



PJT7605-AU

60V Complementary Enhancement Mode MOSFET – ESD Protected

| | | | |
|----------------|------------------|----------------|---------------|
| Voltage | 60 / -60V | Current | 250 mA |
|----------------|------------------|----------------|---------------|

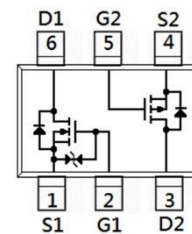
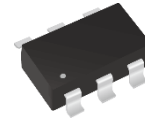
Features

- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case : SOT-363 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0002 ounces, 0.006 grams

SOT-363



Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

| PARAMETER | | SYMBOL | N-Ch LIMIT | P-Ch LIMIT | UNITS |
|--|----------------------|-----------------------------------|------------|------------|-------|
| Drain-Source Voltage | | V _{DS} | 60 | -60 | V |
| Gate-Source Voltage | | V _{GS} | ±20 | ±20 | V |
| Continuous Drain Current ^(Note 4) | | I _D | 250 | -250 | mA |
| Pulsed Drain Current ^(Note 1) | | I _{DM} | 1000 | -1000 | mA |
| Power Dissipation | T _a =25°C | P _D | 350 | | mW |
| | Derate above 25°C | | 2.8 | | mW/°C |
| Operating Junction and Storage Temperature Range | | T _J , T _{STG} | -55~150 | | °C |
| Typical Thermal Resistance | | R _{θJA} | 357 | | °C/W |
| - Junction to Ambient ^(Note 3) | | | | | |



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N-Channel Electrical Characteristics (T_A=25°C unless otherwise noted)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---|---------------------|---|------|------|------|-------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} =0V, I _D = 250uA | 60 | - | - | V |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D = 250uA | 1 | 1.5 | 2.5 | V |
| Drain-Source On-State Resistance | R _{DS(on)} | V _{GS} =10V, I _D = 500mA | - | 1.7 | 3 | Ω |
| | | V _{GS} = 4.5V, I _D = 200mA | - | 2.2 | 4 | |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 60V, V _{GS} =0V | - | - | 1 | uA |
| Gate-Source Leakage Current | I _{GSS} | V _{GS} =±20V, V _{DS} =0V | - | - | ±10 | uA |
| Dynamic | | | | | | |
| Total Gate Charge | Q _g | V _{DS} =15V, I _D =200mA, V _{GS} =5V (Note 1,2) | - | 0.7 | - | nC |
| Gate-Source Charge | Q _{gs} | | - | 0.3 | - | |
| Gate-Drain Charge | Q _{gd} | | - | 0.1 | - | |
| Input Capacitance | C _{iss} | V _{DS} =25V, V _{GS} =0V, f=1.0MHZ | - | 23 | - | pF |
| Output Capacitance | C _{oss} | | - | 13 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 7 | - | |
| Switching | | | | | | |
| Turn-On Delay Time | t _{d(on)} | V _{DD} =30V, I _D =200mA, V _{GS} =10V, R _G =10Ω (Note 1,2) | - | 3 | - | ns |
| Turn-On Rise Time | t _r | | - | 18 | - | |
| Turn-Off Delay Time | t _{d(off)} | | - | 9 | - | |
| Turn-Off Fall Time | t _f | | - | 22 | - | |
| Drain-Source Diode | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I _s | --- | - | - | 0.25 | A |
| Diode Forward Voltage | V _{SD} | I _s = 200mA, V _{GS} =0V | - | 0.8 | 1.3 | V |



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P-Channel Electrical Characteristics (T_A=25°C unless otherwise noted)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---|---------------------|--|------|-------|------|-------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} =0V, I _D = -250uA | -60 | - | - | V |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D = -250uA | -0.8 | -1.6 | -2 | V |
| Drain-Source On-State Resistance | R _{DS(on)} | V _{GS} = -10V, I _D =-500mA | - | 2.4 | 4 | Ω |
| | | V _{GS} = -4.5V, I _D =-200mA | - | 2.8 | 6 | |
| | | V _{GS} = -2.5V, I _D = -50mA | - | 4.7 | 13 | |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =-60V, V _{GS} =0V | - | - | -1 | uA |
| Gate-Source Leakage Current | I _{GSS} | V _{GS} =±20V, V _{DS} =0V | - | - | ±100 | nA |
| Dynamic | | | | | | |
| Total Gate Charge | Q _g | V _{DS} =-25V, I _D =-100mA, V _{GS} =-4.5V(Notes 1,2) | - | 1.1 | - | nC |
| Gate-Source Charge | Q _{gs} | | - | 0.3 | - | |
| Gate-Drain Charge | Q _{gd} | | - | 0.2 | - | |
| Input Capacitance | C _{iss} | V _{DS} =-25V, V _{GS} =0V, f=1.0MHZ | - | 51 | - | pF |
| Output Capacitance | C _{oss} | | - | 15 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 2.2 | - | |
| Switching | | | | | | |
| Turn-On Delay Time | t _{d(on)} | V _{DD} =-25V, I _D =-100mA, V _{GS} =-10V, R _G =6Ω (Notes 1,2) | - | 4.8 | - | ns |
| Turn-On Rise Time | t _r | | - | 19 | - | |
| Turn-Off Delay Time | t _{d(off)} | | - | 52 | - | |
| Turn-Off Fall Time | t _f | | - | 32 | - | |
| Drain-Source Diode | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I _s | --- | - | - | -250 | mA |
| Diode Forward Voltage | V _{SD} | I _s =-500mA, V _{GS} =0V | - | -0.95 | -1.3 | V |

NOTES :

1. Pulse width ≤ 300us, Duty cycle ≤ 2%
2. Essentially independent of operating temperature typical characteristics.
3. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1 inch FR-4 with 2oz. square pad of copper.
4. The maximum current rating is package limited.



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N-Channel TYPICAL CHARACTERISTIC CURVES

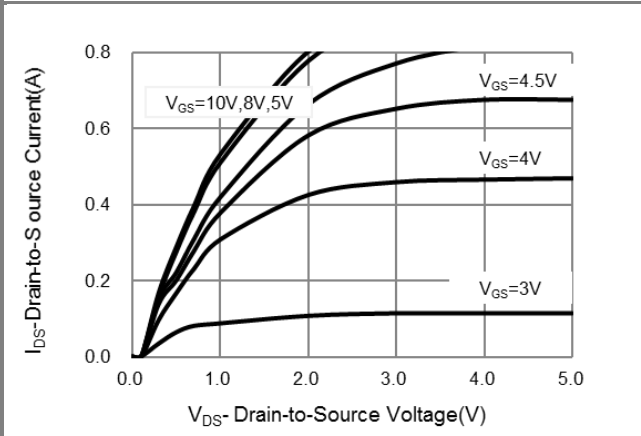


Fig.1 Output Characteristics

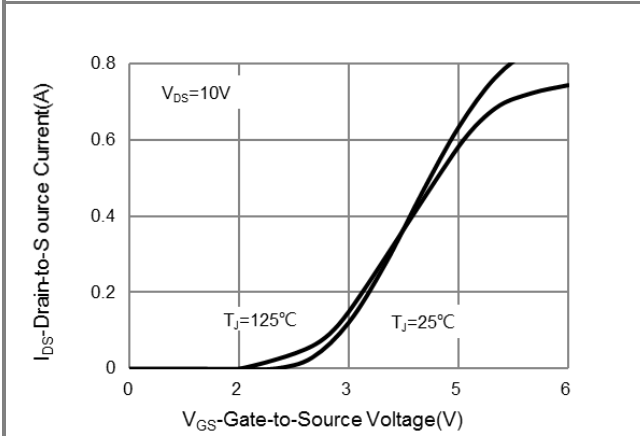


Fig.2 Transfer Characteristics

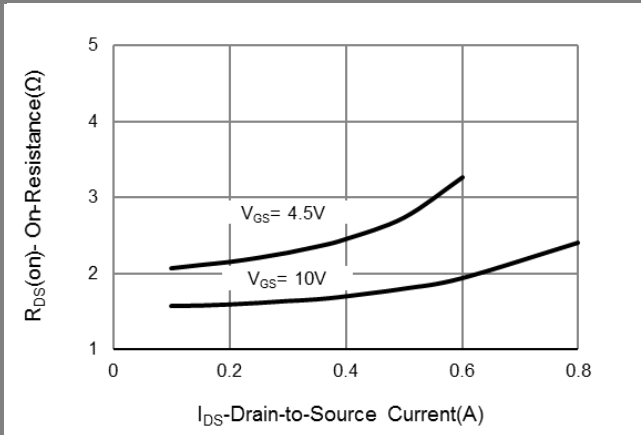


Fig.3 On-Resistance vs. Drain Current

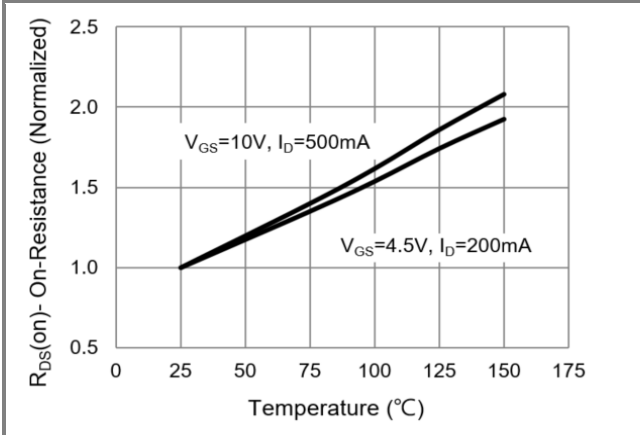


Fig.4 On-Resistance vs. Junction temperature

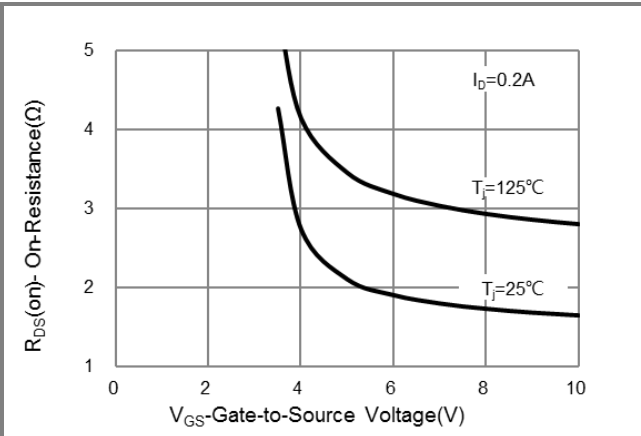


Fig.5 On-Resistance Variation with VGS

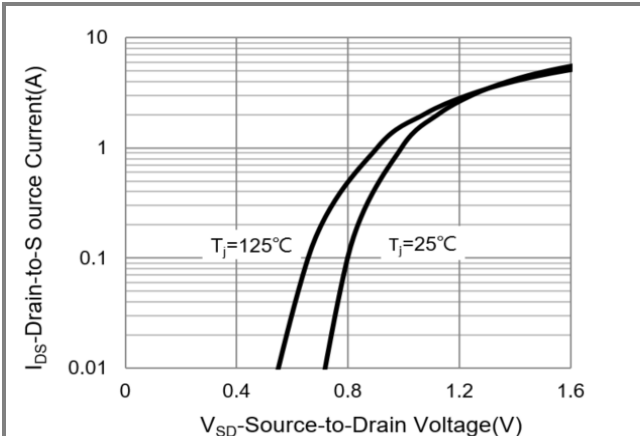


Fig.6 Source-Drain Diode Forward Voltage



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N-Channel TYPICAL CHARACTERISTIC CURVES

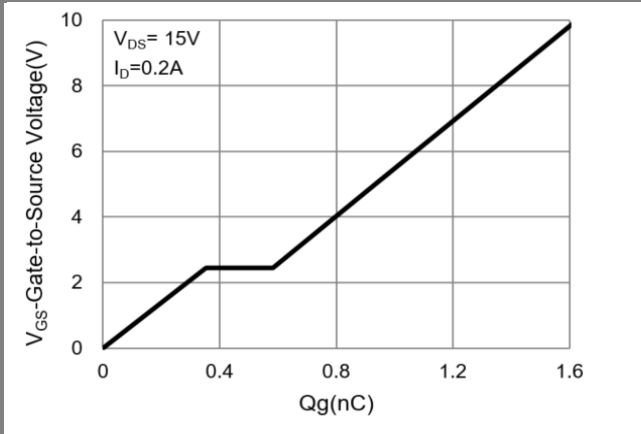


Fig.7 Gate-Charge Characteristics

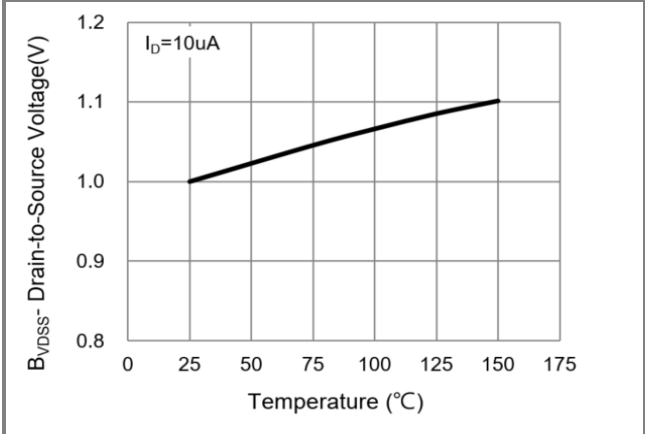


Fig.8 Breakdown Voltage Variation vs. Temperature

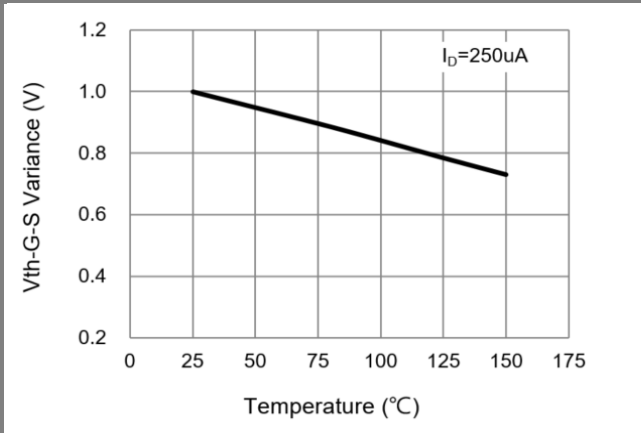


Fig.9 Threshold Voltage Variation with Temperature

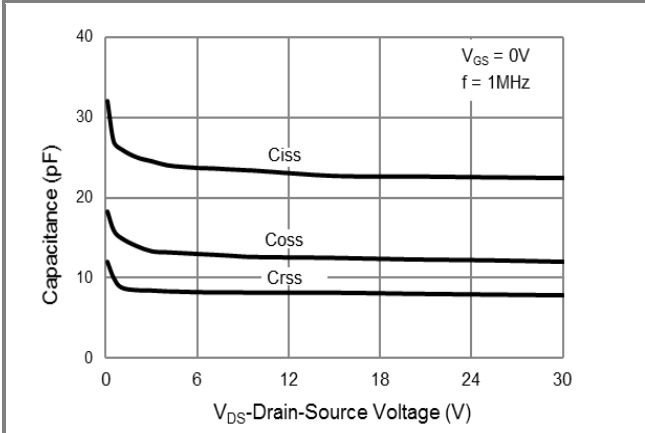


Fig.10 Capacitance vs. Drain-Source Voltage



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P-Channel TYPICAL CHARACTERISTIC CURVES

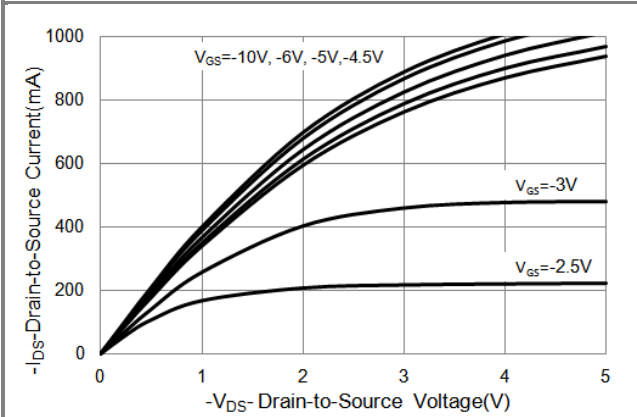


Fig.1 Output Characteristics

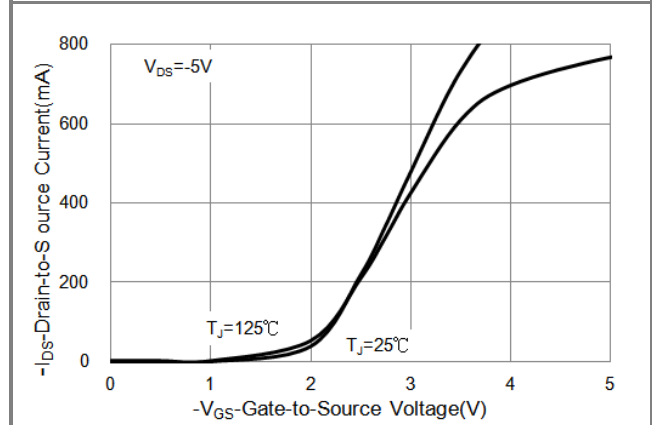


Fig.2 Transfer Characteristics

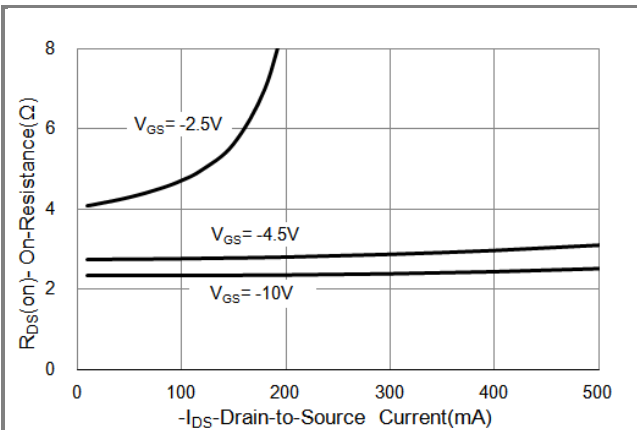


Fig.3 On-Resistance vs. Drain Current

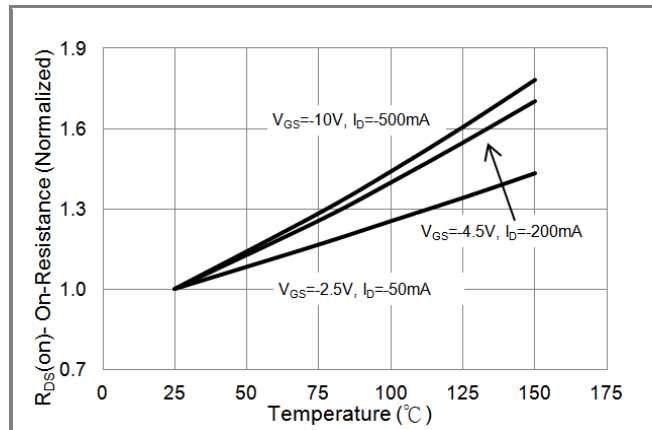


Fig.4 On-Resistance vs. Junction temperature

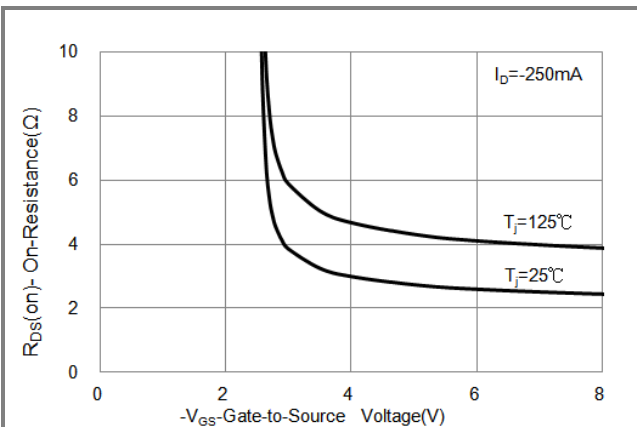


Fig.5 On-Resistance Variation with V_{GS}

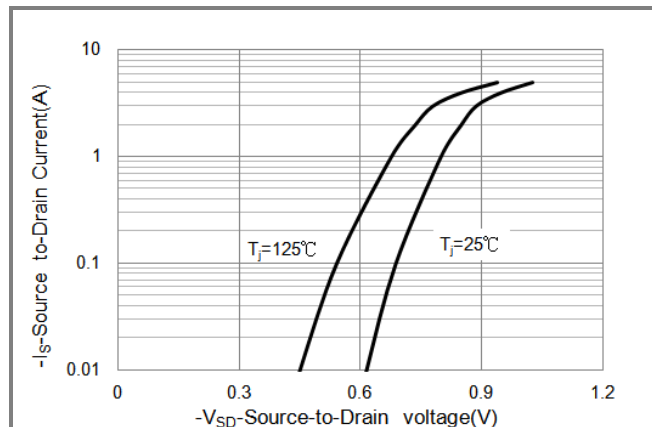


Fig.6 Source-Drain Diode Forward Voltage



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P-Channel TYPICAL CHARACTERISTIC CURVES

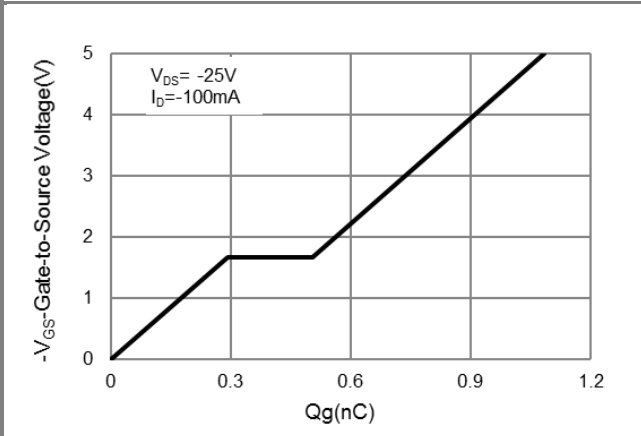


Fig.7 Gate-Charge Characteristics

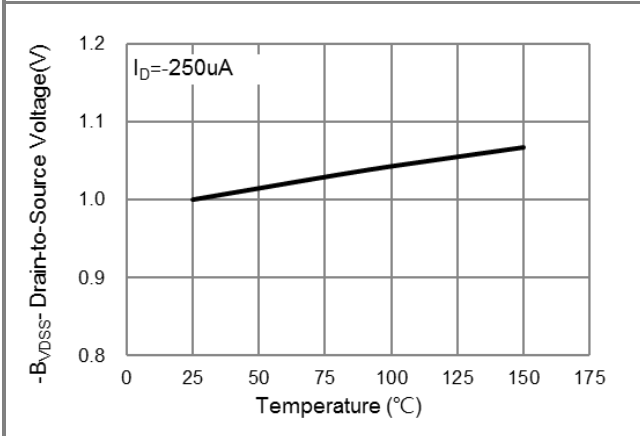


Fig.8 Breakdown Voltage Variation vs. Temperature

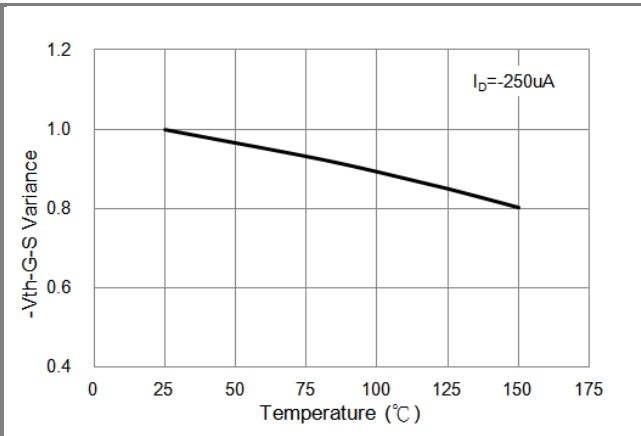


Fig.9 Threshold Voltage Variation with Temperature

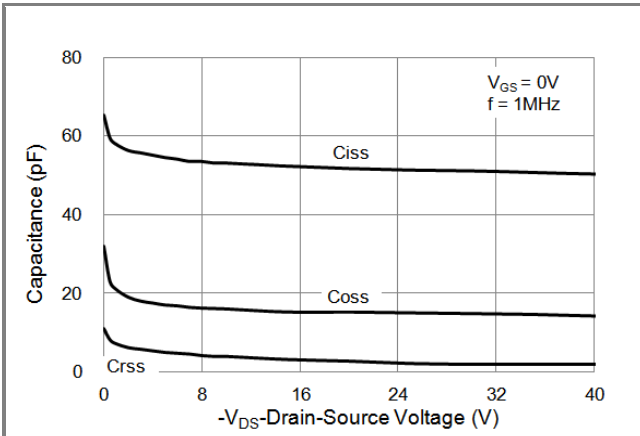


Fig.10 Capacitance vs. Drain-Source Voltage



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