



NTBG022N120M3S

THERMAL CHARACTERISTICS

| Parameter | Symbol | Max | Unit |
|---|-----------------|------|------|
| Junction-to-Case – Steady State (Note 2) | $R_{\theta JC}$ | 0.34 | °C/W |
| Junction-to-Ambient – Steady State (Notes 1, 2) | $R_{\theta JA}$ | 40 | |

RECOMMENDED OPERATING CONDITIONS

| Parameter | Symbol | Value | Unit |
|--|------------|----------------|------|
| Operation Values of Gate-to-Source Voltage | V_{GSop} | -5...-3 +18 | V |

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

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

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|-----------|--------|----------------|-----|-----|-----|------|
|-----------|--------|----------------|-----|-----|-----|------|

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°C (Note 7) | - | 0.3 | - | V/°C |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{GS} = 0\text{ V}, V_{DS} = 1200\text{ V}, T_J = 25^\circ\text{C}$ | - | - | 100 | μA |
| Gate-to-Source Leakage Current | I_{GSS} | $V_{GS} = +22/-10\text{ V}, V_{DS} = 0\text{ V}$ | - | - | ± 1 | μA |

ON-STATE CHARACTERISTICS

| | | | | | | |
|-------------------------------|--------------|---|------|------|-----|------------|
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{GS} = V_{DS}, I_D = 20\text{ mA}$ | 2.04 | 2.72 | 4.4 | V |
| Drain-to-Source On Resistance | $R_{DS(on)}$ | $V_{GS} = 18\text{ V}, I_D = 40\text{ A}, T_J = 25^\circ\text{C}$ | - | 22 | 30 | m Ω |
| | | $V_{GS} = 18\text{ V}, I_D = 40\text{ A}, T_J = 175^\circ\text{C}$ (Note 7) | - | 44 | - | |
| Forward Transconductance | g_{FS} | $V_{DS} = 10\text{ V}, I_D = 40\text{ A}$ (Note 7) | - | 34 | - | S |

CHARGES, CAPACITANCES & GATE RESISTANCE

| | | | | | | |
|------------------------------|--------------|--|---|------|---|----------|
| Input Capacitance | C_{ISS} | $V_{GS} = 0\text{ V}, f = 1\text{ MHz}, V_{DS} = 800\text{ V}$ (Note 7) | - | 3175 | - | pF |
| Output Capacitance | C_{OSS} | | - | 146 | - | |
| Reverse Transfer Capacitance | C_{RSS} | | - | 14 | - | |
| Total Gate Charge | $Q_{G(TOT)}$ | $V_{GS} = -3/18\text{ V}, V_{DS} = 800\text{ V}, I_D = 40\text{ A}$, (Note 7) | - | 142 | - | nC |
| Threshold Gate Charge | $Q_{G(TH)}$ | | - | 11 | - | |
| Gate-to-Source Charge | Q_{GS} | | - | 16 | - | |
| Gate-to-Drain Charge | Q_{GD} | | - | 38 | - | |
| Gate-Resistance | R_G | $f = 1\text{ MHz}$ | - | 1.5 | - | Ω |

SWITCHING CHARACTERISTICS

| | | | |
|--------------------|-------------|--|--|
| Turn-On Delay Time | $t_{d(ON)}$ | - | .1834 275.074 .907097D0 Tc@s039 .90707 |
| | | $V_{GS} = -3/18\text{ V},$ $V_{DS} = 800\text{ V},$ $I_D = 40\text{ A},$ $R_G = 4.5\ \Omega$ inductive load (Notes 6, 7) | |

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

Paramete

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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