

Silicon Carbide (SiC) MOSFET – EliteSiC, 28 mohm, 1700 V, M1, D2PAK-7L NTBG028N170M1

Features

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

Typical Applications

- UPS
- DC–DC Converter
- Boost Converter

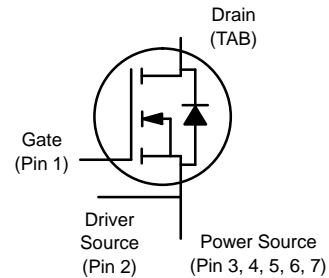
MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

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		$T_C < 175^\circ\text{C}$ V_{GSop}	-5/+20	V	
Continuous Drain Current (Note 2)	Steady State	$T_C = 25^\circ\text{C}$	I_D	71	A
			P_D	428	W
Continuous Drain Current (Note 2)	Steady State	$T_C = 100^\circ\text{C}$	I_D	53	A
			P_D	214	W
Pulsed Drain Current (Note 3)	$T_A = 25^\circ\text{C}$		I_{DM}	195	A
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to +175	$^\circ\text{C}$	
Source Current (Body Diode)		I_S	99	A	
Single Pulse Drain-to-Source Avalanche Energy ($I_{L(pk)} = 30\text{ A}$, $L = 1\text{ mH}$) (Note 4)		E_{AS}	450	mJ	
Maximum Lead Temperature for Soldering (1/8" from case for 5 s)		T_L	300	$^\circ\text{C}$	

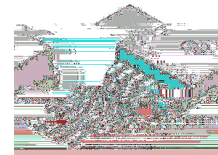
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Surface mounted on a FR-4 board using 1 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. Repetitive rating, limited by max junction temperature.
4. EAS of 450 mJ is based on starting $T_J = 25^\circ\text{C}$; $L = 1\text{ mH}$, $I_{AS} = 30\text{ A}$, $V_{DD} = 120\text{ V}$, $V_{GS} = 18\text{ V}$.

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



N-CHANNEL MOSFET



D2PAK-7L
CASE 418BJ

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.

NTBG028N170M1

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

Parameter	Symbol
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NTBG028N170M1



NTBG028N170M1

TYPICAL CHARACTERISTICS

Figure 7. SW Loss vs. ID 25°C

Figure 8. SW Loss vs. ID 125

NTBG028N170M1

TYPICAL CHARACTERISTICS

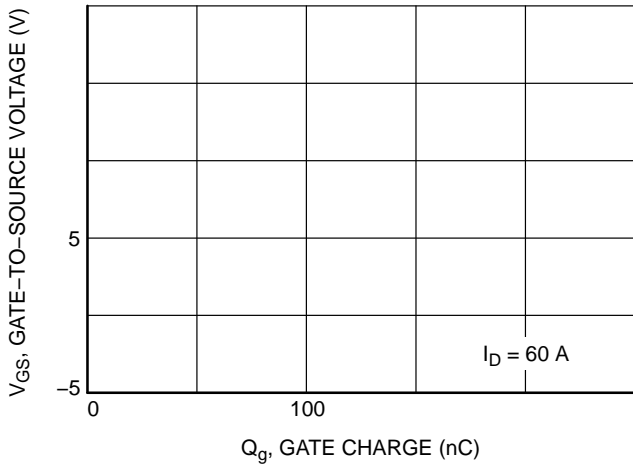


Figure 10. Gate-to-Source Voltage vs. Total Charge

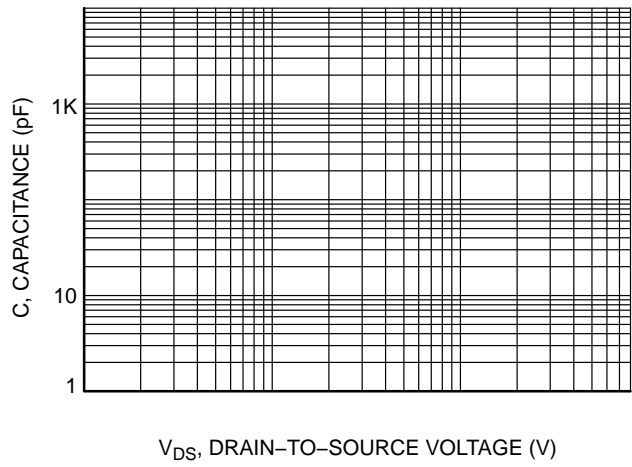


Figure 11. Capacitance vs. Drain-to-Source Voltage

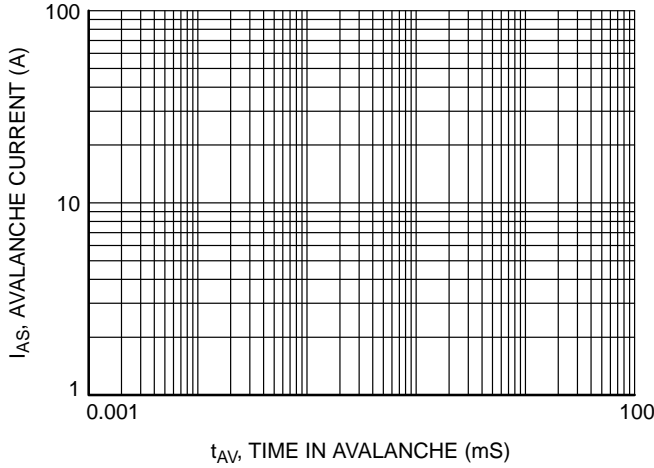


Figure 12. Unclamped Inductive Switching Capability

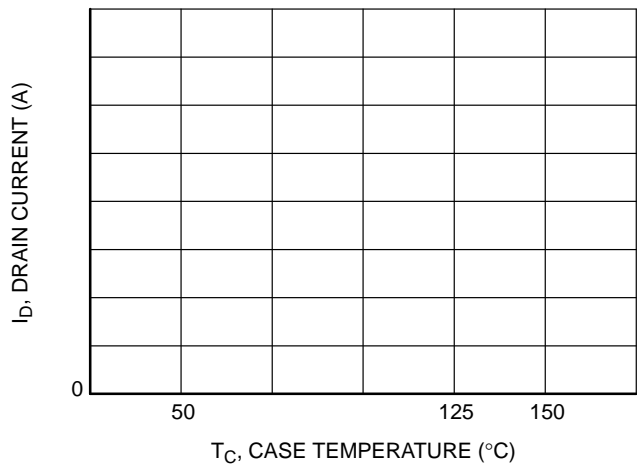


Figure 13. Maximum Continuous Drain Current vs. Case Temperature

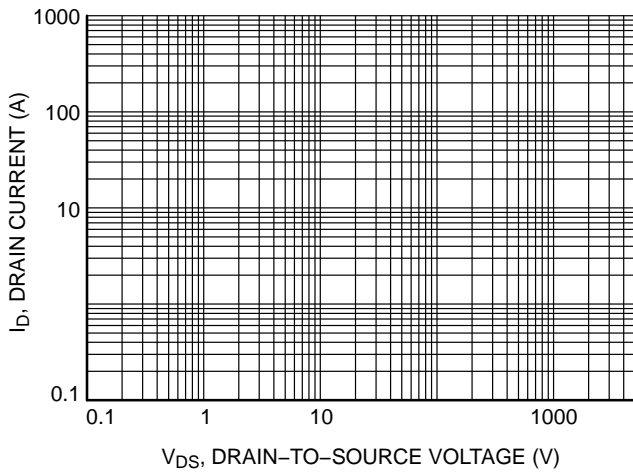


Figure 14. Maximum Rated Forward Biased Safe Operating Area

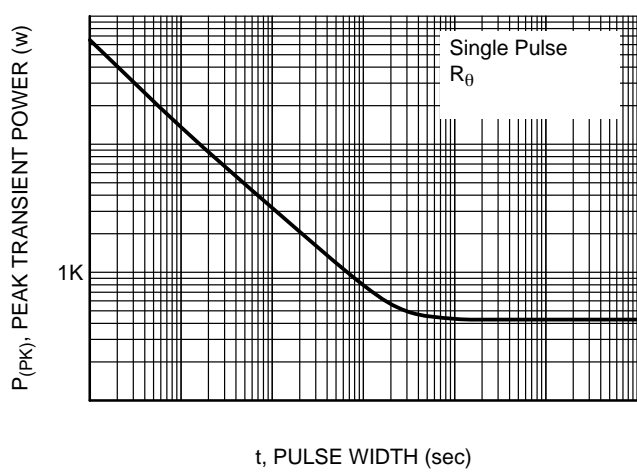


Figure 15. Single Pulse Maximum Power Dissipation

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TYPICAL CHARACTERISTICS

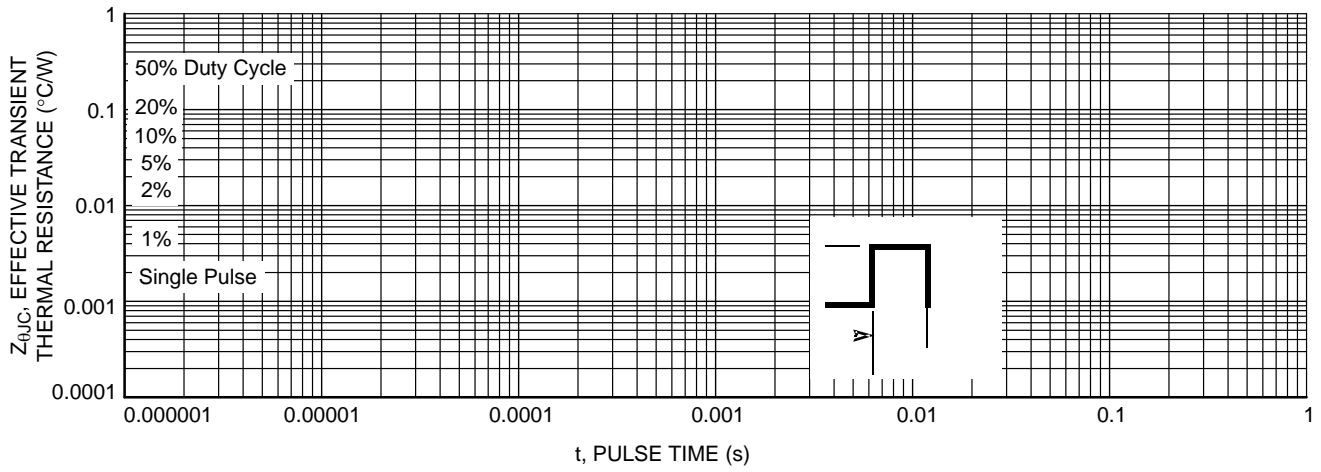


Figure 16. Transient Thermal Impedance

D²PAK7 (TO-263-7L HV)
CASE 418BJ
ISSUE B

DATE 16 AUG 2019

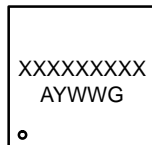
A

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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