



PJA3441

40V P-Channel Enhancement Mode MOSFET

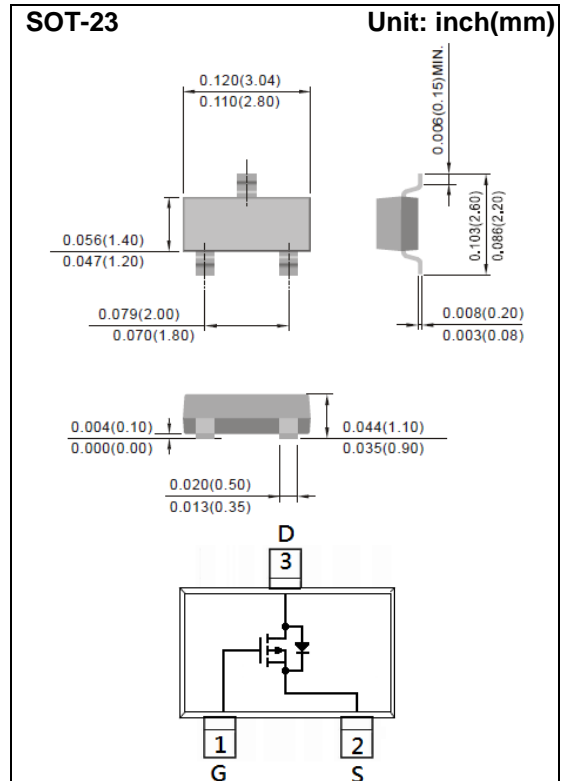
Voltage **-40 V** **Current** **-3.1A**

Features

- $R_{DS(ON)}$, $V_{GS}@-10V$, $I_D@-3.1A < 88m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-4.5V$, $I_D@-2.6A < 108m\Omega$
- 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 : A41



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | LIMIT | UNITS |
|--|-----------------|---------------------------------|--------------------|
| Drain-Source Voltage | V_{DS} | -40 | V |
| Gate-Source Voltage | V_{GS} | +20 | V |
| Continuous Drain Current | I_D | -3.1 | A |
| Pulsed Drain Current ^(Note 4) | I_{DM} | -12.4 | A |
| Power Dissipation | P_D | $T_a=25^\circ\text{C}$ | 1.25 |
| | | Derate above 25°C | 10 |
| 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 ($T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---|--------------|---|------|----------|-----------|------------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=-250\mu A$ | -40 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -1.0 | -1.5 | -2.5 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=-10V, I_D=-3.1A$ | - | 74 | 88 | m Ω |
| | | $V_{GS}=-4.5V, I_D=-2.6A$ | - | 88 | 108 | |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-40V, V_{GS}=0V$ | - | -0.01 | -1 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | - | ± 10 | ± 100 | nA |
| Dynamic (Note 5) | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=-20V, I_D=-3.1A,$ $V_{GS}=-4.5V$ (Note 1,2) | - | 6 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 1.6 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 2.3 | - | |
| Input Capacitance | C_{iss} | $V_{DS}=-20V, V_{GS}=0V,$ $f=1.0\text{MHz}$ | - | 505 | - | pF |
| Output Capacitance | C_{oss} | | - | 48 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 33 | - | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=-20V, I_D=-2.5A,$ $V_{GS}=-10V,$ $R_G=1\Omega$ (Note 1,2) | - | 6 | - | ns |
| Turn-On Rise Time | t_r | | - | 35 | - | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 18 | - | |
| Turn-Off Fall Time | t_f | | - | 10 | - | |
| Drain-Source Diode | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I_S | --- | - | - | -1.0 | A |
| Diode Forward Voltage | V_{SD} | $I_S=-1.0A, V_{GS}=0V$ | - | -0.82 | -1.2 | V |
| Reverse Recovery Time | t_{rr} | $V_{GS}=0V, I_S=-2.5A$ $di_F/dt=100A/\mu s$ | - | 13 | - | ns |
| Reverse Recovery Charge | Q_{rr} | | - | 8.7 | - | nC |

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.
5. Guaranteed by design, not subject to production testing.



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TYPICAL CHARACTERISTIC CURVES

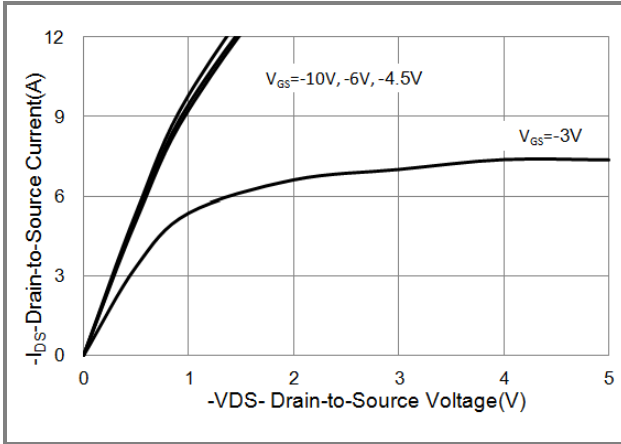


Fig.1 On-Region Characteristics

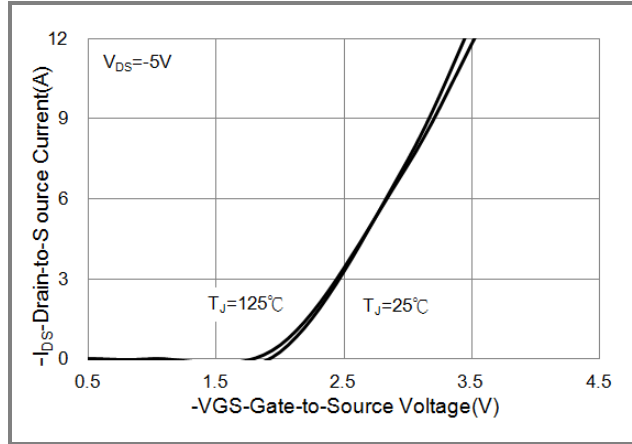


Fig.2 Transfer Characteristics

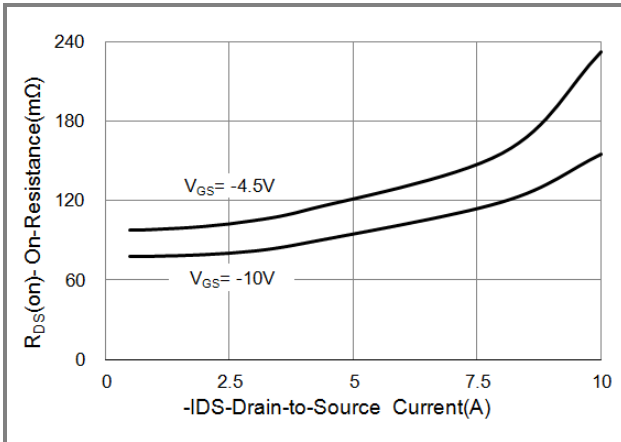


Fig.3 On-Resistance vs. Drain Current

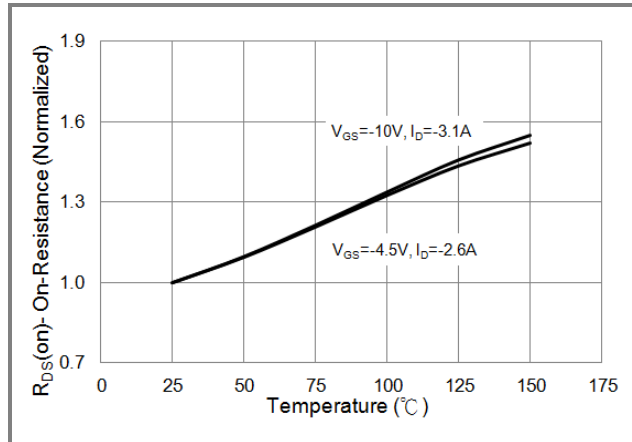


Fig.4 On-Resistance vs. Junction temperature

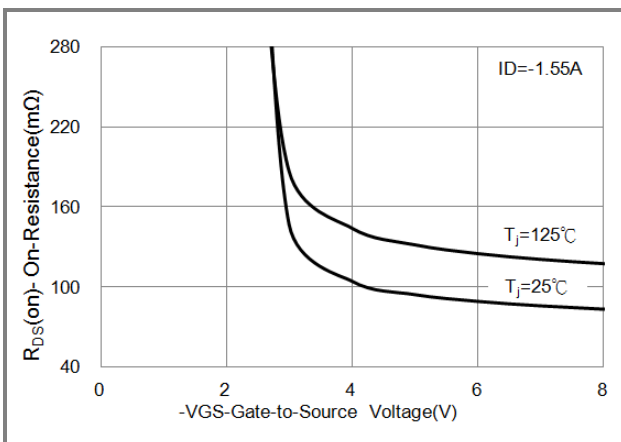


Fig.5 On-Resistance Variation with V_GS.

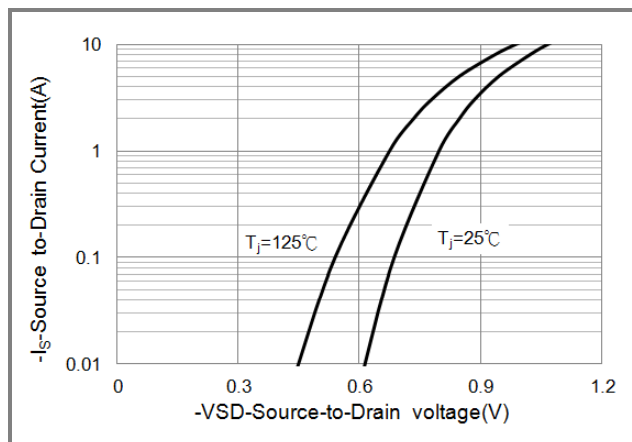


Fig.6 Body Diode Characteristics



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TYPICAL CHARACTERISTIC CURVES

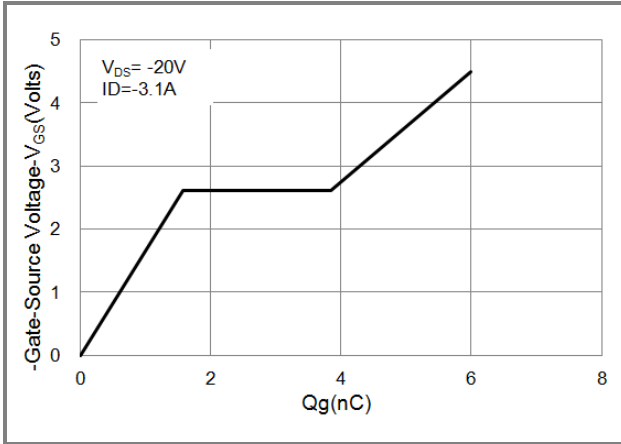


Fig.7 Gate-Charge Characteristics

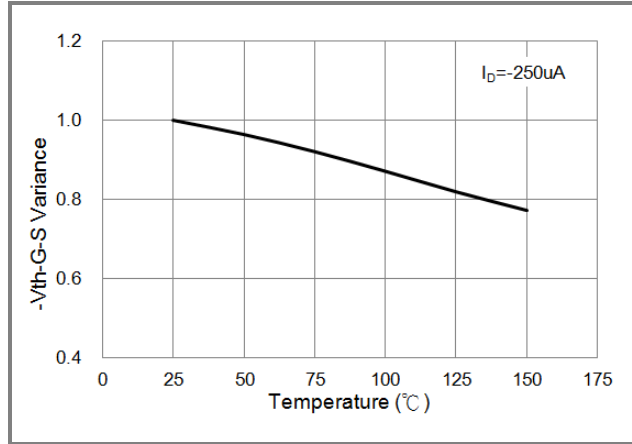


Fig.8 Threshold Voltage Variation with Temperature.

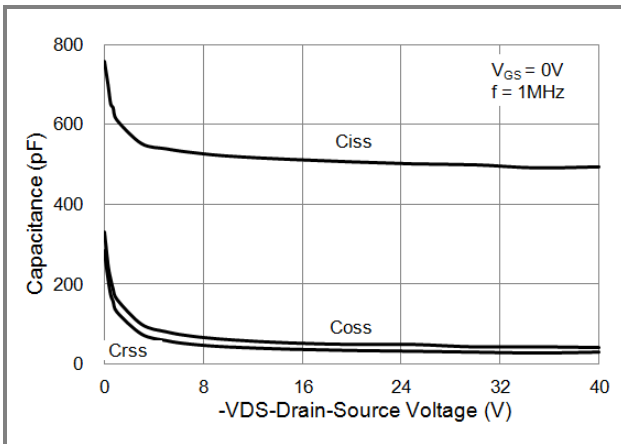


Fig.9 Capacitance vs. Drain-Source Voltage.

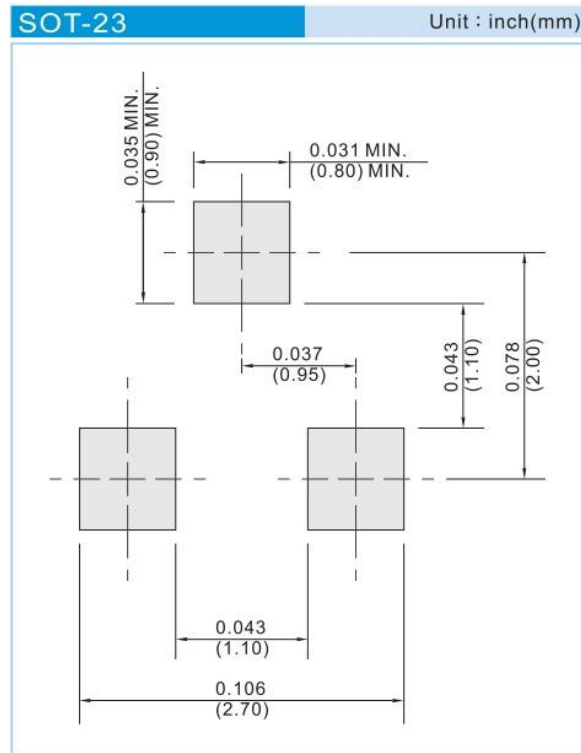


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PART NO PACKING CODE VERSION

| PART NO PACKING CODE | Package Type | Packing type | Marking | Version |
|----------------------|--------------|--------------------|---------|--------------|
| PJA3441_R1_00001 | SOT-23 | 3K pcs / 7" reel | A41 | Halogen free |
| PJA3441_R2_00001 | SOT-23 | 12K pcs / 13" reel | A41 | Halogen free |

MOUNTING PAD LAYOUT





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