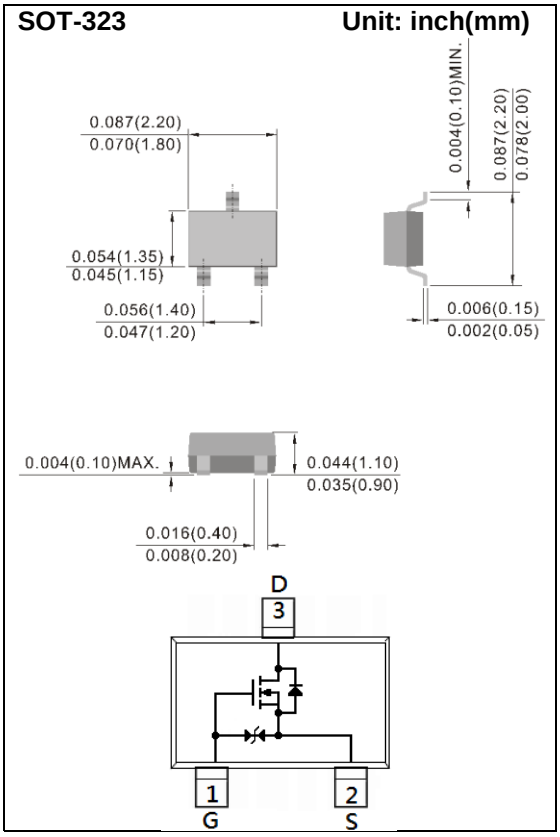
# PJC7428

## 30V N-Channel Enhancement Mode MOSFET

| Voltage | 30 V | Current | 300mA |
|---|---|---|---|

### Features

- Advanced Trench Process Technology
- ESD Protected
- Specially Designed for Relay driver, Speed line drive, etc
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC61249 standard




### Mechanical Data

- Case : SOT-323 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.00018 ounces, 0.005 grams

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

| PARAMETER | | SYMBOL | LIMIT | UNITS |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 30 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±10 | |
| Continuous Drain Current (Note 4) | | $I_D$ | 300 | mA |
| Pulsed Drain Current (Note 1) | | $I_{DM}$ | 600 | |
| 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<br>- Junction to Ambient (Note 3,4) | | $R_{\theta JA}$ | 357 | °C/W |

# PJC7428

## 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 | 30 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250uA | 0.4 | 0.75 | 1 | |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}$=4.5V, $I_D$=300mA | - | 0.7 | 1.2 | Ω |
| | | $V_{GS}$=2.5V, $I_D$=200mA | - | 0.8 | 1.6 | |
| | | $V_{GS}$=1.8V, $I_D$=100mA | - | 0.9 | 2 | |
| | | $V_{GS}$=1.5V, $I_D$=50mA | - | 1.1 | 3 | |
| | | $V_{GS}$=1.2V, $I_D$=20mA | - | 1.5 | 4 | |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=24V, $V_{GS}$=0V | - | - | 1 | uA |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±8V, $V_{DS}$=0V | - | - | ±10 | |
| **Dynamic** (Note 5) | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=10V, $I_D$=300mA, $V_{GS}$=4.5V | - | 0.9 | - | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 0.3 | - | |
| Gate-Drain Charge | $Q_{gd}$ | | - | 0.2 | - | |
| Input Capacitance | Ciss | $V_{DS}$=10V, $V_{GS}$=0V, f=1MHZ | - | 45 | - | pF |
| Output Capacitance | Coss | | - | 14 | - | |
| Reverse Transfer Capacitance | Crss | | - | 0.8 | - | |
| Turn-On Delay Time | $td_{(on)}$ | $V_{DD}$=10V, $I_D$=300mA, $V_{GS}$=4V, $R_G$=10Ω (Note 1,2) | - | 8.3 | - | ns |
| Turn-On Rise Time | tr | | - | 5.7 | - | |
| Turn-Off Delay Time | $td_{(off)}$ | | - | 35 | - | |
| Turn-Off Fall Time | tf | | - | 12 | - | |
| **Drain-Source Diode** | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | $I_S$ | --- | - | - | 300 | mA |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=300mA, $V_{GS}$=0V | - | 0.9 | 1.3 | V |

NOTES :

1. Pulse width≤300us, Duty cycle≤2%.
2. Essentially independent of operating temperature typical characteristics.
3. $R_{\Theta JA}$ 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.
5. Guaranteed by design, not subject to production testing.

# PJC7428

## TYPICAL CHARACTERISTIC CURVES

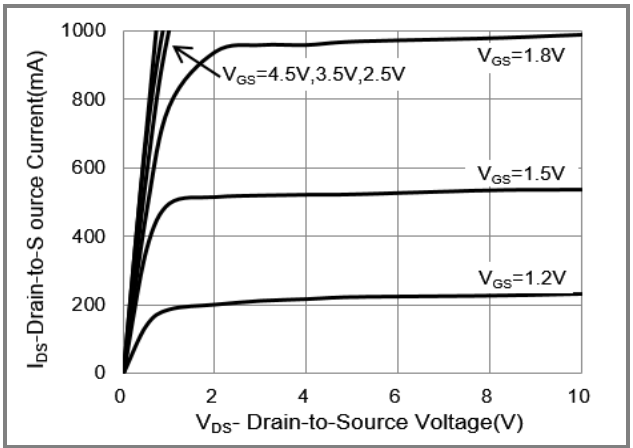



Fig.1 On-Region Characteristics

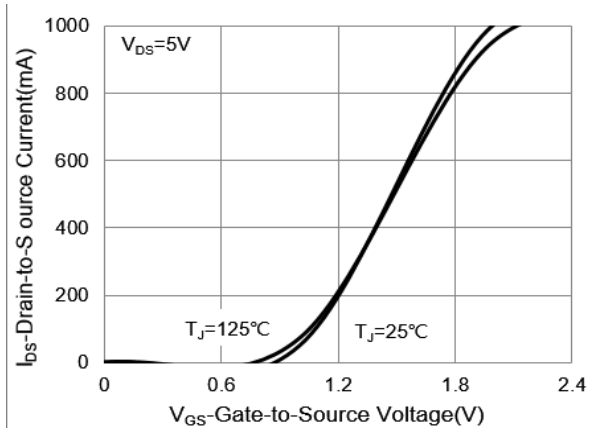



Fig.2 Transfer Characteristics

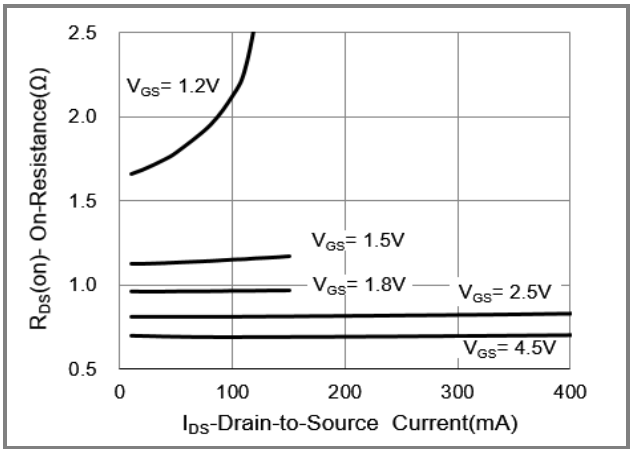



Fig.3 On-Resistance vs. Drain Current

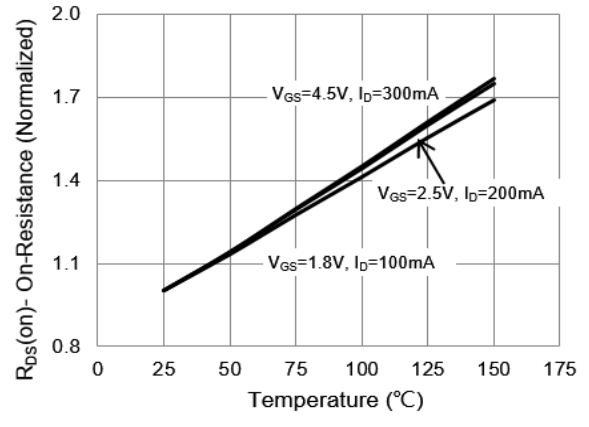



Fig.4 On-Resistance vs. Junction temperature

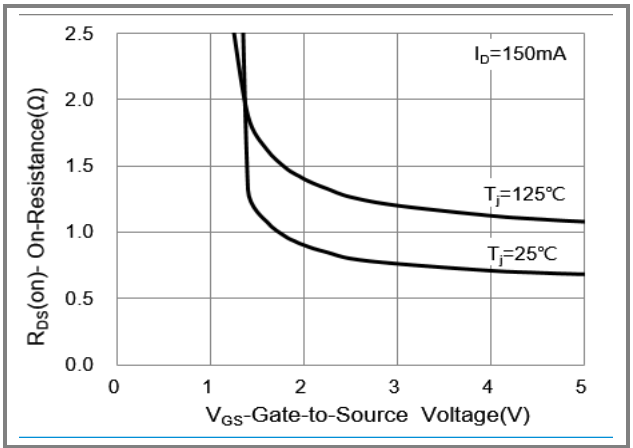



Fig.5 On-Resistance Variation with $V_{GS}$

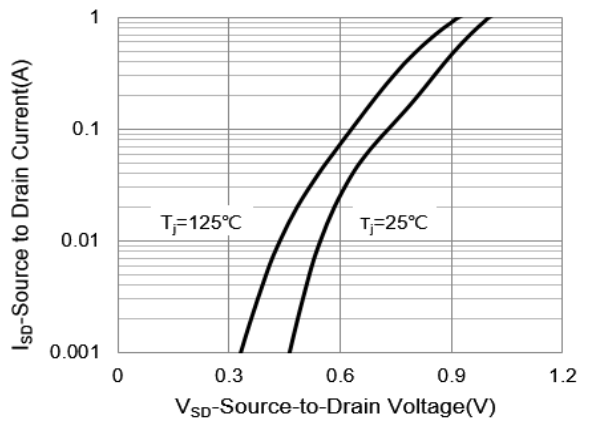



Fig.6 Body Diode Characteristics

# PJC7428

## TYPICAL CHARACTERISTIC CURVES

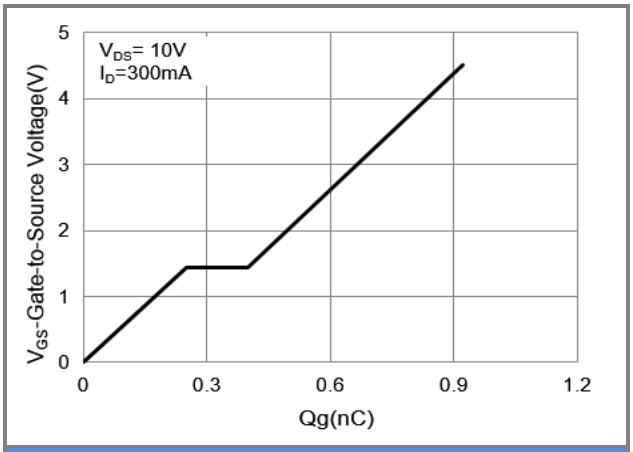



Fig.7 Gate-Charge Characteristics

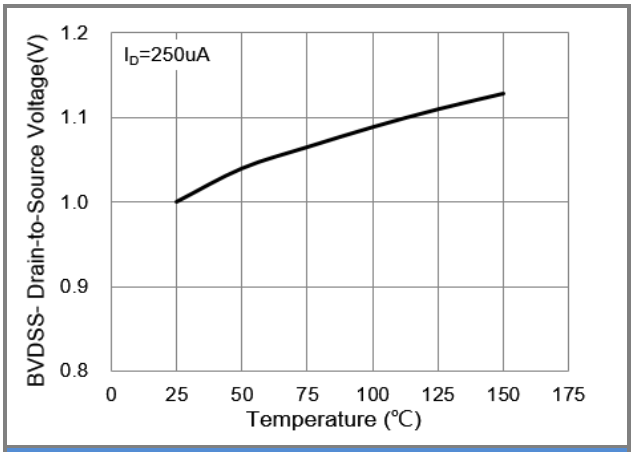



Fig.8 Breakdown Voltage Variation vs. Temperature

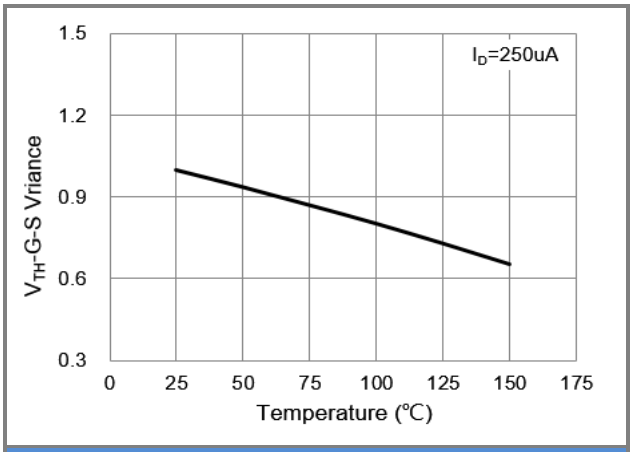



Fig.9 Threshold Voltage Variation with Temperature

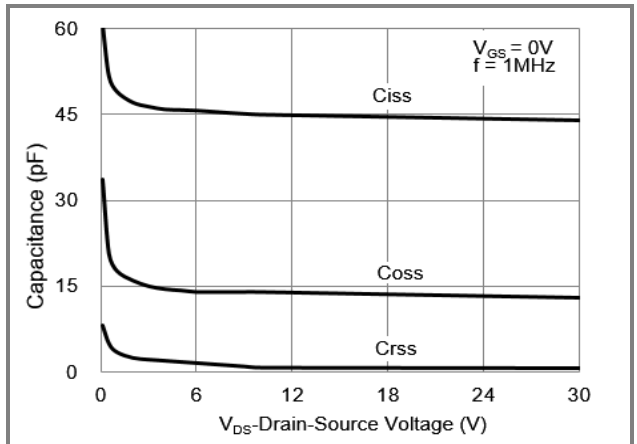


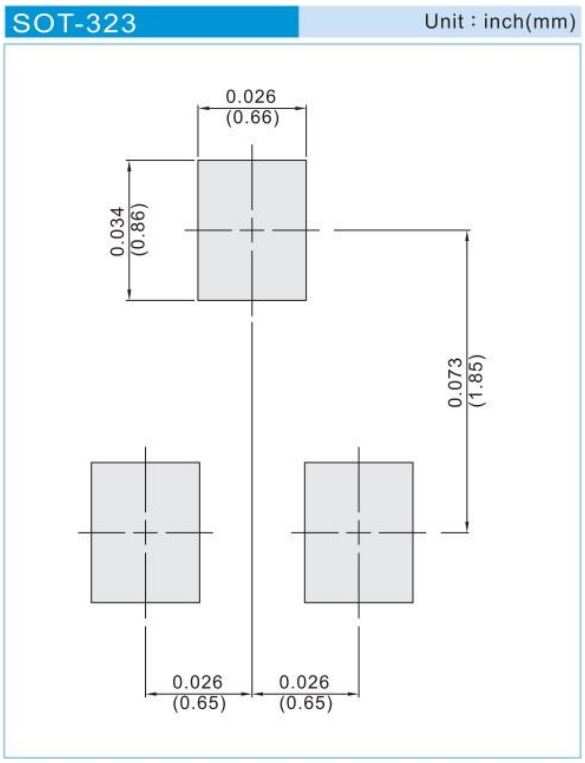

Fig.10 Capacitance vs. Drain-Source Voltage

# PJC7428

## Part No Packing Code Version

| Part No Packing Code | Package Type | Packing Type | Marking | Version |
|---|---|---|---|---|
| PJC7428_R1_00001 | SOT-323 | 3K pcs / 7” reel | C28 | Halogen free |

## Mounting Pad Layout



# PJC7428

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