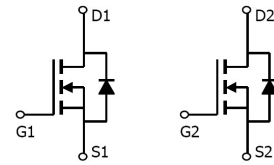


Feature

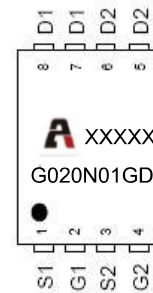
- 100V,25A
 $R_{DS(ON)} < 18m\Omega @ V_{GS}=10V$ TYP:15 m Ω
 $R_{DS(ON)} < 24m\Omega @ V_{GS}=4.5V$ TYP:20 m Ω
- Advanced Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge



Schematic Diagram

Application

- PWM applications
- Load Switch
- Power management



Marking and pin assignment

Package Marking and Ordering Information

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity (PCS) |
|----------------|-------------|----------------|-----------|------------|----------------|
| G020N01GD | APG020N01GD | PDFN5X6-D | 13 inch | - | 5000 |

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

| Parameter | Symbol | Value | Unit |
|---|-----------------|-----------|---------------------------|
| Drain-Source Voltage | V_{DS} | 100 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current ($T_a=25^\circ\text{C}$) | I_D | 25 | A |
| Continuous Drain Current ($T_a=100^\circ\text{C}$) | I_D | 17 | A |
| Pulsed Drain Current ⁽¹⁾ | I_{DM} | 75 | A |
| Singel Pulsed Avalanche Energy ⁽²⁾ | E_{AS} | 28 | mJ |
| Power Dissipation | P_D | 65 | W |
| Thermal Resistance from Junction to Case ⁽⁴⁾ | $R_{\theta JC}$ | 1.45 | $^\circ\text{C}/\text{W}$ |
| Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{STG} | -55~ +150 | $^\circ\text{C}$ |

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|----------------------|---|-----|------|------|------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D =250μA | 100 | - | - | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} =100V, V _{GS} = 0V | - | - | 1 | μA |
| Gate-body leakage current | I _{GSS} | V _{GS} =±20V, V _{DS} = 0V | - | - | ±100 | nA |
| Gate threshold voltage ⁽³⁾ | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 1 | 1.8 | 2.5 | V |
| Drain-source on-resistance ⁽³⁾ | R _{DS(on)} | V _{GS} =10V, I _D =20A | - | 15 | 18 | mΩ |
| | | V _{GS} =4.5V, I _D =15A | - | 20 | 24 | |
| Dynamic characteristics | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =25V, V _{GS} =0V, f =1MHz | - | 1130 | - | pF |
| Output Capacitance | C _{oss} | | - | 496 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 60 | - | |
| Switching characteristics | | | | | | |
| Turn-on delay time | t _{d(on)} | V _{DD} =50V, I _D =20A, R _L =6Ω V _{GS} =10V, R _G =3Ω | - | 46 | - | ns |
| Turn-on rise time | t _r | | - | 55 | - | |
| Turn-off delay time | t _{d(off)} | | - | 249 | - | |
| Turn-off fall time | t _f | | - | 105 | - | |
| Total Gate Charge | Q _g | V _{DS} =50V, I _D =20A, V _{GS} =10V | - | 30 | - | nC |
| Gate-Source Charge | Q _{gs} | | - | 6 | - | |
| Gate-Drain Charge | Q _{gd} | | - | 8.2 | - | |
| Source-Drain Diode characteristics | | | | | | |
| Diode Forward voltage ⁽³⁾ | V _{DS} | V _{GS} =0V, I _S =10A | - | - | 1.2 | V |
| Diode Forward current ⁽⁴⁾ | I _S | | - | - | 25 | A |

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: T_J=25°C, V_{DD}=20V, R_G=25 Ω, L=0.5mH
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board, t≤10 sec

Typical Performance Characteristics

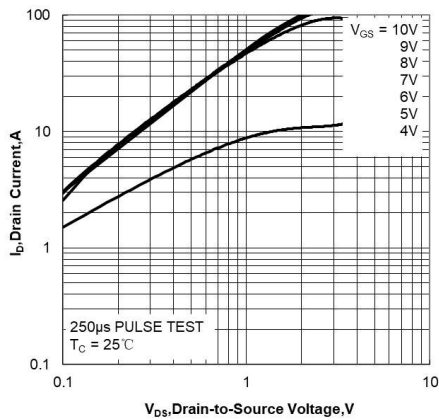


Figure 1. Output Characteristics

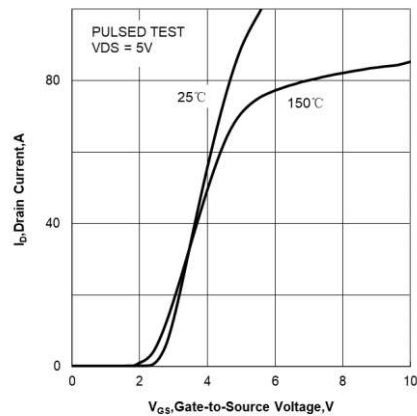


Figure 2. Transfer Characteristics

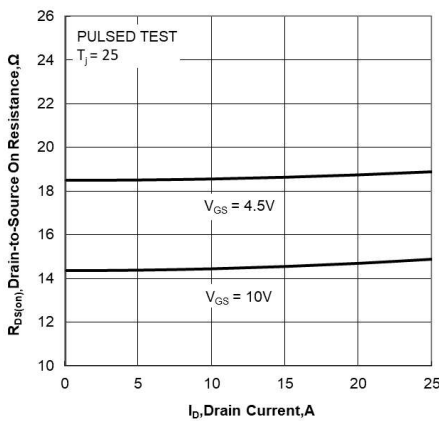


Figure 3. Drain-to-Source On Resistance vs Drain Current

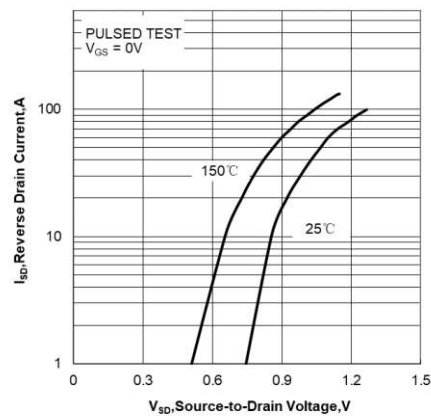


Figure 4. Body Diode Forward Voltage vs Source Current and Temperature

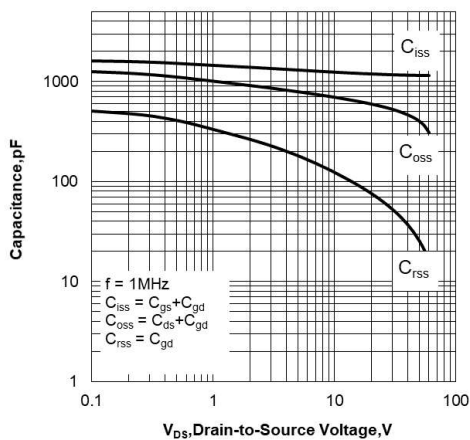


Figure 5. Capacitance Characteristics

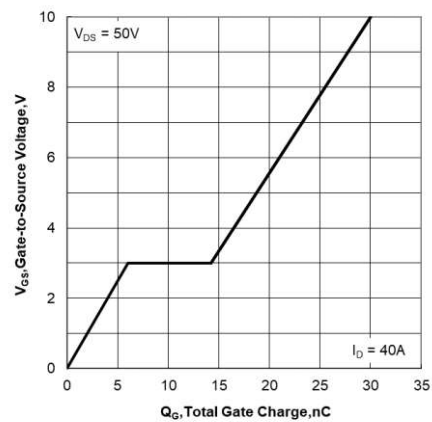


Figure 6. Gate Charge Characteristics

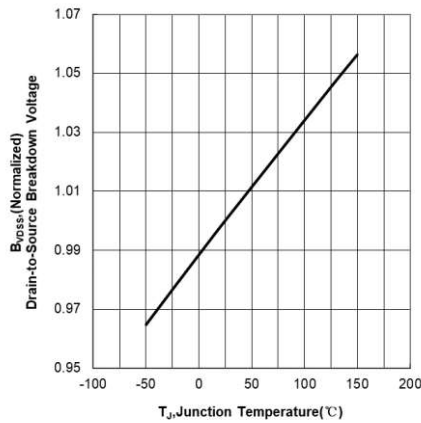


Figure 7. Normalized Breakdown Voltage vs Junction Temperature

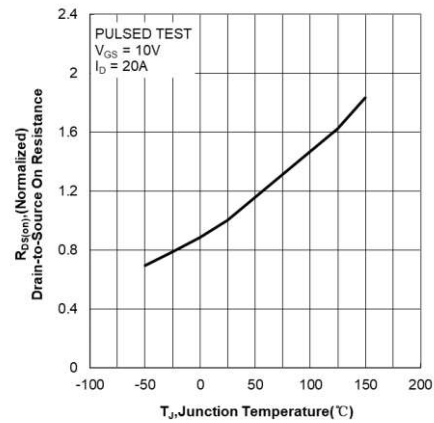


Figure 8. Normalized On Resistance vs Junction Temperature

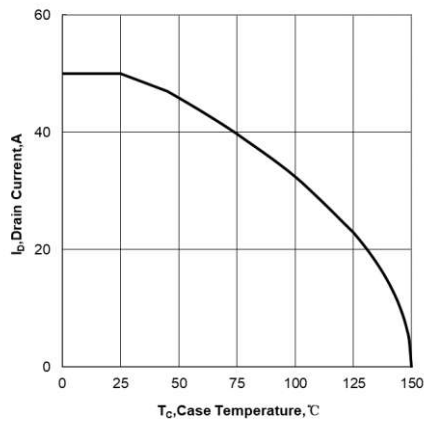


Figure 9. Maximum Continuous Drain Current vs Case Temperature

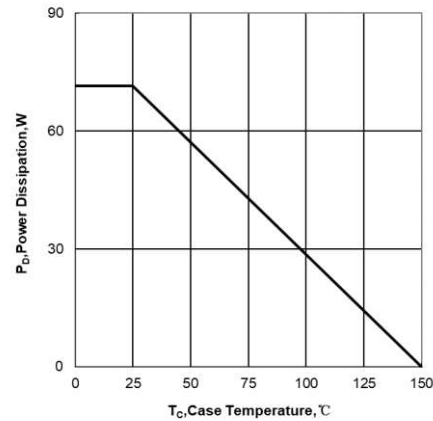


Figure 10. Maximum Power Dissipation vs Case Temperature

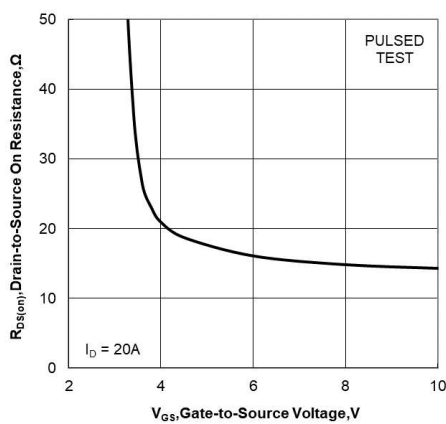


Figure 11. Drain-to-Source On Resistance vs Gate Voltage and Drain Current

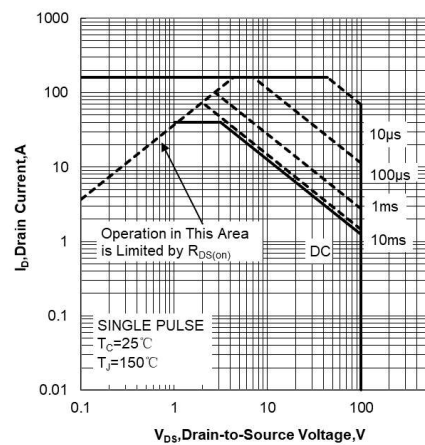


Figure 12. Maximum Safe Operating Area

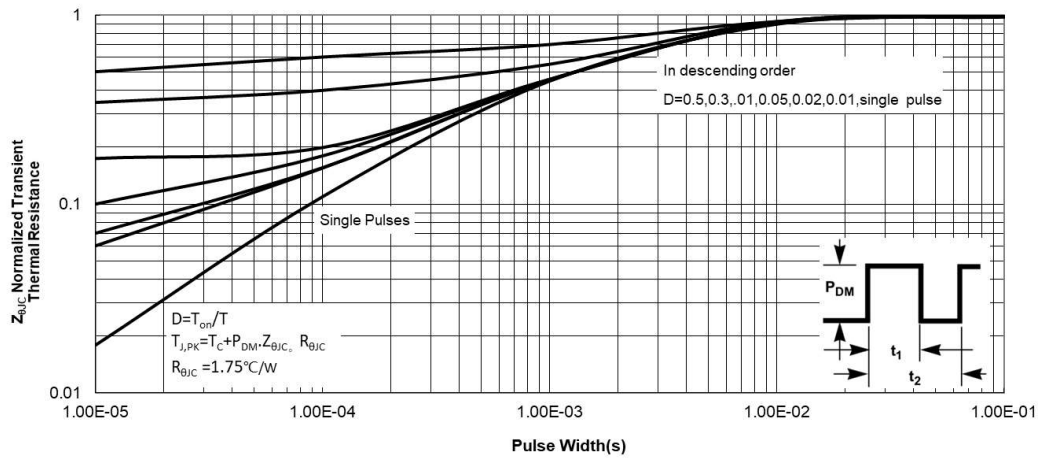
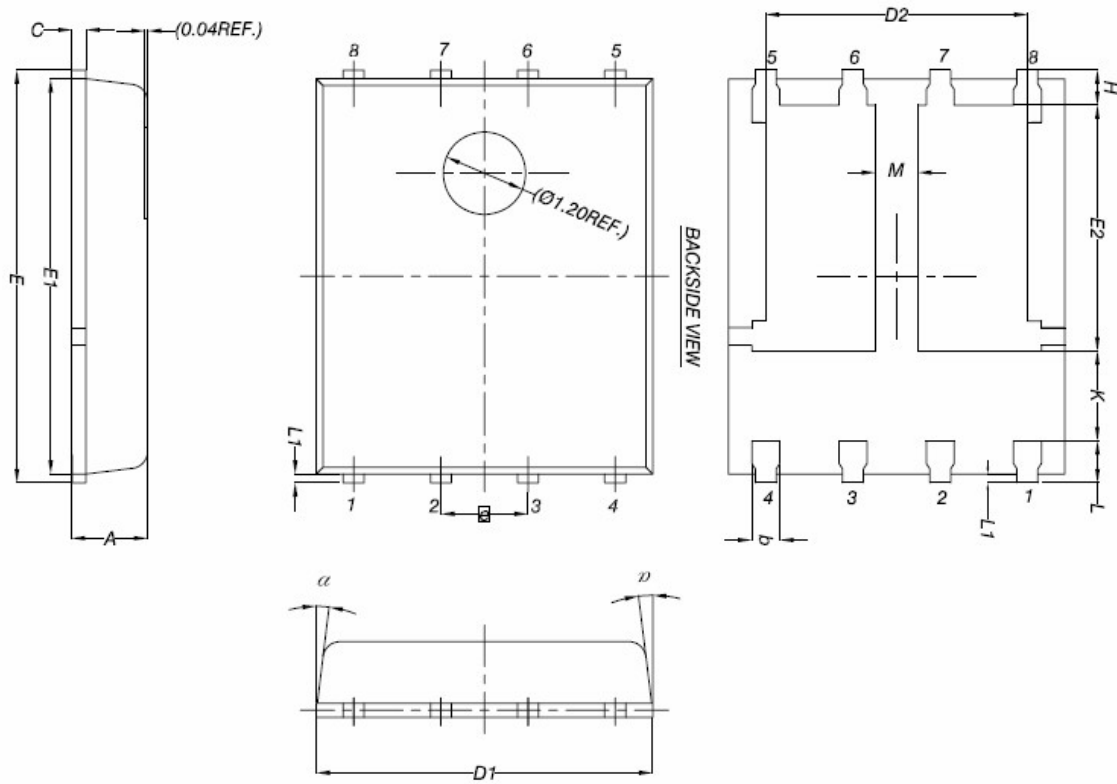


Figure 13. Maximum Effective Transient Thermal Impedance, Junction-to-Case

PDFN5X6-D Package Information



| DIM. | MILLIMETERS | | |
|------|-------------|------|------|
| | MIN. | NOM. | MAX. |
| A | 0.90 | 1.00 | 1.10 |
| b | 0.33 | 0.41 | 0.51 |
| C | 0.20 | 0.25 | 0.30 |
| D1 | 4.80 | 4.90 | 5.00 |
| D2 | 3.61 | 3.81 | 3.96 |
| E | 5.90 | 6.00 | 6.10 |
| E1 | 5.70 | 5.75 | 5.80 |
| E2 | 3.38 | 3.58 | 3.78 |
| e | 1.27 BSC | | |
| H | 0.41 | 0.51 | 0.61 |
| K | 1.10 | - | - |
| L | 0.51 | 0.61 | 0.71 |
| L1 | 0.06 | 0.13 | 0.20 |
| M | 0.50 | - | - |
| α | 0° | - | 12° |