



PJA3440

40V N-Channel Enhancement Mode MOSFET

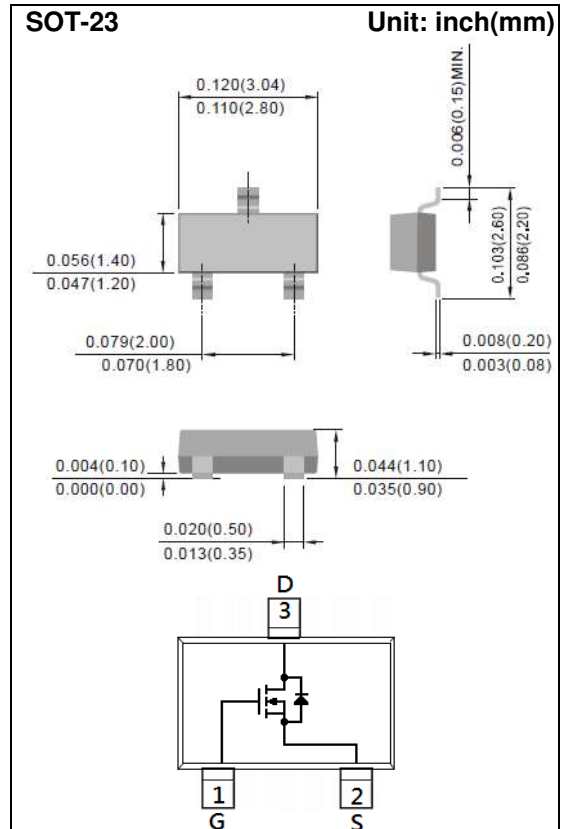
| | | | |
|----------------|-------------|----------------|-------------|
| Voltage | 40 V | Current | 4.3A |
|----------------|-------------|----------------|-------------|

Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@4.3A < 42m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@3.9A < 51m\Omega$
- Advanced Trench Process Technology
- Specially Designed for switch Load, PWM applications, and solid-state relays relay
- 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: A40



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ C$ 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 | 4.3 | A |
| Pulsed Drain Current ^(Note 4) | | I_{DM} | 17.2 | A |
| Power Dissipation | $T_a=25^\circ C$ | P_D | 1.25 | W |
| | Derate above $25^\circ C$ | | 10 | mW/ $^\circ C$ |
| Operating Junction and Storage Temperature Range | | T_J, T_{STG} | -55~150 | $^\circ C$ |
| Typical Thermal resistance | | $R_{\theta JA}$ | 100 | $^\circ C/W$ |
| - 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 | $R_{DS(on)}$ | $V_{GS}=10V, I_D=4.3A$ | - | 35 | 42 | m Ω |
| | | $V_{GS}=4.5V, I_D=3.9A$ | - | 44 | 51 | |
| 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 | $V_{DS}=20V, I_D=4.3A,$ $V_{GS}=4.5V$ (Note 1,2) | - | 4.8 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 1.4 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 1.8 | - | |
| Input Capacitance | C_{iss} | $V_{DS}=20V, V_{GS}=0V,$ $f=1.0\text{MHZ}$ | - | 410 | - | pF |
| Output Capacitance | C_{oss} | | - | 50 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 30 | - | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=20V, I_D=3.5A,$ $V_{GS}=10V,$ $R_G=1\Omega$ (Note 1,2) | - | 4 | - | ns |
| Turn-On Rise Time | t_r | | - | 30 | - | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 15 | - | |
| Turn-Off Fall Time | t_f | | - | 8 | - | |
| Drain-Source Diode | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I_S | --- | - | - | 1.0 | A |
| Diode Forward Voltage | V_{SD} | $I_S=1.0A, V_{GS}=0V$ | - | 0.78 | 1.2 | V |
| Reverse Recovery Time | t_{rr} | $V_{GS}=0V, I_S=3.5A$ $di_F/dt=100A/\mu s$ | - | 10.2 | - | ns |
| Reverse Recovery Charge | Q_{rr} | | - | 5.5 | - | 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

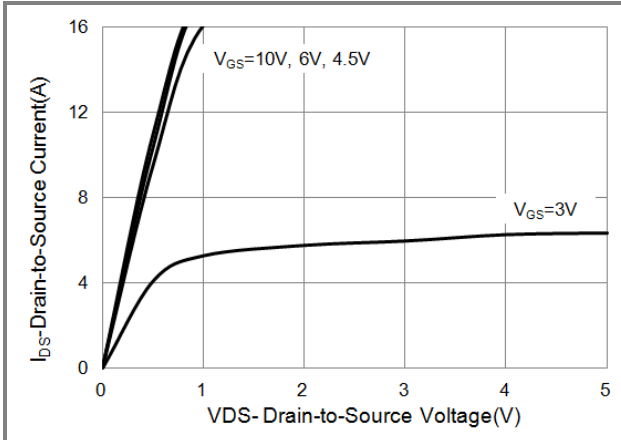


Fig.1 On-Region Characteristics

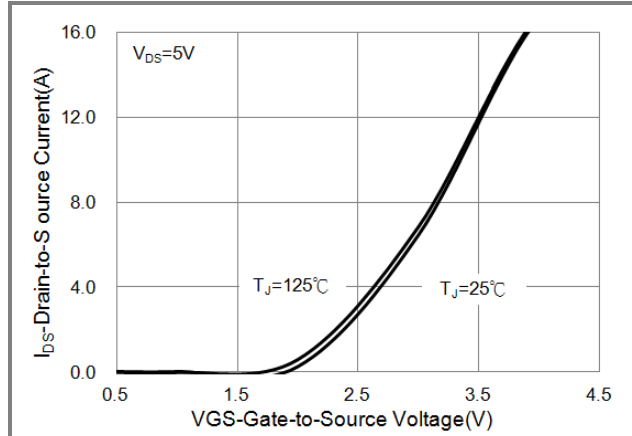


Fig.2 Transfer Characteristics

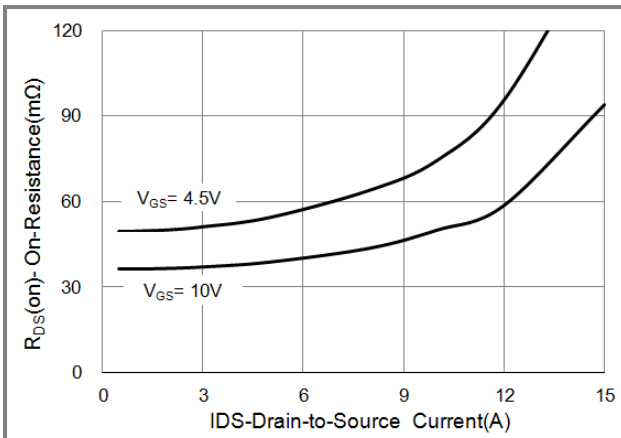


Fig.3 On-Resistance vs. Drain Current

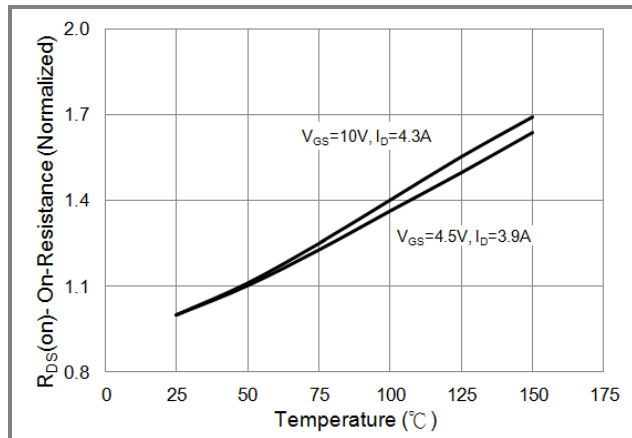


Fig.4 On-Resistance vs. Junction temperature

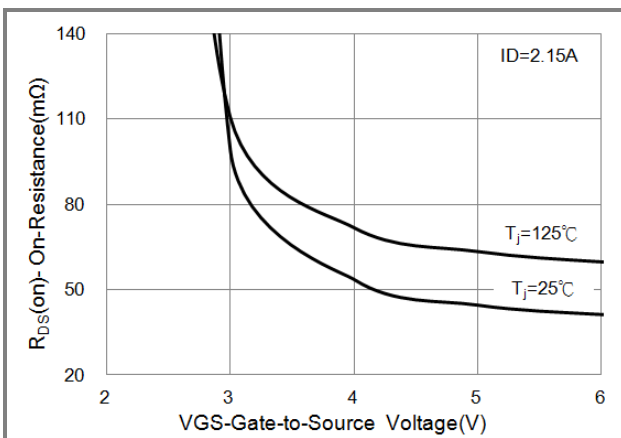


Fig.5 On-Resistance Variation with VGS.

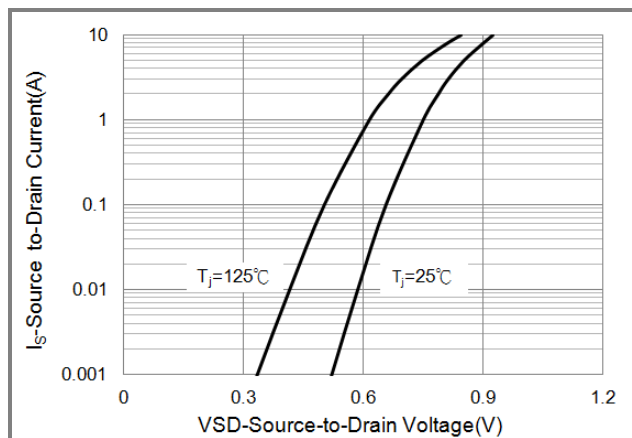


Fig.6 Body Diode Characteristics



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TYPICAL CHARACTERISTIC CURVES

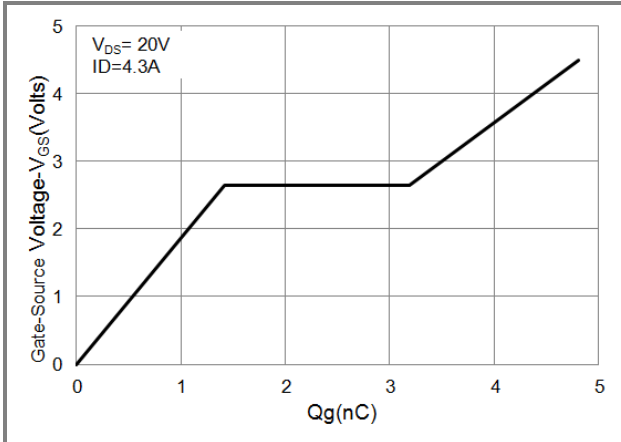


Fig.7 Gate-Charge Characteristics

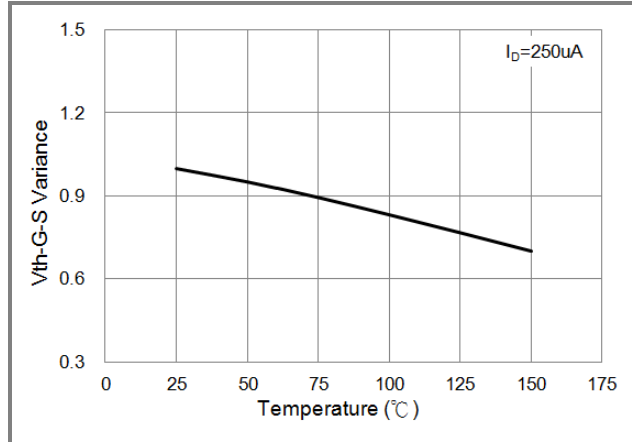


Fig.8 Threshold Voltage Variation with Temperature.

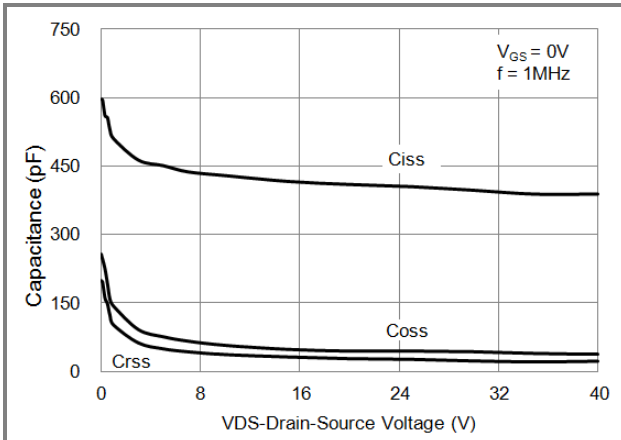


Fig.9 Capacitance vs. Drain-Source Voltage.

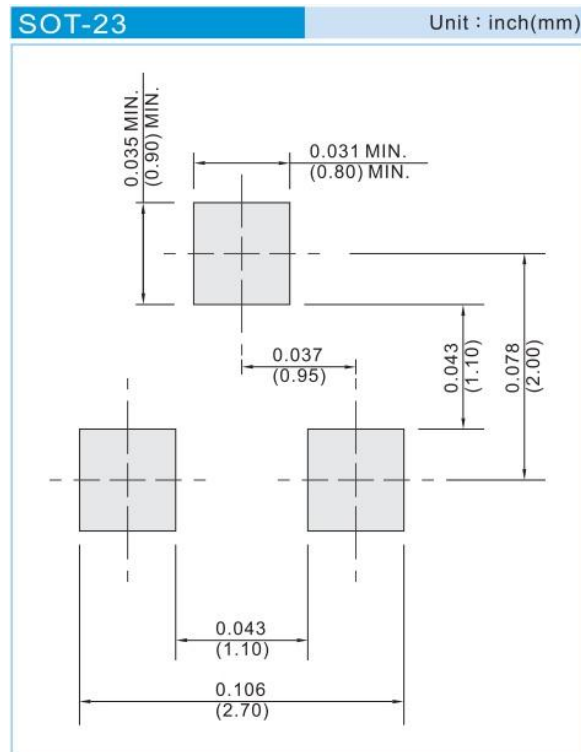


PJA3440

PART NO PACKING CODE VERSION

| PART NO PACKING CODE | Package Type | Packing type | Marking | Version |
|----------------------|--------------|--------------------|---------|--------------|
| PJA3440_R1_00001 | SOT-23 | 3K pcs / 7" reel | A40 | Halogen free |
| PJA3440_R2_00001 | SOT-23 | 12K pcs / 13" reel | A40 | Halogen free |

MOUNTING PAD LAYOUT





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