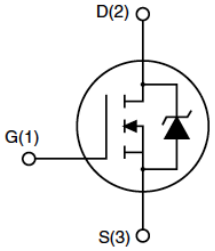
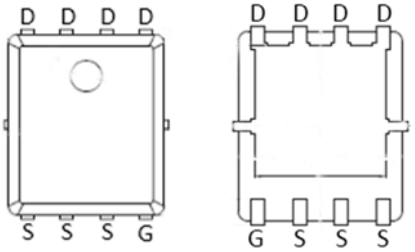
## Features

- 150V,40A
  $R_{DS(ON)}$ <22 mΩ @$V_{GS}$=10V TYP:19 mΩ
  $R_{DS(ON)}$ <27 mΩ @$V_{GS}$= 6V TYP:21mΩ
- Surface-mounted package
- Super Trench
- Low Thermal Resistance




PDFN5X6

## Applications

- Motor drivers
- DC - DC Converter

## Package Marking and Ordering Information

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity (PCS) |
|---|---|---|---|---|---|
| G22N15G | APG22N15G | PDFN5X6 | - | - | 5000 |

## ABSOLUTE MAXIMUM RATINGS ($T_a$=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 150 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current ($T_C$ =25℃) (1) | $I_D$ | 40 | A |
| Continuous Drain Current ($T_C$=100℃) (1) | $I_D$ | 16 | A |
| Pulsed Drain Current (1,2) | $I_{DM}$ | 104 | A |
| Single Pulsed Avalanche Energy （$V_{DD}$=50V, L=1.0mH） | $E_{AS}$ | 32 | mJ |
| Drain Power Dissipation | $P_D$ | 35 | W |
| Thermal Resistance from Junction to Case(1) | $R_{\theta JC}$ | 3.5 | ℃/W |
| Thermal Resistance- Junction to Ambient(1) | $R_{\theta JA}$ | 62.5 | ℃/W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55~ +150 | ℃ |

Notes：

1. Surface Mounted on 1 in2 pad area, t ≤ 10 sec
2. Pulse width ≤ 300 μs, duty cycle ≤ 2 %
3. Limited by bonding wire

## MOSFET ELECTRICAL CHARACTERISTICS($T_a$=25℃ 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 | 150 | - | - | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =120V, $V_{GS}$ = 0V | - | - | 1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±20V, $V_{DS}$ = 0V | - | - | ±100 | nA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | 2.0 | - | 4.0 | V |
| Drain-source on-resistance[a] | $R_{DS(on)}$ | $V_{GS}$ =10V, $I_D$ =15A | - | 19 | 22 | mΩ |
| | | $V_{GS}$=6V, ID=10A | - | 21 | 27 | mΩ |
| **Dynamic characteristics** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ =75V, $V_{GS}$ =0V, f =1.0MHz | - | 2008 | - | pF |
| Output Capacitance | $C_{oss}$ | | - | 152 | - | |
| Reverse Transfer Capacitance | $C_{rss}$ | | - | 23 | - | |
| **Switching characteristics** | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}$=75V, $I_D$=15A, $R_G$=3.9Ω, $R_L$=5Ω,$V_G$=10V | - | 10 | - | ns |
| Turn-on rise time | $t_r$ | | - | 12 | - | |
| Turn-off delay time | $t_{d(off)}$ | | - | 25 | - | |
| Turn-off fall time | $t_f$ | | - | 11 | - | |
| Total Gate Charge | Qg | $V_{DS}$=75V, $I_D$=15A, $V_{GS}$=10V | - | 35 | - | nC |
| Gate-Source Charge | Qgs | | - | 10 | - | |
| Gate-Drain Charge | Qgd | | - | 8 | - | |
| **Source-Drain Diode characteristics** | | | | | | |
| Diode Forward voltage[a] | $V_{SD}$ | $T_C$=25℃, $V_{GS}$ =0V, $I_S$=15A | - | - | 1.3 | V |
| Diode Forward current | $I_S$ | $T_C$=25℃ | - | - | 40 | A |
| Body Diode Reverse Recovery Time | trr | $T_C$=25℃，IF=15A,di/dt=100A/us | | 72 | | ns |
| Body Diode Reverse Recovery Charge | Qrr | $T_C$=25℃，IF=15A,di/dt=100A/us | | 236 | | nc |

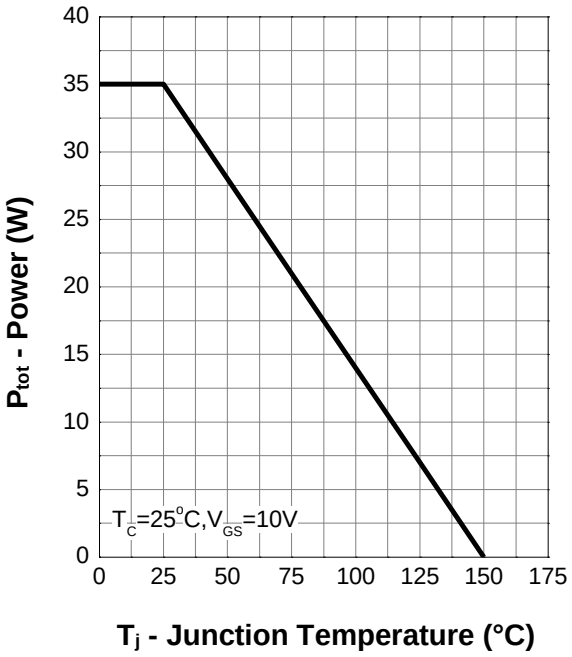
**Notes:**

a) : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

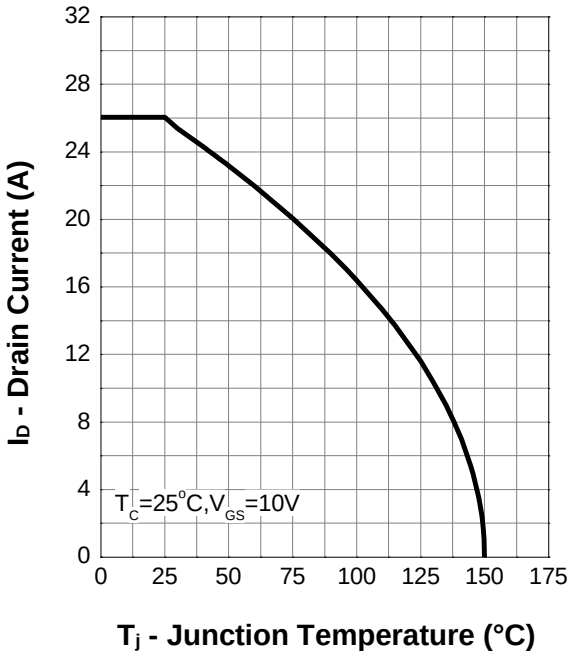
b) : Guaranteed by design, not subject to production testing

## Typical Characteristics (Cont.)

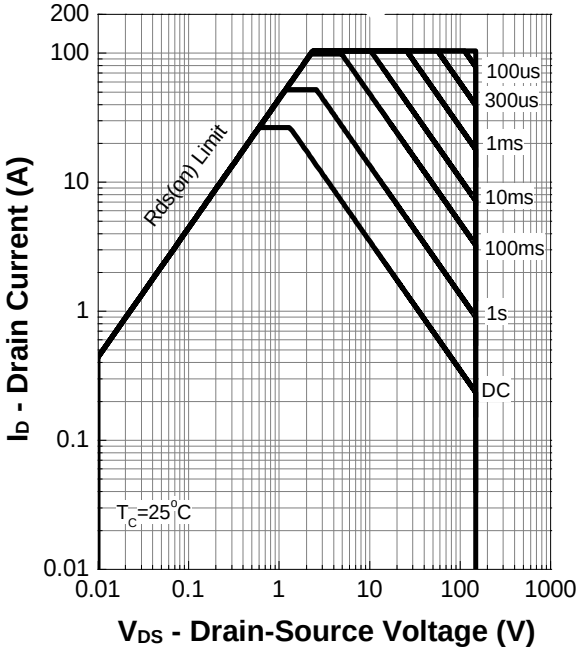
**Power Capability**



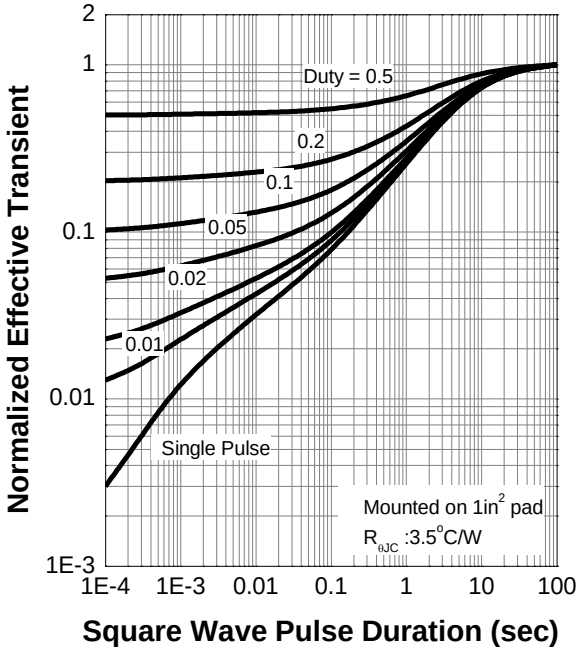

**Current Capability**




**Safe Operating Area**

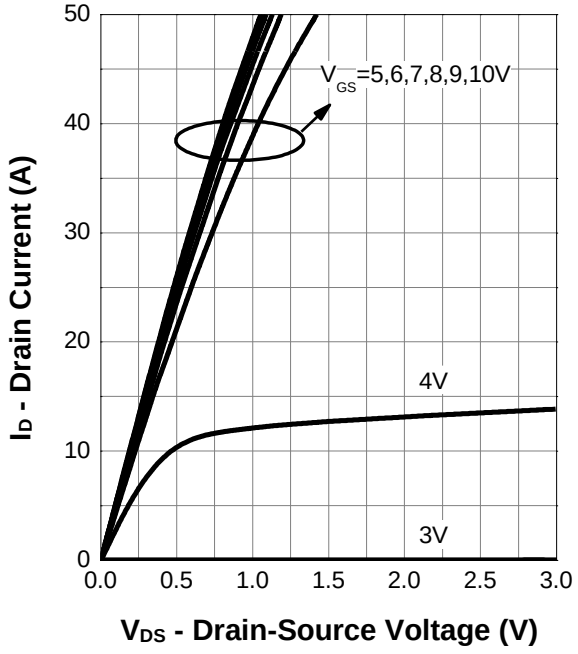



**Transient Thermal Impedance**

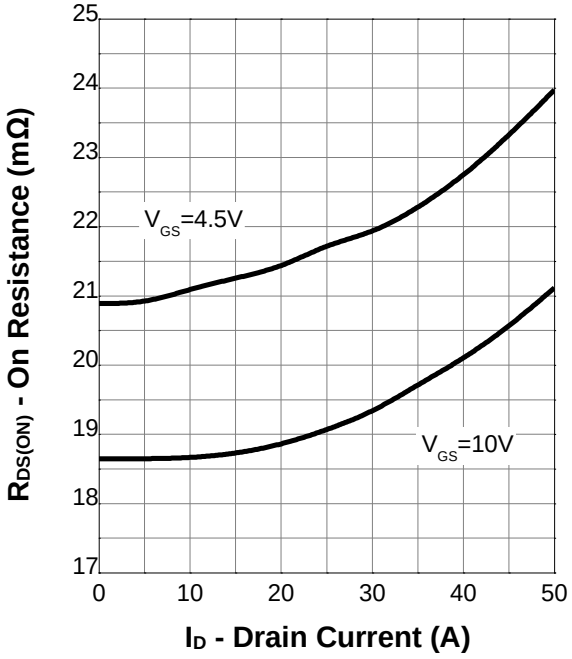


## Typical Characteristics (Cont.)

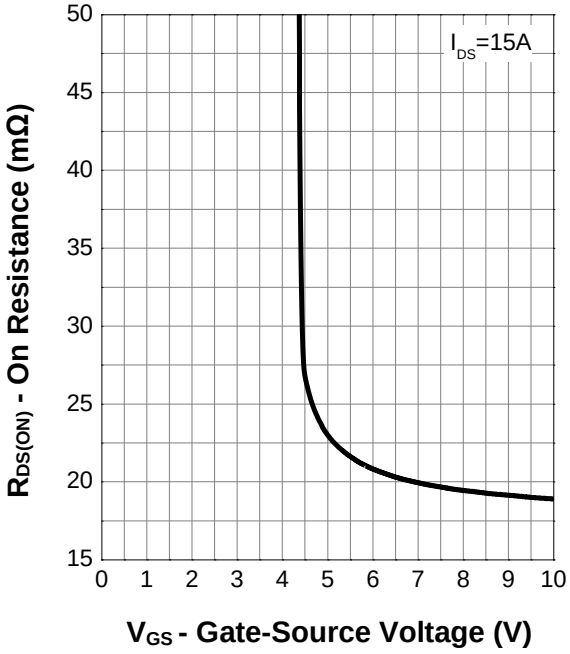
**Output Characteristics**



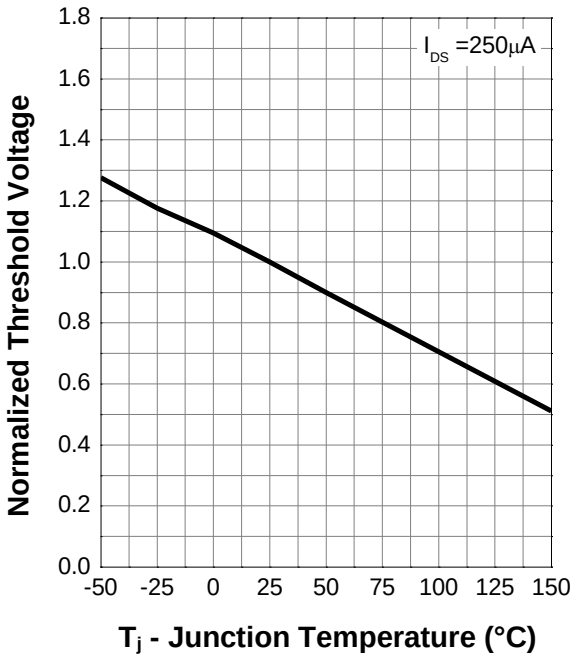

**On Resistance**




**Transfer Characteristics**

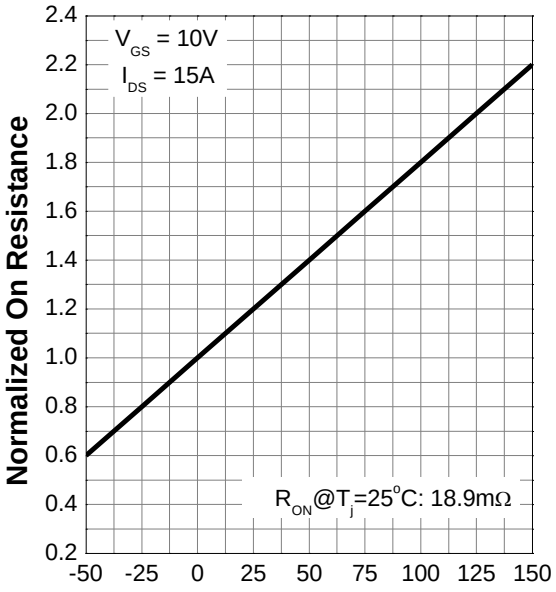



**Normalized Threshold Voltage**



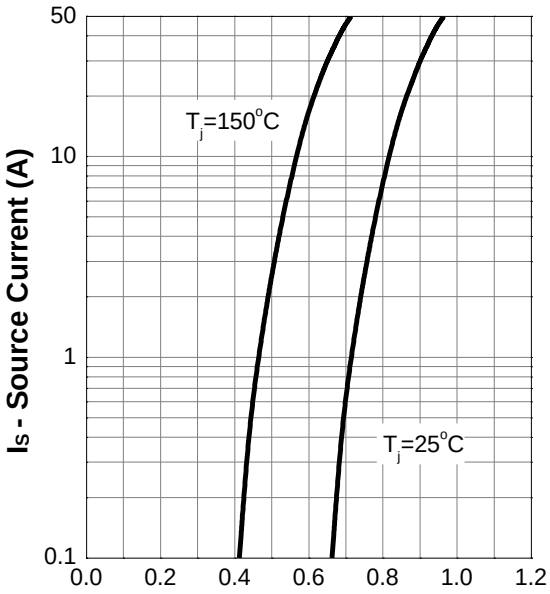
# Typical Characteristics (Cont.)

**Normalized On Resistance**



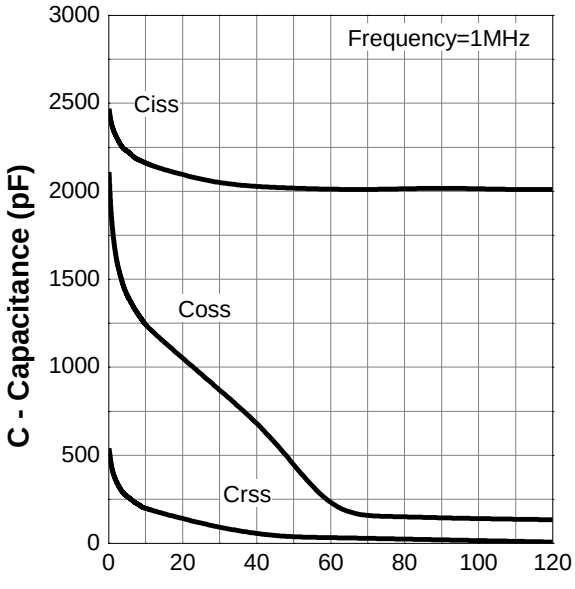

$T_j$ - Junction Temperature (°C)

**Diode Forward Current**



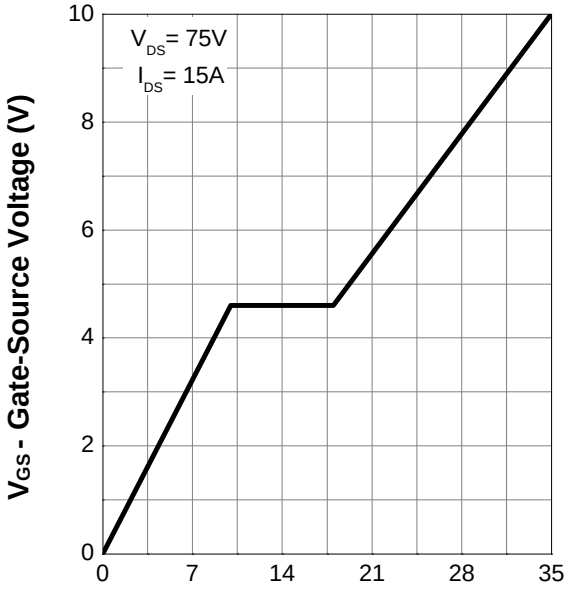

$V_{SD}$ - Source-Drain Voltage (V)

**Capacitance**




$V_{DS}$ - Drain-Source Voltage (V)

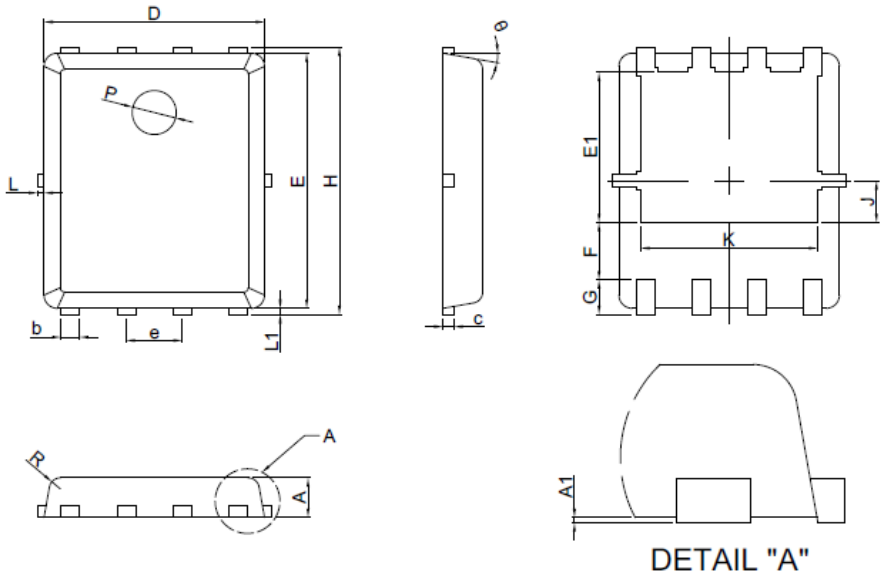
**Gate Charge**




$Q_G$ - Gate Charge (nC)

## Package Dimensions

**PDFN5x6**




| Symbol | Dimensions In Millimeters | |
|---|---|---|
| | MIN. | MAX. |
| A | 0.80 | 1.00 |
| A1 | 0.00 | 0.05 |
| b | 0.35 | 0.49 |
| c | 0.254REF | |
| D | 4.90 | 5.10 |
| F | 1.40REF | |
| E | 5.70 | 5.90 |
| e | 1.27BSC | |
| H | 5.95 | 6.20 |
| L1 | 0.10 | 0.18 |
| G | 0.60REF | |
| K | 4.00REF | |
| L | - | 0.15 |
| J | 0.95BSC | |
| P | 1.00REF | |
| E1 | 3.40REF | |
| θ | 6° | 14° |
| R | 0.25REF | |