

PJA3404

30V N-Channel Enhancement Mode MOSFET

Voltage

30 V

Current

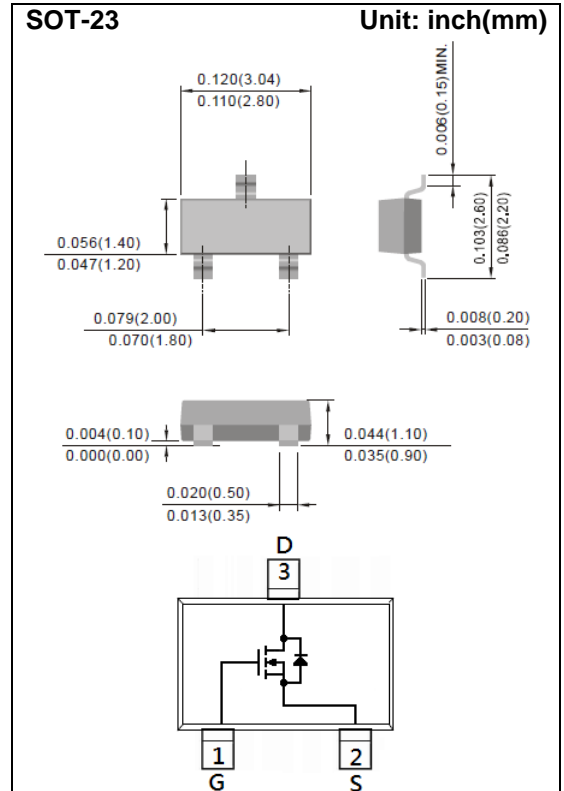
5.6 A

Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@5.6A < 30m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@3.5A < 45m\Omega$
- 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 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0003 ounces, 0.0084 grams
- Marking : A04



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ 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 | 5.6 | A | |
| Pulsed Drain Current | I_{DM} | 22 | A | |
| Power Dissipation | P_D | $T_a=25^\circ\text{C}$ | 1.25 | W |
| | | Derate above 25°C | 10 | mW/ $^\circ\text{C}$ |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55~150 | $^\circ\text{C}$ | |
| Typical Thermal Resistance | $R_{\theta JA}$ | 100 | $^\circ\text{C/W}$ | |
| - Junction to Ambient ^(Note 3) | | | | |

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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 | 1.0 | 1.33 | 2.1 | V |
| Drain-Source On-State Resistance | R _{DS(on)} | V _{GS} =10V, I _D =5.6A | - | 27 | 30 | mΩ |
| | | V _{GS} =4.5V, I _D =3.5A | - | 39 | 45 | |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =30V, V _{GS} =0V | - | 0.01 | 1 | uA |
| Gate-Source Leakage Current | I _{GSS} | V _{GS} =±20V, V _{DS} =0V | - | ±10 | ±100 | nA |
| Dynamic | | | | | | |
| Total Gate Charge | Q _g | V _{DS} =15V, I _D =5.6A, V _{GS} =10V(Notes 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=1.0MHZ | - | 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 =5.6A, V _{GS} =10V, R _G =3Ω(Notes 1,2) | - | 3 | - | 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 | --- | - | - | 1.5 | A |
| Diode Forward Voltage | V _{SD} | I _S =1.0A, V _{GS} =0V | - | 0.77 | 1.2 | 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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TYPICAL CHARACTERISTIC CURVES

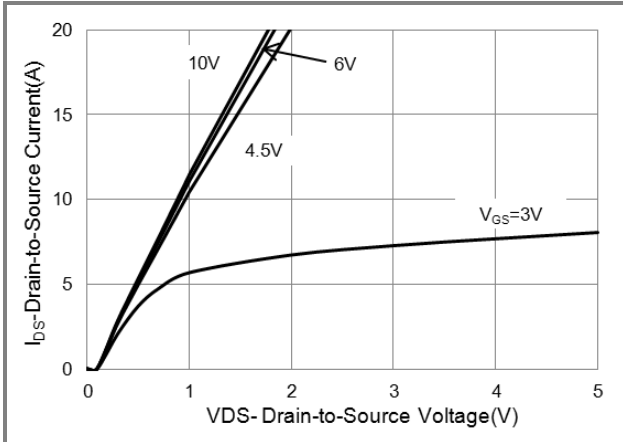


Fig.1 On-Region Characteristics

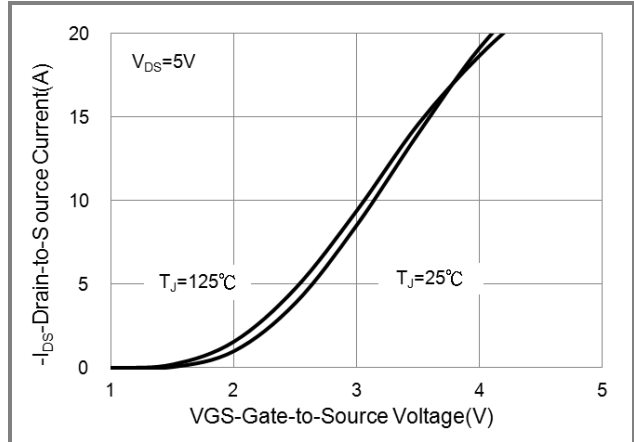


Fig.2 Transfer Characteristics

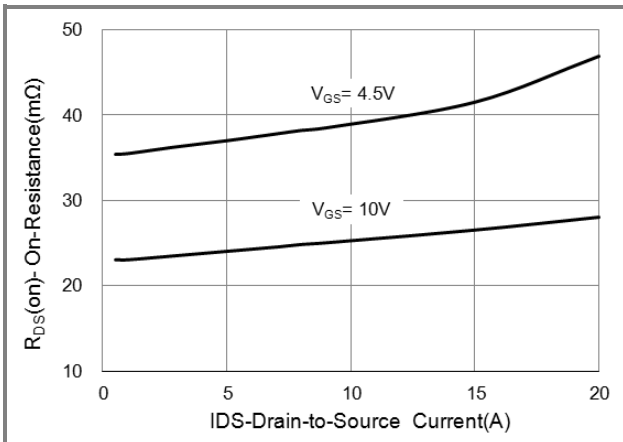


Fig.3 On-Resistance vs. Drain Current

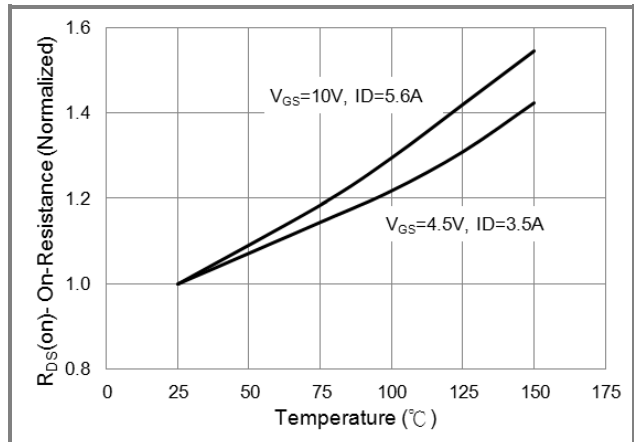


Fig.4 On-Resistance vs. Junction temperature

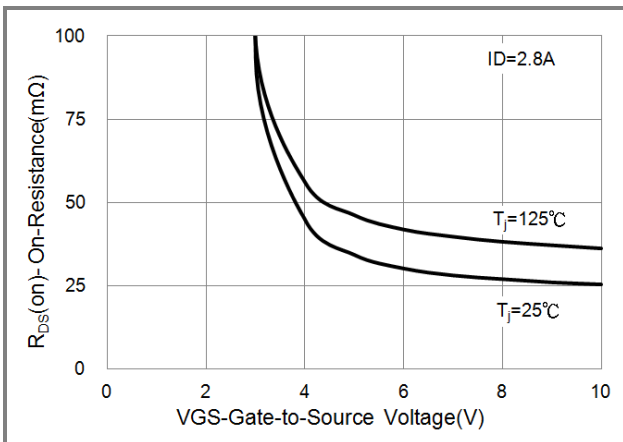


Fig.5 On-Resistance Variation with VGS.

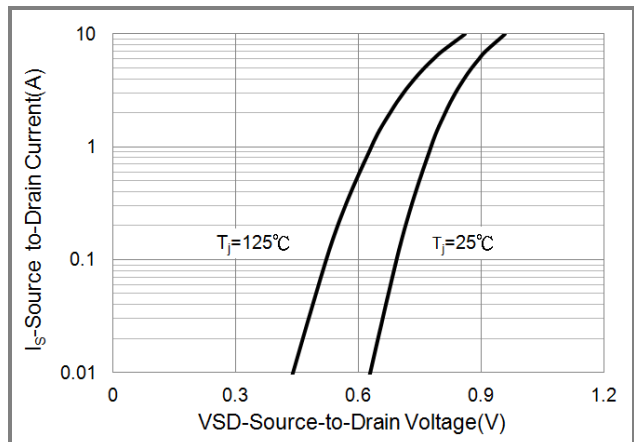


Fig.6 Body Diode Characteristics

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TYPICAL CHARACTERISTIC CURVES

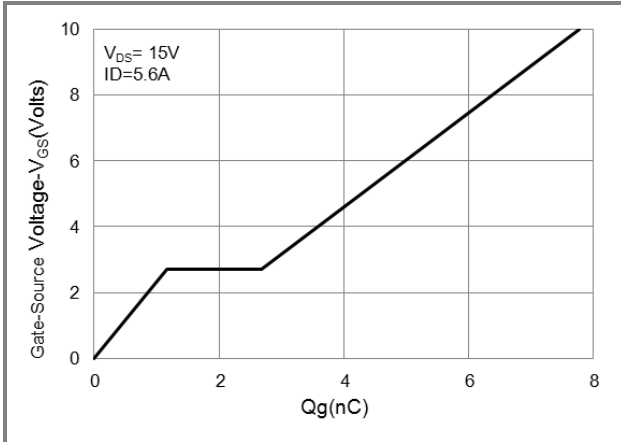


Fig.7 Gate-Charge Characteristics

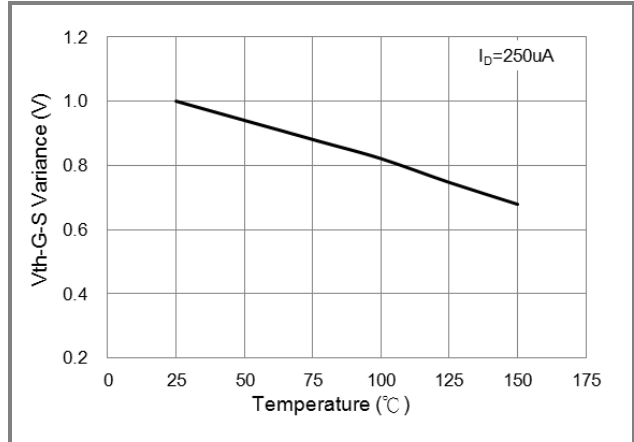


Fig.8 Threshold Voltage Variation with Temperature

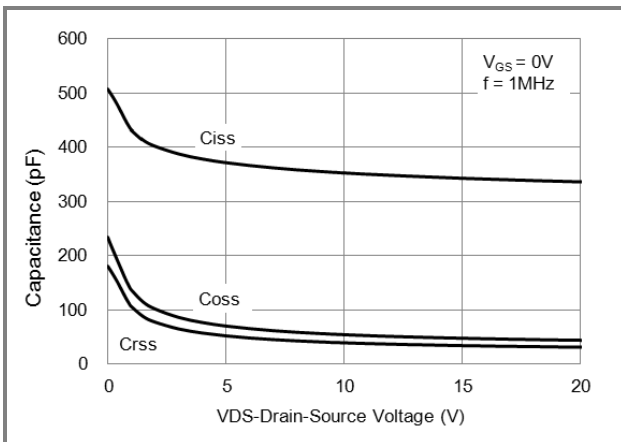


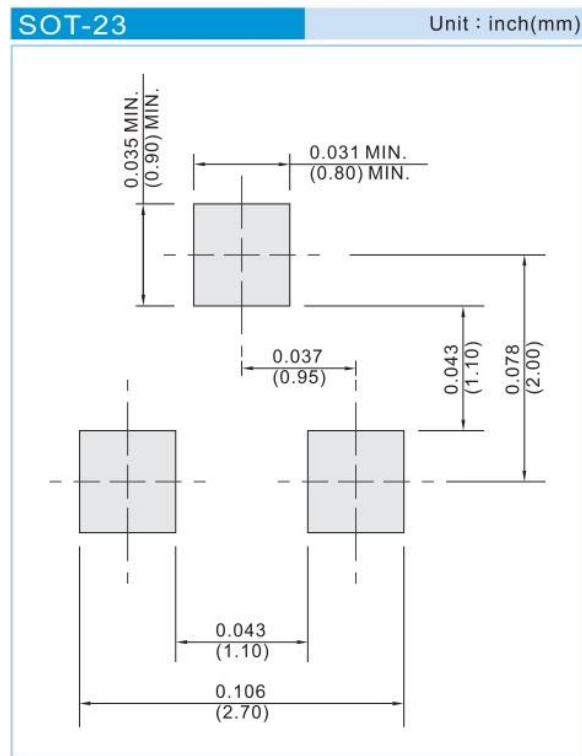
Fig.9 Capacitance vs. Drain-Source Voltage.

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Product and Packing Information

| Part No. | Package Type | Packing Type | Marking |
|----------|--------------|------------------|---------|
| PJA3404 | SOT-23 | 3K pcs / 7" reel | A04 |

Mounting Pad Layout



PJA3404

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