# N-Channel Enhancement Mode MOSFET

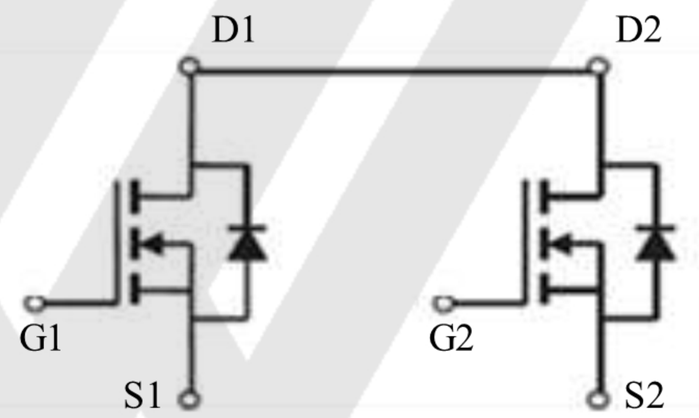
## GENERAL DESCRIPTION

The PW8205A6S uses advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

## FEATURES

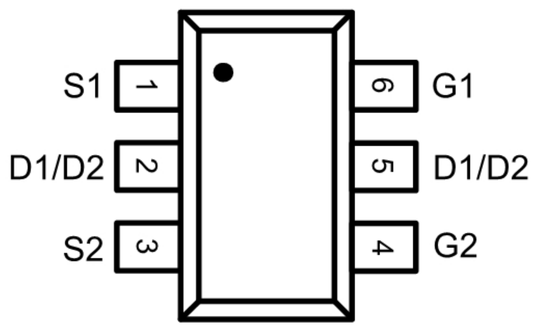
VDS = 20V,ID = 6A
RDS(ON) < 21 mΩ @ VGS=4.5V
RDS(ON) < 27 mΩ @ VGS=2.5V
Available in a 6-Pin SOT23-6 Package

Products




**PW 8205A 6S**

- Package: 6S = SOT23-6L
- Product Type
- PWCHIP




SOT-23-6L

## Absolute Maximum Ratings (TA=25℃)

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 20 | V |
| Gate-Source Voltage | $V_{GS}$ | ±12 | V |
| Drain Current, VGS @ 4.5V | ID@TA=25℃ | 6 | A |
| Drain Current, VGS @ 4.5V | ID@TA=70℃ | 4.8 | A |
| Pulsed Drain Current | $I_{DM}$ | 26 | A |
| MAx Power Dissipation | $P_D$@TA=25℃ | 2 | W |
| Storage Temperature Range | $T_{STG}$ | -55 To 150 | ℃ |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Thermal Resistance, Junction-to -ambient | $R_{\theta JA}$ | 62.5 | ℃/W |

## ELECTRICAL CHARACTERISTICS

(TA = 25°C, unless otherwise specified.)

| Parameter | Symbol | Test Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V | $I_D$=250μA | 20 | | | V |
| Drain-Source Leakage Current($T_j$=25℃) | $I_{DSS}$ | $V_{DS}$=20V | $V_{GS}$=0V | | | 1 | μA |
| Drain-Source Leakage Current($T_j$=70℃) | $I_{DSS}$ | $V_{DS}$=20V | $V_{GS}$=0V | | | 25 | μA |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±12V | $V_{DS}$=0V | | | ±100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$ | $I_D$=250μA | 0.5 | | 1.2 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$=4.5V | $I_D$=6.0A | | 21 | 27 | mΩ |
| | | $V_{GS}$=2.5V | $I_D$=4.0A | | 27 | 37 | mΩ |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=10V | $I_D$=6.0A | | 6 | | S |
| Forward On Voltage | $V_{SD}$ | $V_{GS}$=0V | $I_S$=1.7A | | | 1.2 | V |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=20V f=1.0MHz | $V_{GS}$=0V | | 570 | 910 | pF |
| Output Capacitance | $C_{oss}$ | | | | 90 | | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | | | 85 | | pF |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DS}$=10V $V_{GS}$=10V $R_D$=10Ω | $I_D$=1A $R_G$=3.3Ω | | 4.2 | | ns |
| Rise Time | $t_r$ | | | | 09 | | ns |
| Turn-off Delay Time | $t_{d(off)}$ | | | | 23 | | ns |
| Fall Time | $t_f$ | | | | 3.5 | | ns |

Notes:

1 Surface Mounted on FR4 Board, t ≤ 10 sec.

2 Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤2%.

## Typical Characteristics

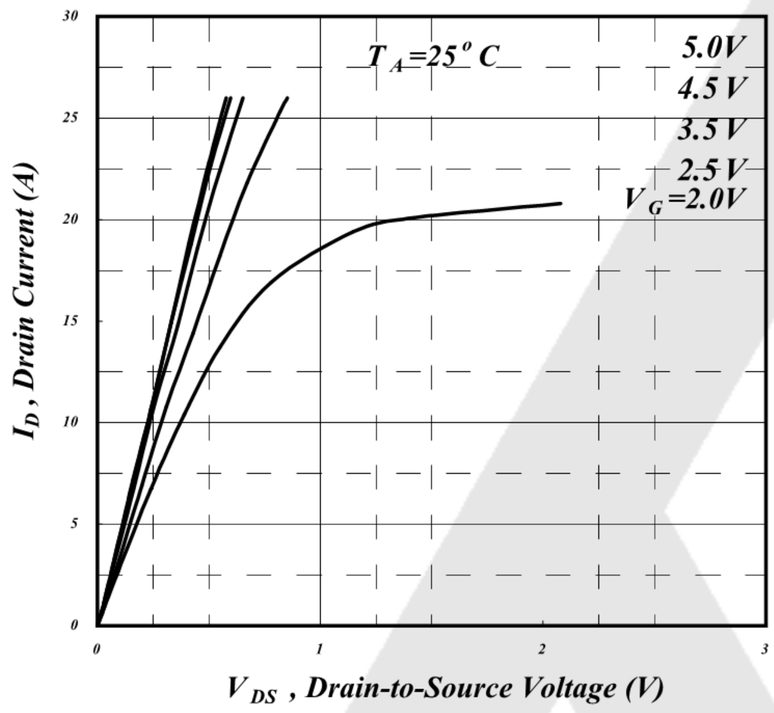



Fig.1 Typical Output Characteristics

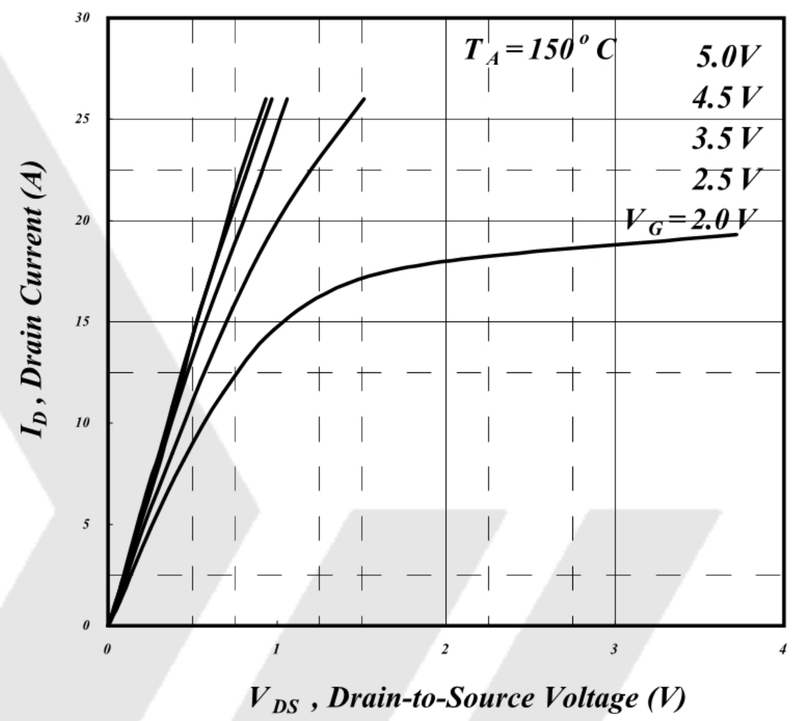



Fig.2 Typical Output Characteristics

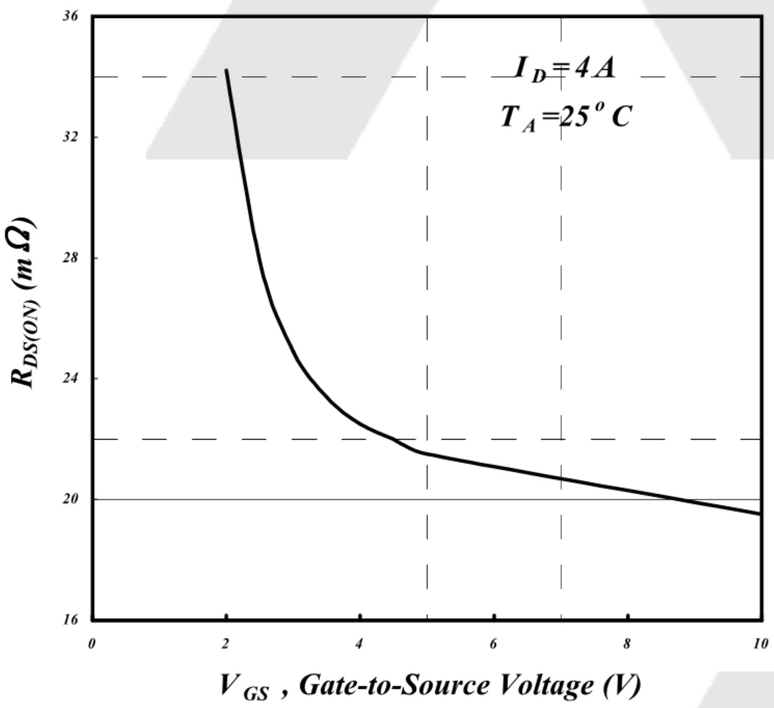



Fig.3 On-Resistance v.s. Gate Voltage

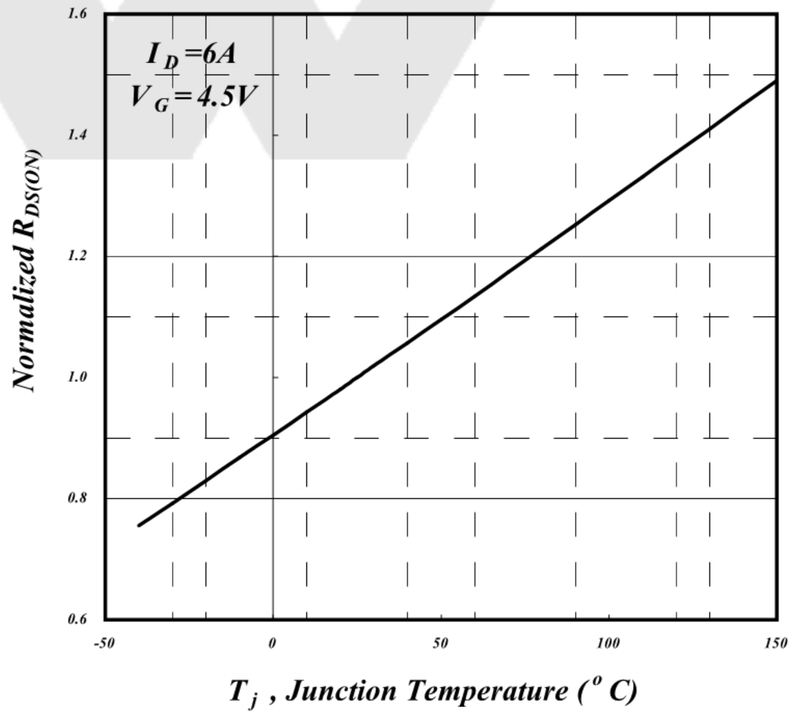



Fig.4 Normalized On-Resistancev.s. Temperature

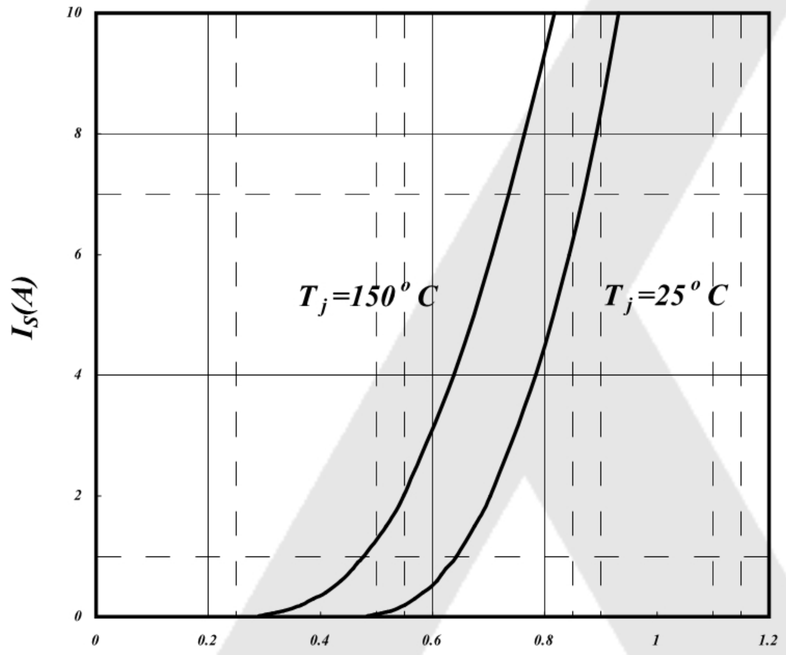



Fig.5 Forward Characteristic of Reverse Diode

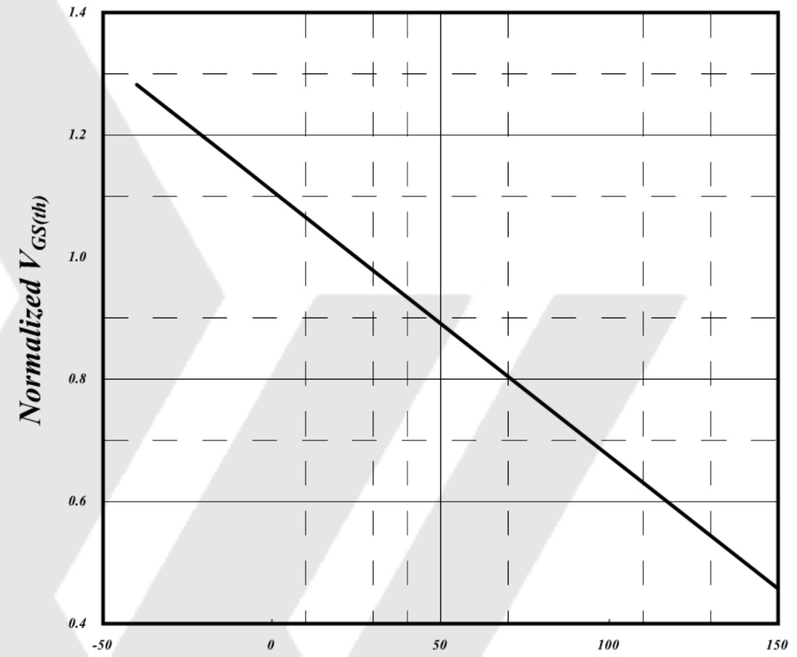



Fig.6 Gate Threshold Voltage v.s. Junction Temperature

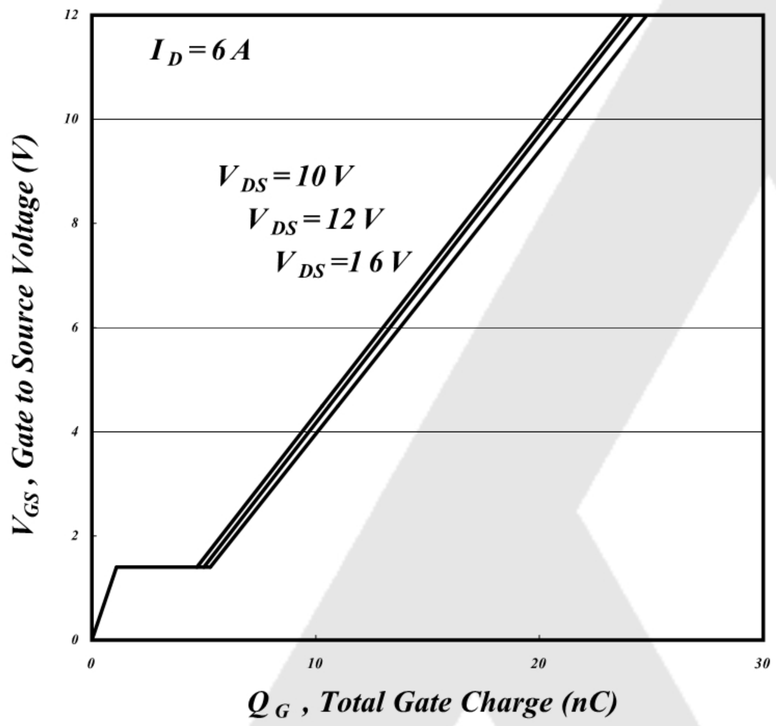



Fig.7 Junction Temperature

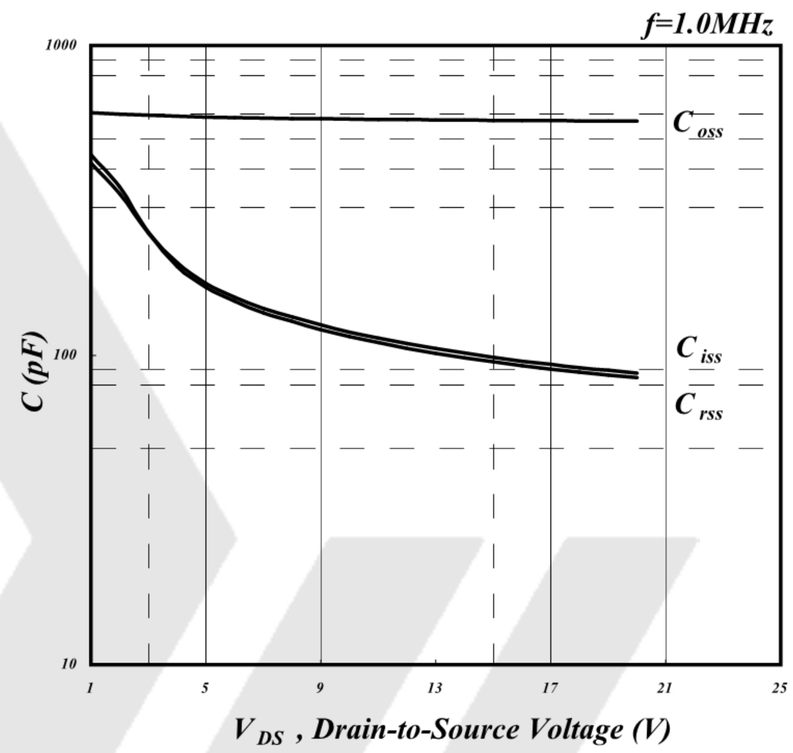



Fig.8 Typical Capacitance Characteristics

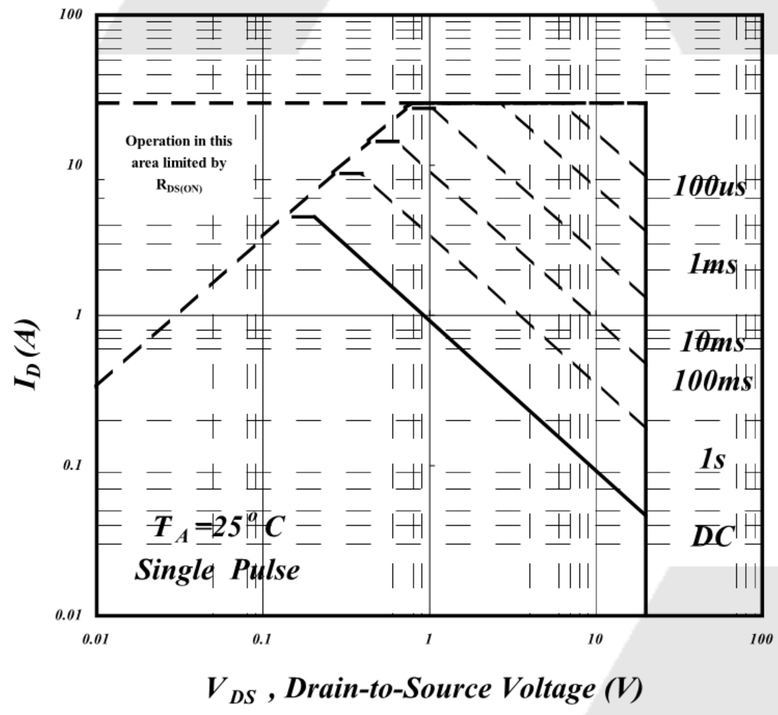



Figure 9 Maximum Safe Operating Area

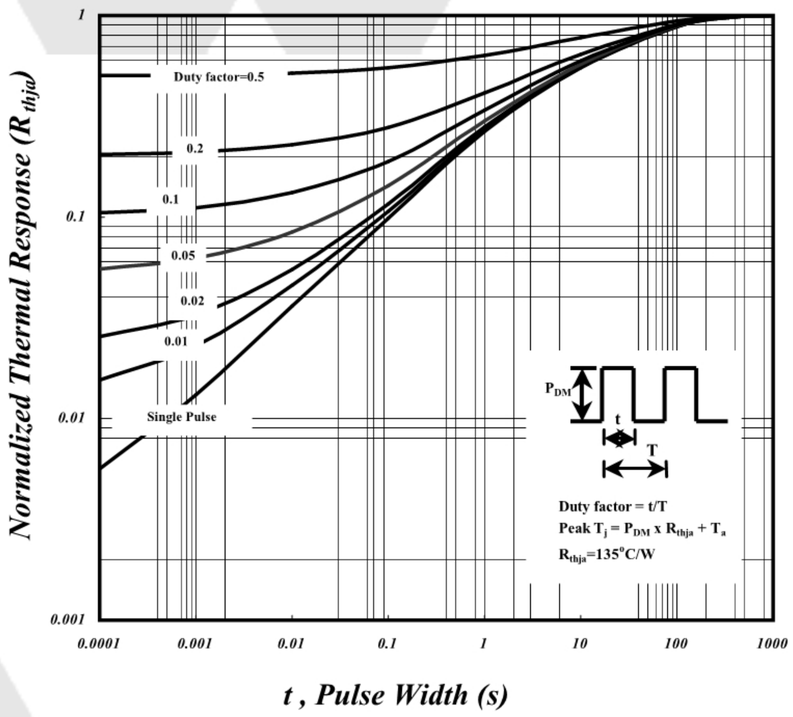



Figure 10 Effective Transient Thermal Impedance

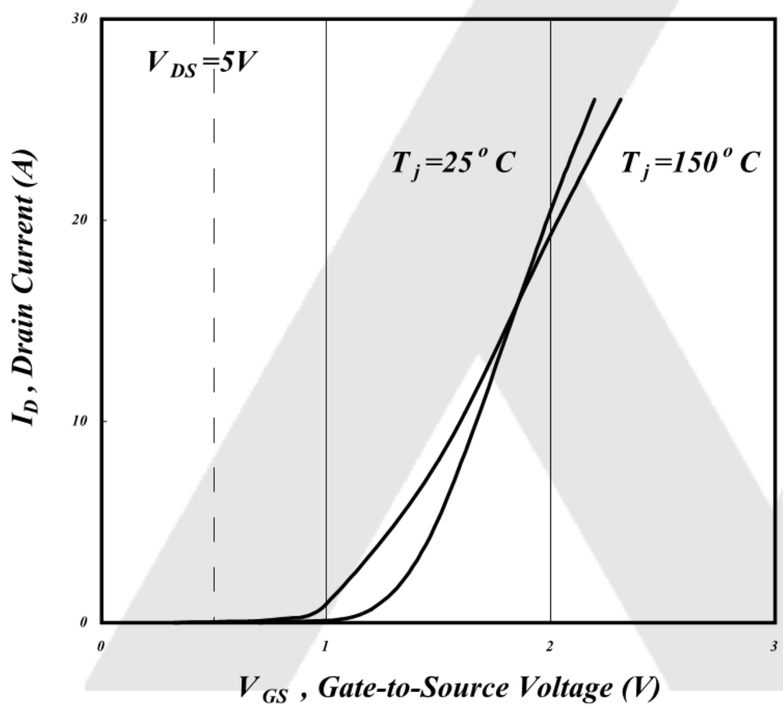



Fig 11. Transfer Characteristics

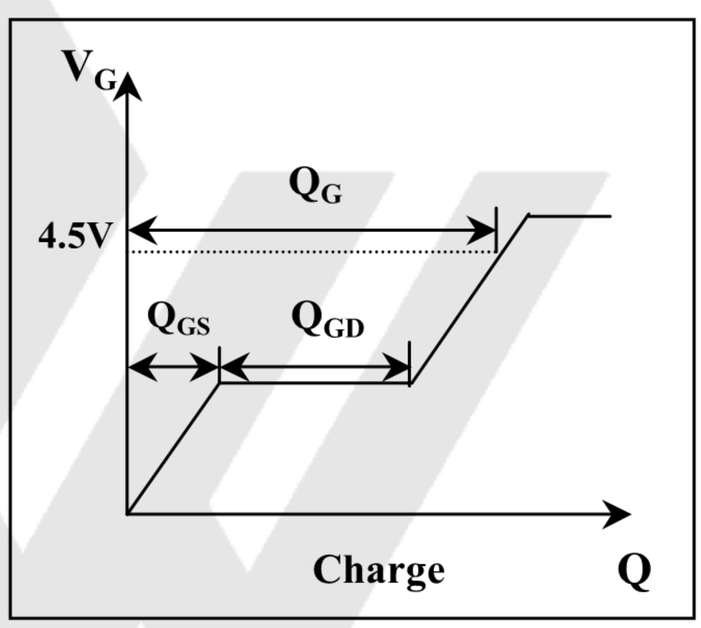
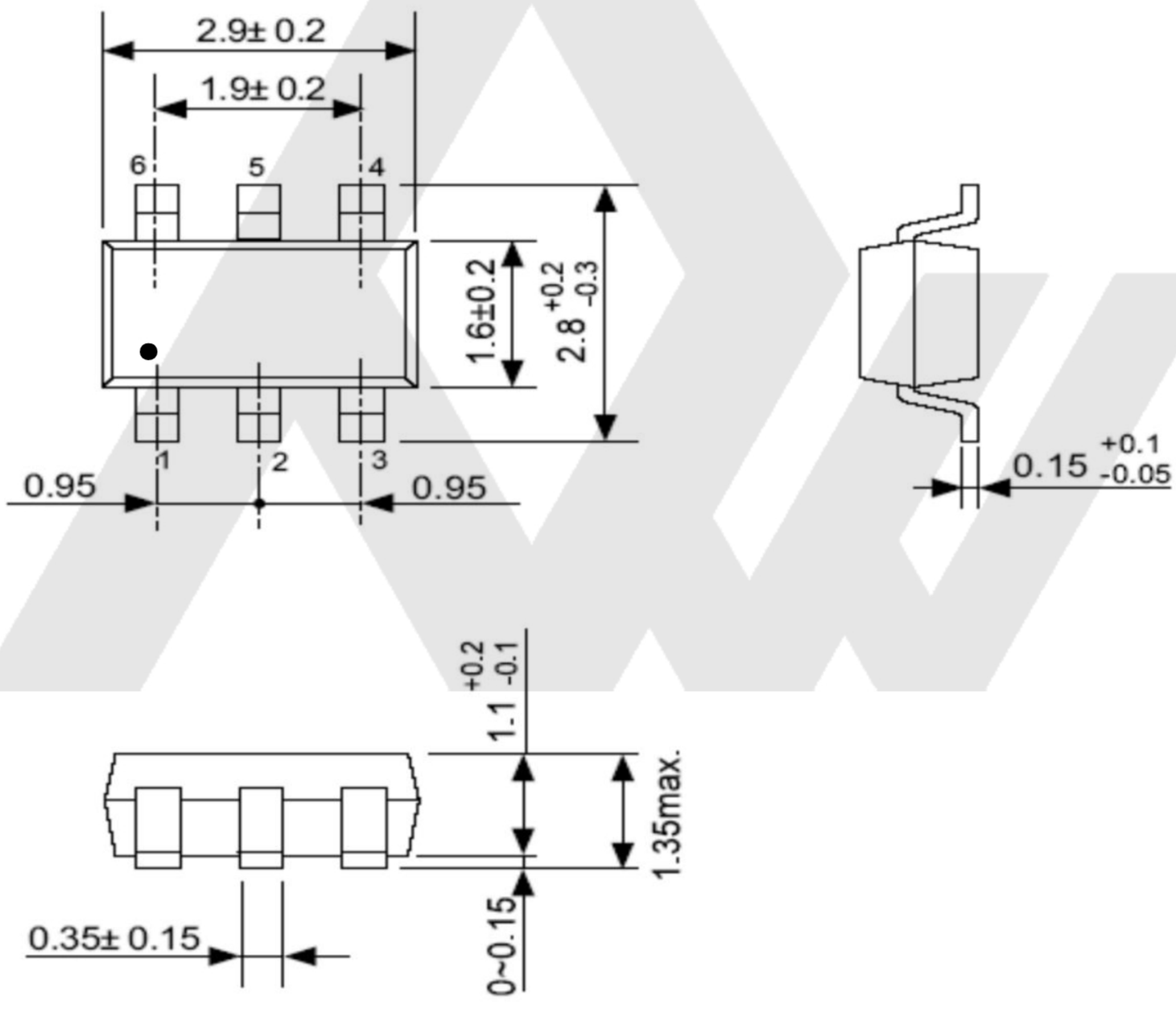



Fig 12. Gate Charge Waveform

# PACKAGE DESCRIPTION

**SOT23-6**

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