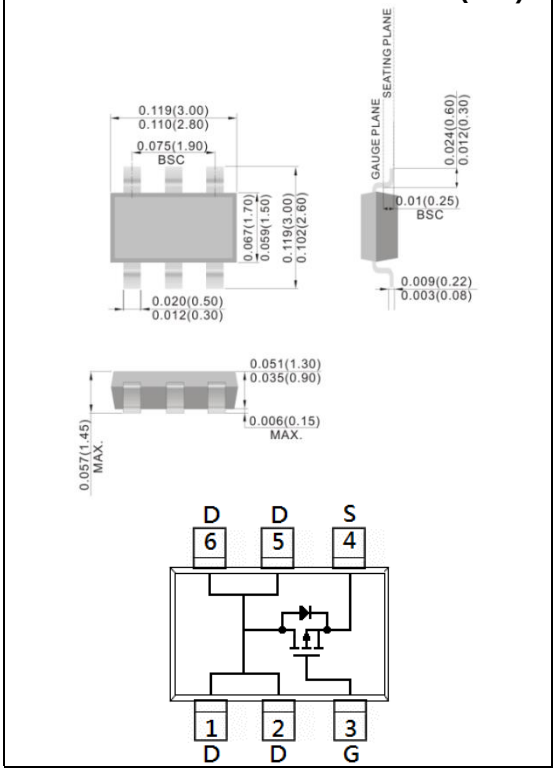
# PJS6421

## 20V P-Channel Enhancement Mode MOSFET

| Voltage | -20 V | Current | -7.4 A |
|---|---|---|---|

SOT-23 6L-1 Unit : inch(mm)




### Features

- $R_{DS(ON)}$, $V_{GS}$@-4.5V, $I_D$@-5A<26mΩ
- $R_{DS(ON)}$, $V_{GS}$@-2.5V, $I_D$@-4A<32mΩ
- $R_{DS(ON)}$, $V_{GS}$@-1.8V, $I_D$@-3A<40mΩ
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case : SOT-23 6L-1 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0005 ounces, 0.014 grams

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

| PARAMETER | | SYMBOL | LIMIT | UNITS |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | -20 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±10 | |
| Continuous Drain Current(Note 4) | | $I_D$ | -7.4 | A |
| Pulsed Drain Current(Note 1) | | $I_{DM}$ | -29.6 | |
| Power Dissipation | $T_a$=25°C | $P_D$ | 2 | W |
| | Derate above 25°C | | 16 | 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) | | $R_{\theta JA}$ | 62.5 | °C/W |

# PJS6421

## 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 | -20 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=-250uA | -0.3 | -0.55 | -1 | |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}$=-4.5V, $I_D$=-5A | - | 21 | 26 | mΩ |
| | | $V_{GS}$=-2.5V, $I_D$=-4A | - | 26 | 32 | |
| | | $V_{GS}$=-1.8V, $I_D$=-3A | - | 32 | 40 | |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=-20V, $V_{GS}$=0V | - | - | -1 | uA |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±10V, $V_{DS}$=0V | - | - | ±100 | nA |
| **Dynamic**(Note 5) | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=-10V, $I_D$=-5A, $V_{GS}$=-4.5V(Note 1,2) | - | 16.5 | - | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 2.6 | - | |
| Gate-Drain Charge | $Q_{gd}$ | | - | 3.1 | - | |
| Input Capacitance | Ciss | $V_{DS}$=-15V, $V_{GS}$=0V, f=1MHZ | - | 1620 | - | pF |
| Output Capacitance | Coss | | - | 220 | - | |
| Reverse Transfer Capacitance | Crss | | - | 160 | - | |
| Turn-On Delay Time | $td_{(on)}$ | $V_{DD}$=-10V, $I_D$=-1A, $V_{GS}$=-4.5V, $R_G$=25Ω(Note 1,2) | - | 22 | - | ns |
| Turn-On Rise Time | tr | | - | 25 | - | |
| Turn-Off Delay Time | $td_{(off)}$ | | - | 138 | - | |
| Turn-Off Fall Time | tf | | - | 53 | - | |
| **Drain-Source Diode** | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | $I_S$ | --- | - | - | -2 | A |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=-1A, $V_{GS}$=0V | - | -0.7 | -1 | 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.

# PJS6421

## TYPICAL CHARACTERISTIC CURVES

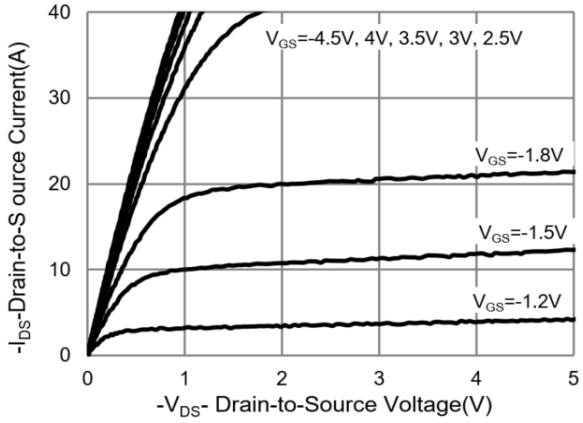



Fig.1 On-Region Characteristics

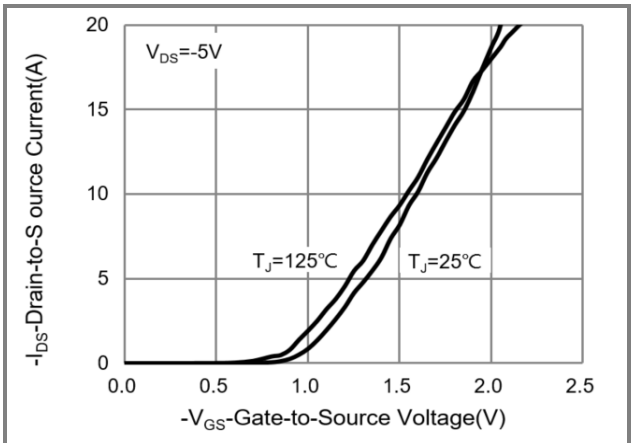



Fig.2 Transfer Characteristics

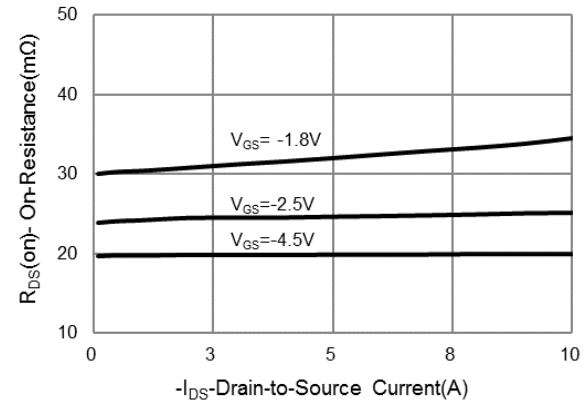



Fig.3 On-Resistance vs. Drain Current

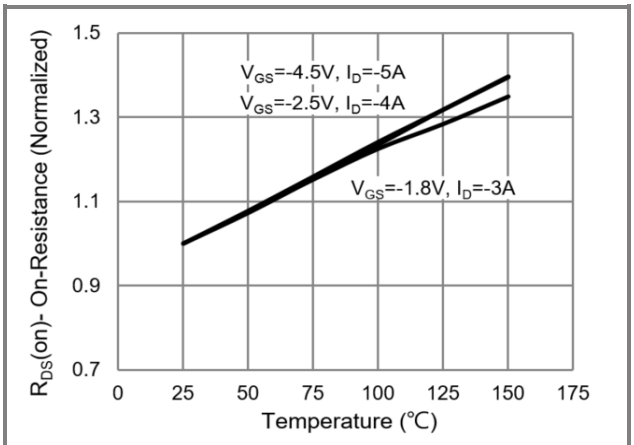



Fig.4 On-Resistance vs. Junction temperature

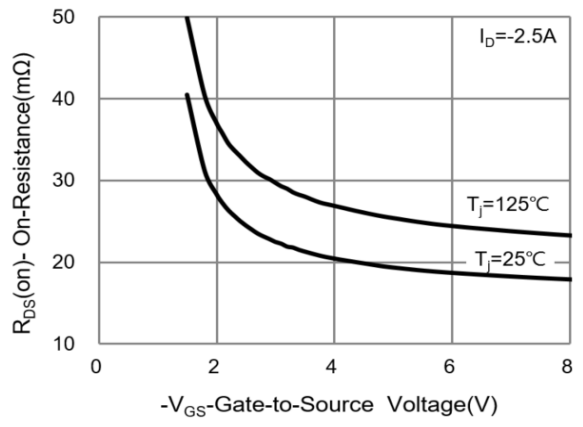



Fig.5 On-Resistance Variation with $V_{GS}$

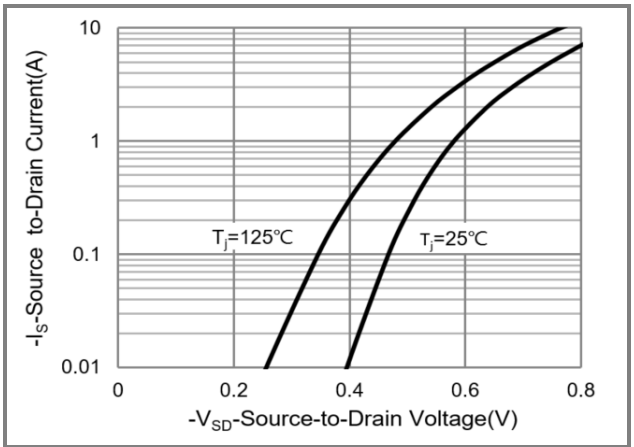



Fig.6 Body Diode Characteristics

# PJS6421

## TYPICAL CHARACTERISTIC CURVES

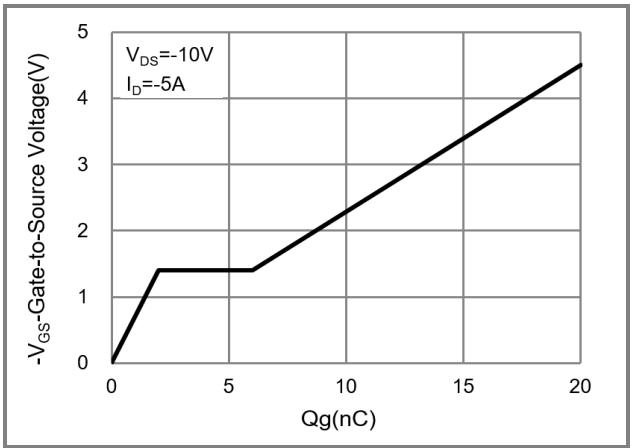



Fig.7 Gate-Charge Characteristics

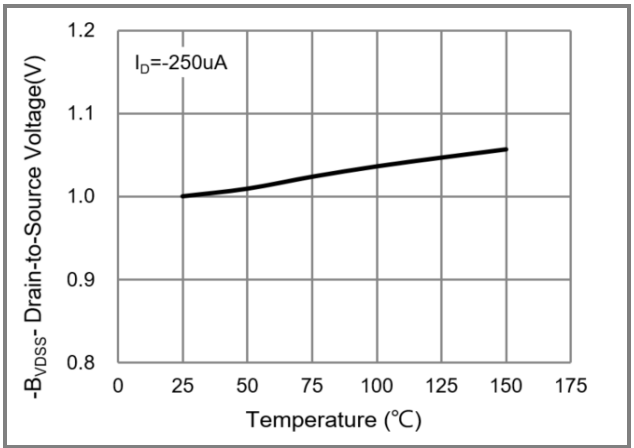



Fig.8 Breakdown Voltage Variation vs. Temperature

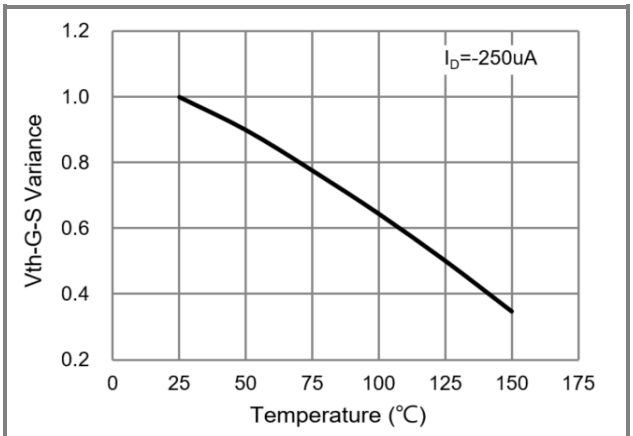



Fig.9 Threshold Voltage Variation with Temperature

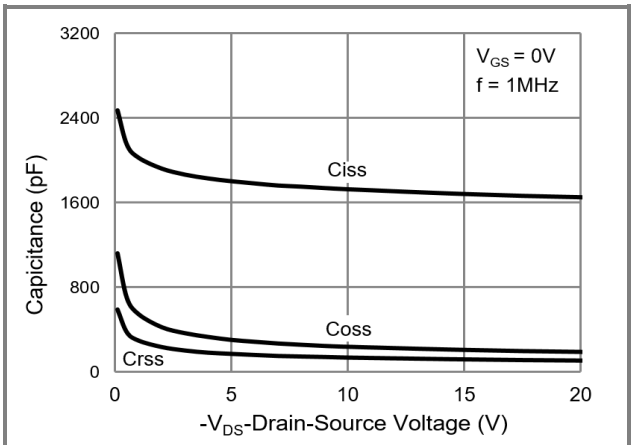


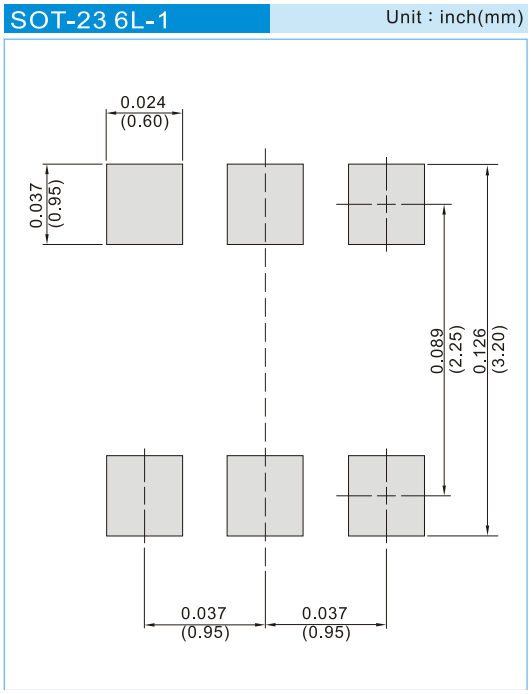

Fig.10 Capacitance vs. Drain-Source Voltage

# PJS6421

## Part No. Packing Code Version

| Part No. Packing Code | Package Type | Packing Type | Marking | Version |
|---|---|---|---|---|
| PJS6421_S1_00001 | SOT-23 6L-1 | 3K pcs / 7” reel | S21 | Halogen free RoHS compliant |

## Mounting Pad Layout



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