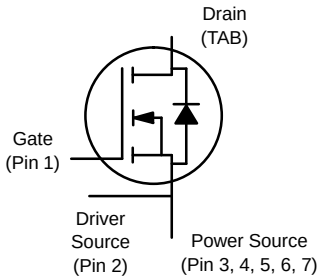
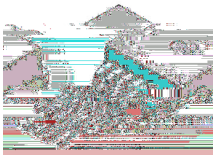
Silicon Carbide (SiC) MOSFET – EliteSiC, 28 mohm, 1700 V, M1, D2PAK-7L

NTBG028N170M1

$V_{(BR)DSS}$	$R_{DS(ON)}$ MAX	I_D MAX
1700 V	40 mΩ @ 20 V	71 A



N−CHANNEL MOSFET



D2PAK−7L
CASE 418BJ

Features

- Typ. $R_{DS(on)}$ = 28 mΩ
- Ultra Low Gate Charge (typ. $Q_{G(tot)}$ = 222 nC)
- Low Effective Output Capacitance (typ. C_{oss} = 200 pF)
- 100% Avalanche Tested
- RoHS Compliant

Typical Applications

- UPS
- DC−DC Converter
- Boost Converter

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

Parameter			Symbol	Value	Unit
Drain−to−Source Voltage			V_{DSS}	1700	V
Gate−to−Source Voltage			V_{GS}	−15/+25	V
Recommended Operation Values of Gate−to−Source Voltage		T_C < 175°C	V_{GSop}	−5/+20	V
Continuous Drain Current (Note 2)	Steady State	T_C = 25°C	I_D	71	A
Power Dissipation (Note 2)	Steady State	T_C = 25°C	P_D	428	W
Continuous Drain Current (Note 2)	Steady State	T_C = 100°C	I_D	53	A
Power Dissipation (Note 2)	Steady State	T_C = 100°C	P_D	214	W
Pulsed Drain Current (Note 3)	T_A = 25°C		I_{DM}	195	A
Operating Junction and Storage Temperature Range			T_J, T_{stg}	−55 to +175	°C
Source Current (Body Diode)			I_S	99	A
Single Pulse Drain−to−Source Avalanche Energy ($I_{L(pk)}$ = 30 A, L = 1 mH) (Note 4)			E_{AS}	450	mJ
Maximum Lead Temperature for Soldering (1/8″ from case for 5 s)			T_L	300	°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 in2 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. Repetitive rating, limited by max junction temperature.
4. EAS of 450 mJ is based on starting T_J = 25°C; L = 1 mH, I_{AS} = 30 A, V_{DD} = 120 V, V_{GS} = 18 V.

MARKING DIAGRAM

A = Assembly Location
Y = Year
WW = Work Week
ZZ = Lot Traceability
BG028N170M1 = Specific Device Code

ORDERING INFORMATION

Device	Package	Shipping†
NTBG028N170M1	D2PAK−7L	800 ea/ Tape&Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

THERMAL RESISTANCE MAXIMUM RATINGS

Parameter	Symbol	Typ	Max	Unit
Junction−to−Case − Steady State (Note 2)	$R_{\theta JC}$	0.35		°C/W
Junction−to−Ambient − Steady State (Notes 1, 2)	$R_{\theta JA}$		40	

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

Parameter	Symbol

TYPICAL CHARACTERISTICS

Figure 7. SW Loss vs. ID 25°C

Figure 8. SW Loss vs. ID 125

TYPICAL CHARACTERISTICS

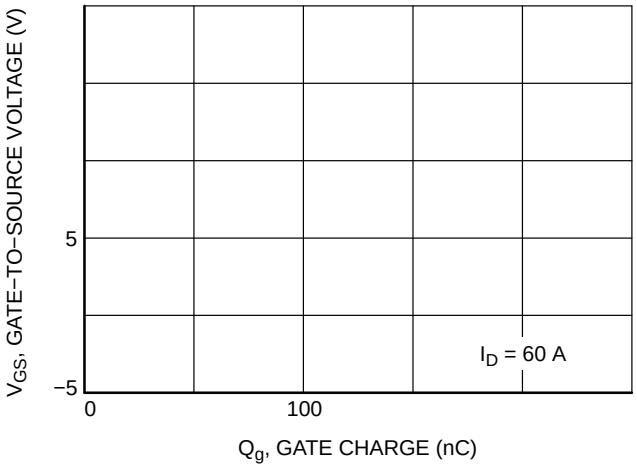


Figure 10. Gate−to−Source Voltage vs. Total Charge

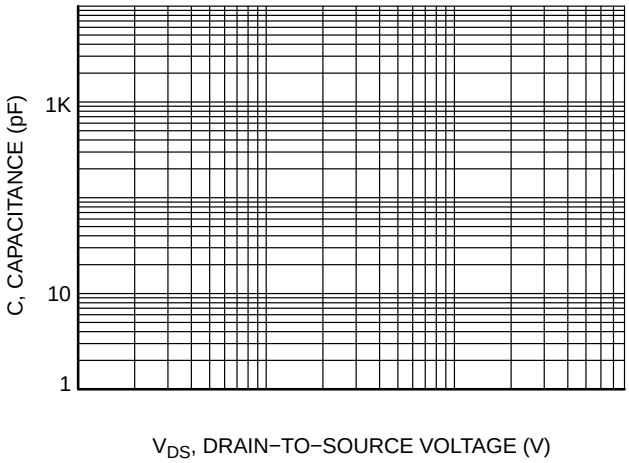


Figure 11. Capacitance vs. Drain−to−Source Voltage

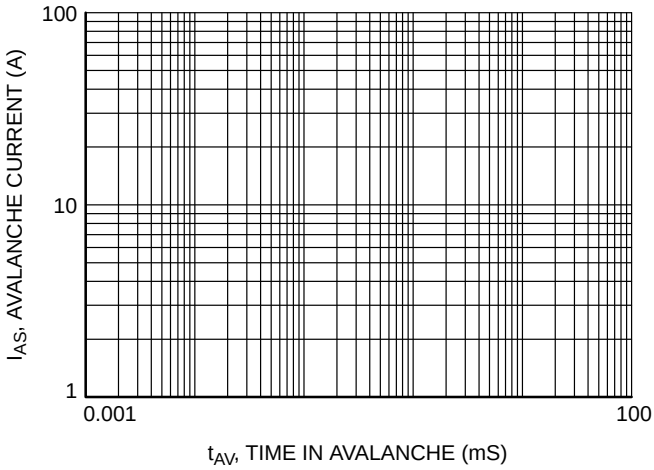


Figure 12. Unclamped Inductive Switching Capability

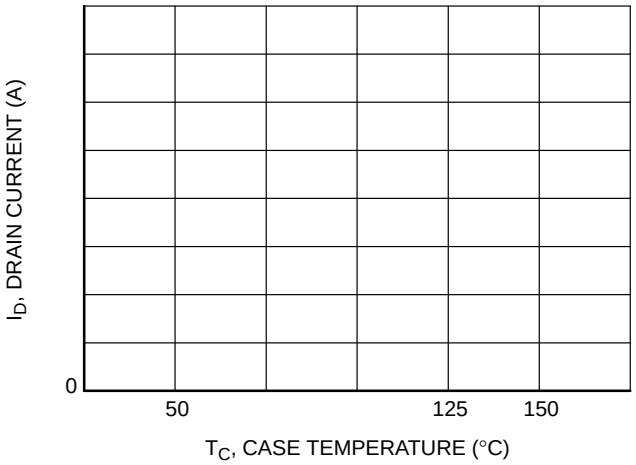


Figure 13. Maximum Continuous Drain Current vs. Case Temperature

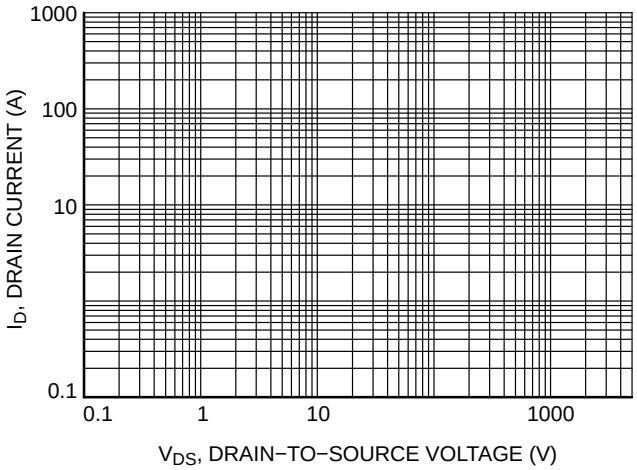


Figure 14. Maximum Rated Forward Biased Safe Operating Area

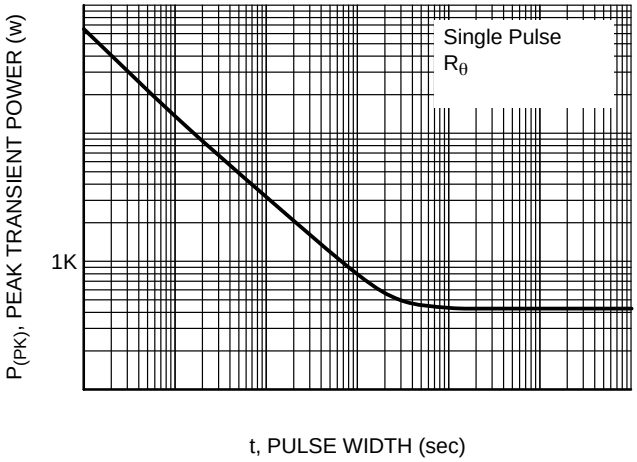


Figure 15. Single Pulse Maximum Power Dissipation

TYPICAL CHARACTERISTICS

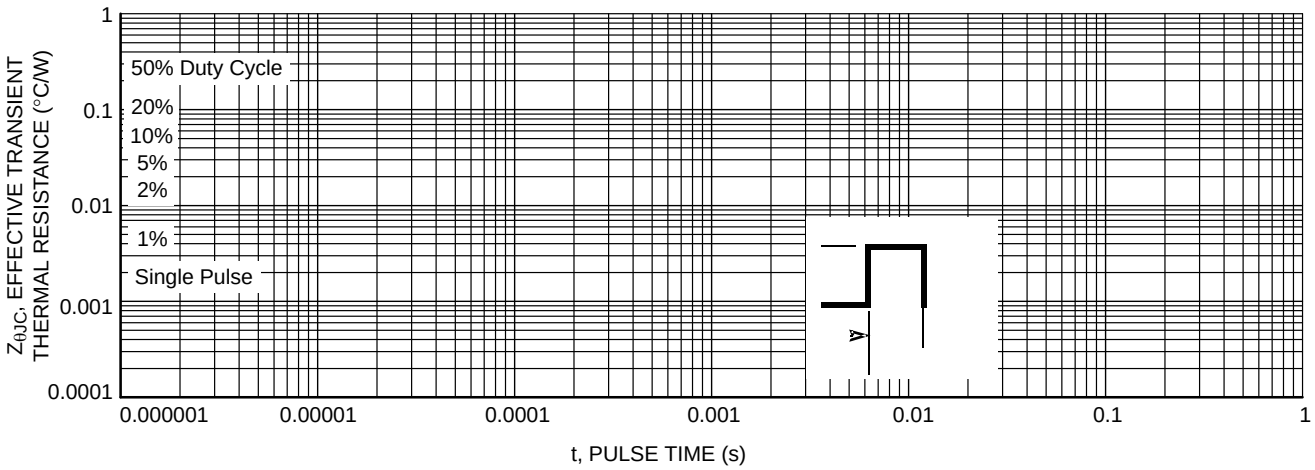


Figure 16. Transient Thermal Impedance

D^{2}PAK7 (TO−263−7L HV)
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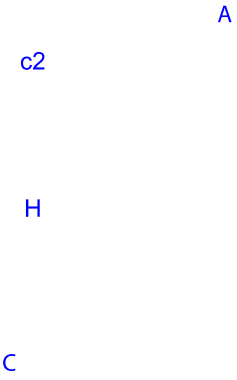

GENERIC
MARKING DIAGRAM*

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.