−10/+22	V
Continuous Drain Current (Notes 2, 3)	Steady State	T_C = 25°C	I_D	57	A
Power Dissipation (Note 2)	Steady State	T_C = 25°C	P_D	263	W
Continuous Drain Current (Notes 2, 3)	Steady State	T_C = 100°C	I_D	40	A
Power Dissipation (Note 2)	Steady State	T_C = 100°C	P_D	131	W
Pulsed Drain Current (Note 4)	T_C = 25°C		I_{DM}	149	A
Operating Junction and Storage Temperature Range			T_J, T_{stg}	−55 to +175	°C
Source Current (Body Diode) T_C = 25°C, V_{GS} = −3 V (Note 2)			I_S	50	A
Single Pulse Drain−to−Source Avalanche Energy ($I_{L(pk)}$ = 16.9 A, L = 1 mH) (Note 5)			E_{AS}	143	mJ
Maximum Temperature for Soldering (10 s)			T_L	270	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Surface mounted on a FR−4 board using1 in^2 pad of 2 oz copper.
2. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
3. The maximum current rating is based on typical RDS(on) performance.
4. Repetitive rating, limited by max junction temperature.
5. E_{AS} of 143 mJ is based on starting T_J = 25°C; L = 1 mH, I_{AS} = 16.9 A, V_{DD} = 100 V, V_{GS} = 18 V.

MARKING DIAGRAM

BG040N120M3S = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
ZZ = Lot Traceability

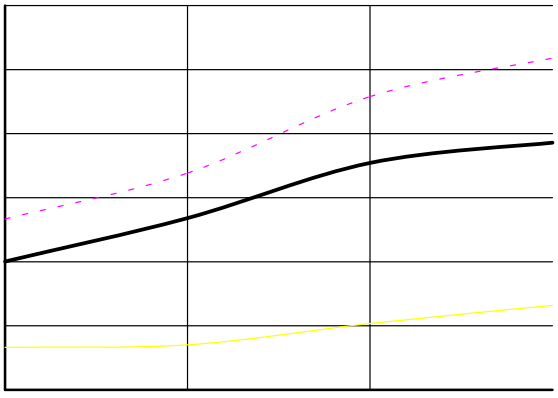
ORDERING INFORMATION

Device	Package	Shipping
NTBG040N120M3S	D2PAK−7L	800 / Tape & Reel

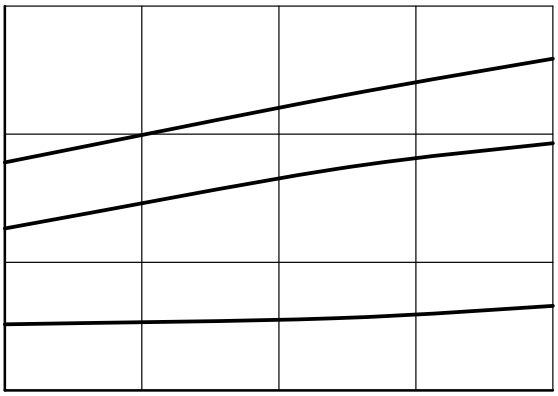
ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified) (continued)

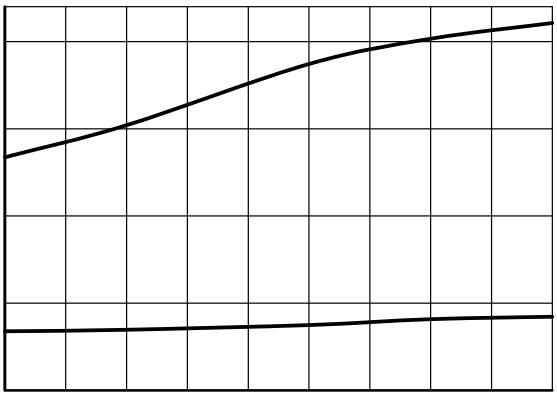
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
SOURCE−						

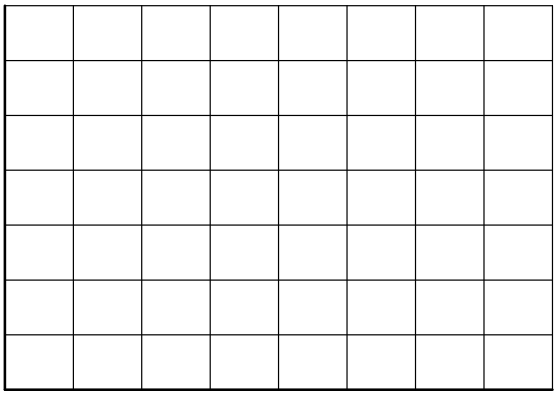
TYPICAL CHARACTERISTICS

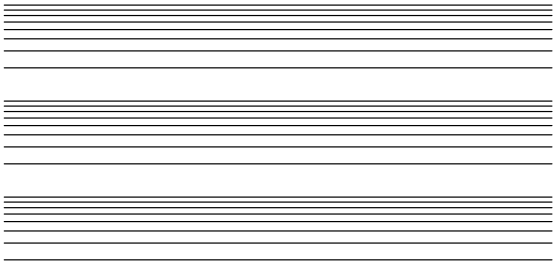


TYPICAL CHARACTERISTICS









D^{2}PAK7 (TO−263−7L HV)
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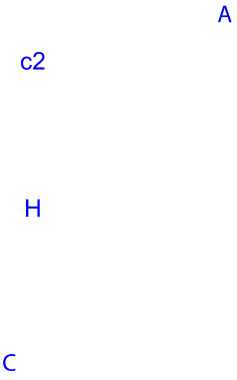
ISSUE B

DATE 16 AUG 2019



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.