



PJS6404

30V N-Channel Enhancement Mode MOSFET

| | | | |
|----------------|-------------|----------------|-------------|
| Voltage | 30 V | Current | 6.8A |
|----------------|-------------|----------------|-------------|

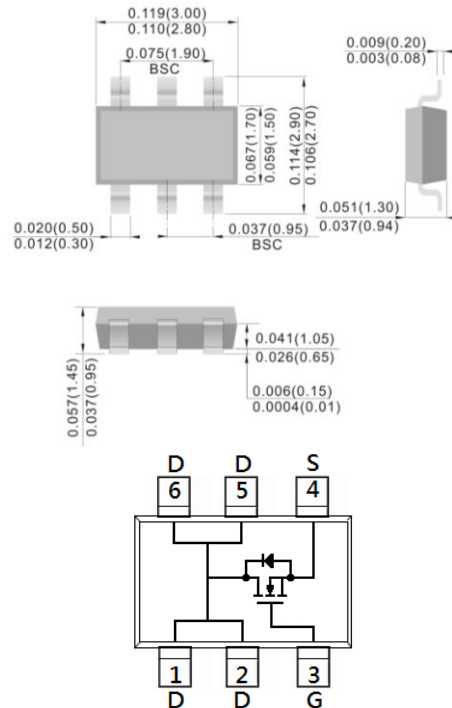
Features

- RDS(ON) , VGS@10V, ID@6.8A<32mΩ
- RDS(ON) , VGS@4.5V, ID@4.3A<47mΩ
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc..
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

Mechanical Data

- Case: SOT-23 6L-1 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0005 ounces, 0.014 grams
- Marking: S04

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



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} | ±20 | V |
| Continuous Drain Current | I _D | 6.8 | A |
| Pulsed Drain Current | I _{DM} | 27.2 | A |
| Power Dissipation | P _D | T _a =25°C | 2 |
| | | Derate above 25°C | 16 |
| Operating Junction and Storage Temperature Range | T _J , T _{STG} | -55~150 | °C |
| Typical Thermal resistance | R _{θJA} | 62.5 | °C/W |
| - Junction to Ambient (Note 3) | | | |



PJS6404

Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---|--------------|--|------|----------|-----------|------------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 30 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | 1.4 | 2.1 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=6.8A$ | - | 26 | 32 | m Ω |
| | | $V_{GS}=4.5V, I_D=4.3A$ | - | 38 | 47 | |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=30V, V_{GS}=0V$ | - | 0.01 | 1 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | - | ± 10 | ± 100 | nA |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=15V, I_D=6.8A,$ $V_{GS}=10V$ (Note 1,2) | - | 7.8 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 1.2 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 1.5 | - | |
| Input Capacitance | C_{iss} | $V_{DS}=15V, V_{GS}=0V,$ $f=1.0\text{MHz}$ | - | 343 | - | pF |
| Output Capacitance | C_{oss} | | - | 48 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 34 | - | |
| Switching | | | | | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=15V, I_D=6.8A,$ $V_{GS}=10V,$ $R_G=6\Omega$ (Note 1,2) | - | 3.1 | - | ns |
| Turn-On Rise Time | t_r | | - | 40 | - | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 38 | - | |
| Turn-Off Fall Time | t_f | | - | 39 | - | |
| Drain-Source Diode | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I_S | --- | - | - | 2.0 | A |
| Diode Forward Voltage | V_{SD} | $I_S=1.0A, V_{GS}=0V$ | | 0.75 | 1.2 | V |

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
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



PJS6404

TYPICAL CHARACTERISTIC CURVES

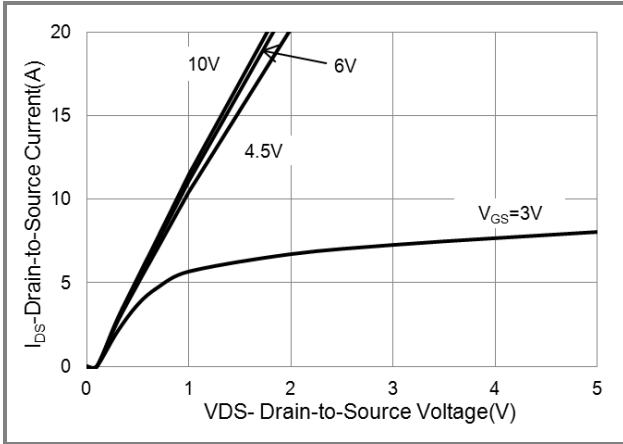


Fig.1 On-Region Characteristics

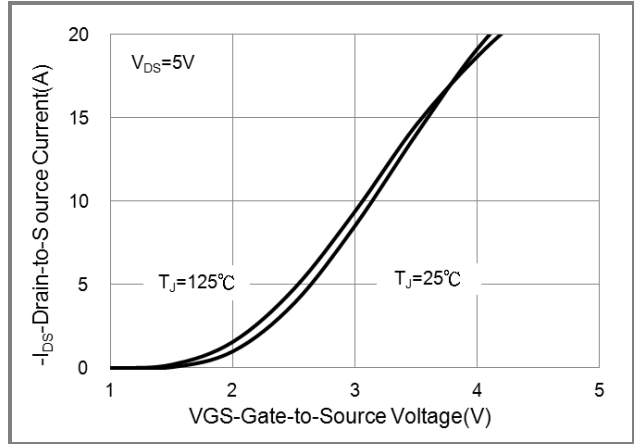


Fig.2 Transfer Characteristics

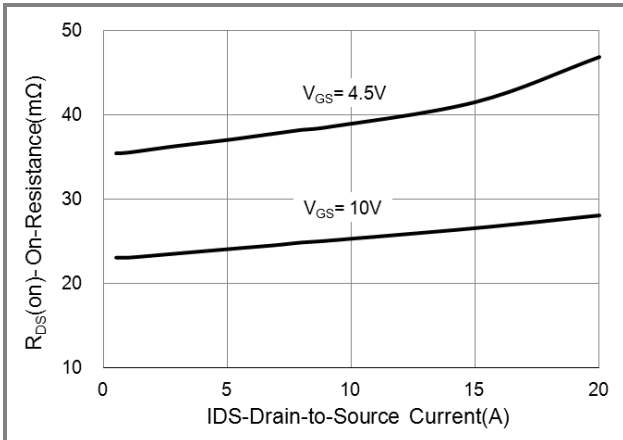


Fig.3 On-Resistance vs. Drain Current

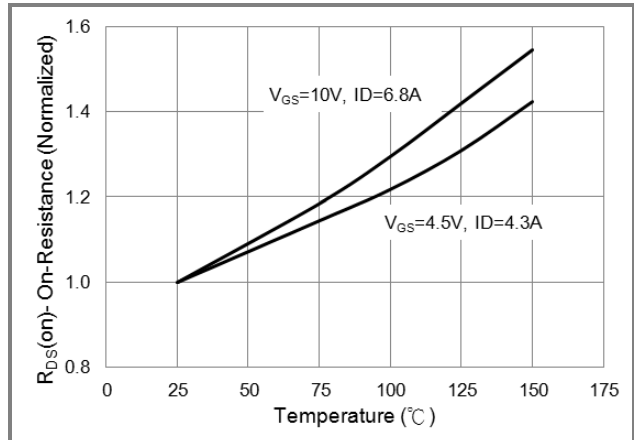


Fig.4 On-Resistance vs. Junction temperature

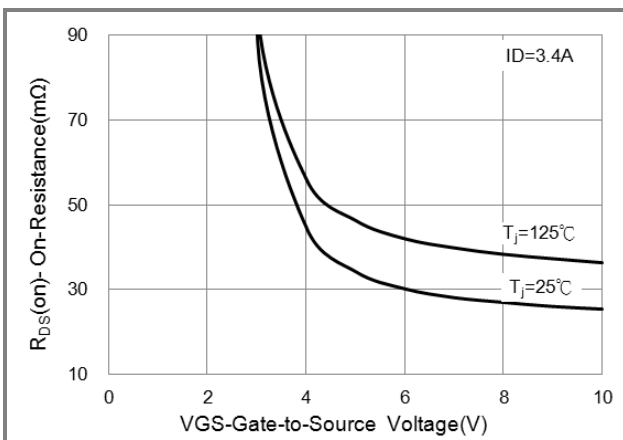


Fig.5 On-Resistance Variation with VGS.

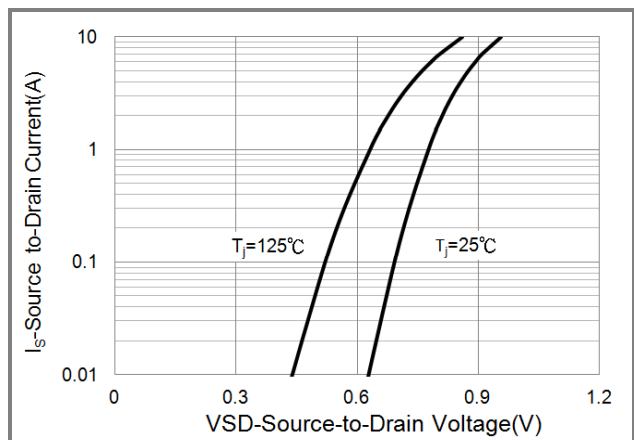


Fig.6 Body Diode Characteristics



PJS6404

TYPICAL CHARACTERISTIC CURVES

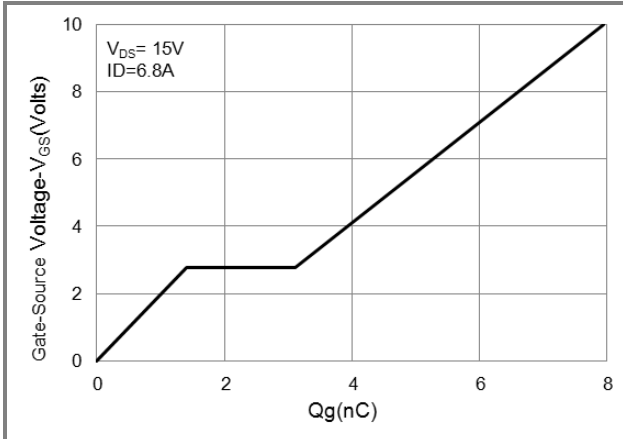


Fig.7 Gate-Charge Characteristics

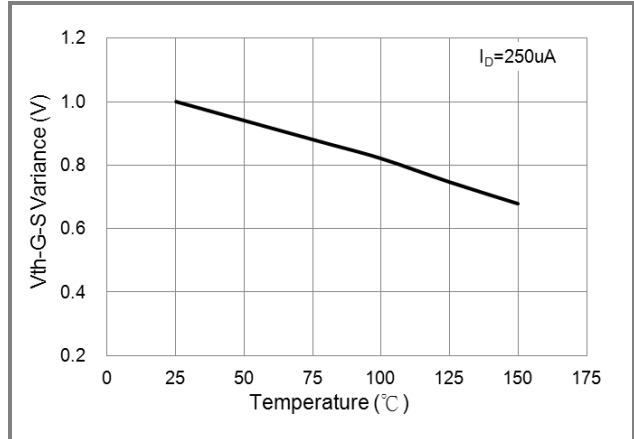


Fig.8 Threshold Voltage Variation with Temperature.

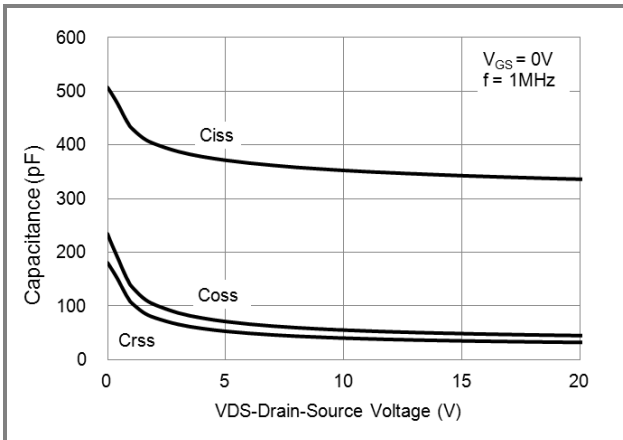


Fig.9 Capacitance vs. Drain-Source Voltage.

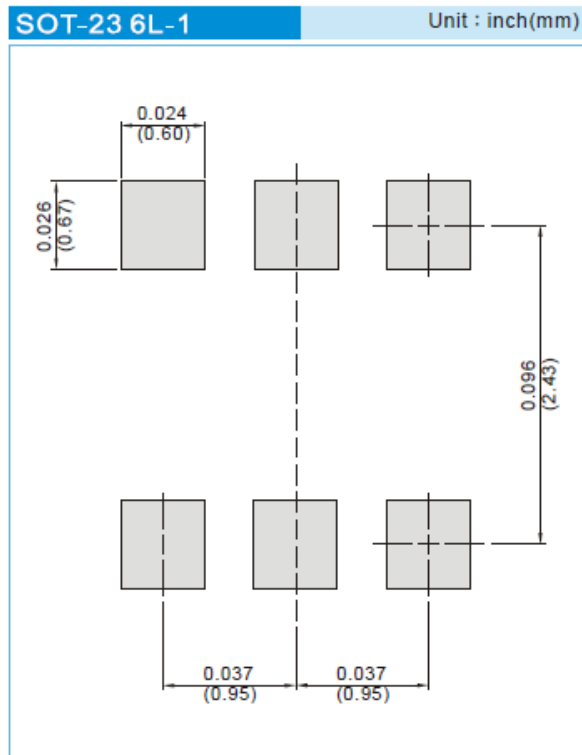


PJS6404

PART NO PACKING CODE VERSION

| Part No Packing Code | Package Type | Packing type | Marking | Version |
|----------------------|--------------|------------------|---------|--------------|
| PJS6404_S1_00001 | SOT-23 6L-1 | 3K pcs / 7" reel | S04 | Halogen free |

MOUNTING PAD LAYOUT





PJS6404

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