



PJX8806

20V N-Channel Enhancement Mode MOSFET – ESD Protected

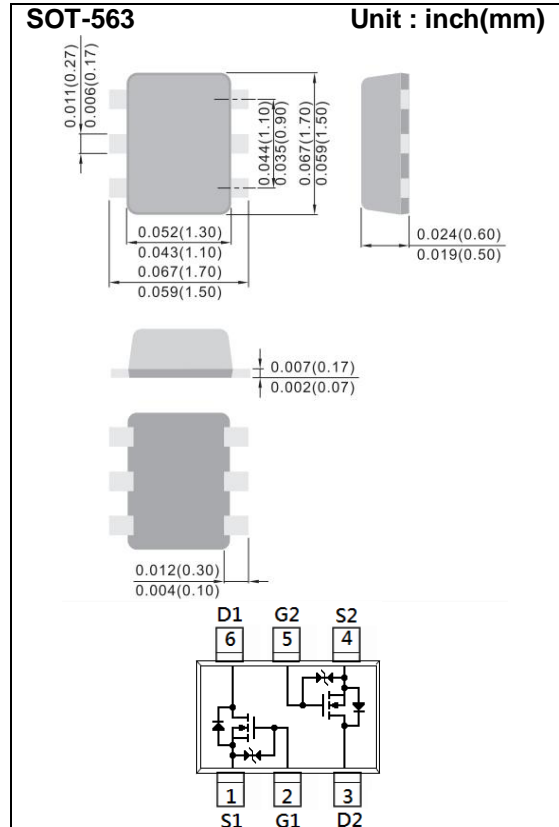
Voltage 20 V **Current** 800mA

Features

- $R_{DS(ON)}$, $V_{GS}@4.5V, I_{DS}@500mA=0.4\Omega$
- $R_{DS(ON)}$, $V_{GS}@2.5V, I_{DS}@300mA=0.7\Omega$
- $R_{DS(ON)}$, $V_{GS}@1.8V, I_{DS}@100mA=1.2\Omega$ (typ)
- Advanced Trench Process Technology
- Specially Designed for Load Switch or PWM application.
- ESD Protected
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std.
(Halogen Free)

Mechanical Data

- Case: SOT-563 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.00009 ounces, 0.0026 grams
- Marking: X06



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

| PARAMETER | SYMBOL | LIMIT | UNITS |
|--|-----------------|---------------------------------|--------------------|
| Drain-Source Voltage | V_{DS} | 20 | V |
| Gate-Source Voltage | V_{GS} | ± 12 | V |
| Continuous Drain Current | I_D | 800 | mA |
| Pulsed Drain Current | I_{DM} | 3000 | mA |
| Power Dissipation | PD | $T_A=25^\circ\text{C}$ | 350 |
| | | Derate above 25°C | 2.8 |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55~150 | $^\circ\text{C}$ |
| Typical Thermal resistance | $R_{\theta JA}$ | 357 | $^\circ\text{C/W}$ |
| - 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} | $V_{GS}=0V, I_D=250\mu A$ | 20 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 0.4 | 0.63 | 1.0 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=4.5V, I_D=500mA$ | - | 0.35 | 0.4 | Ω |
| | | $V_{GS}=2.5V, I_D=300mA$ | - | 0.6 | 0.7 | |
| | | $V_{GS}=1.8V, I_D=100mA$ | - | 1.2 | - | |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=16V, V_{GS}=0V$ | - | 0.02 | 1 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 10V, V_{DS}=0V$ | - | ± 2 | ± 10 | μA |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=10V, I_D=500mA,$ $V_{GS}=4.5V$ (Note 1,2) | - | 0.92 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 0.31 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 0.08 | - | |
| Input Capacitance | C_{iss} | $V_{DS}=10V, V_{GS}=0V,$ $f=1.0MHz$ | - | 50 | - | pF |
| Output Capacitance | C_{oss} | | - | 10 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 8.5 | - | |
| Switching | | | | | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=10V, I_D=500mA,$ $V_{GS}=4.5V,$ $R_G=6\Omega$ (Note 1,2) | - | 4 | - | ns |
| Turn-On Rise Time | t_r | | - | 20 | - | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 12 | - | |
| Turn-Off Fall Time | t_f | | - | 25 | - | |
| Drain-Source Diode | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I_S | --- | - | - | 500 | mA |
| Diode Forward Voltage | V_{SD} | $I_S=500mA, V_{GS}=0V$ | - | 0.91 | 1.3 | 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 square pad of copper



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TYPICAL CHARACTERISTIC CURVES

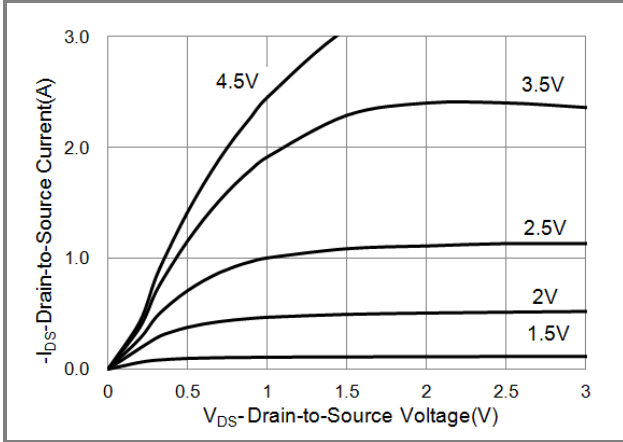


Fig.1 On-Region Characteristics

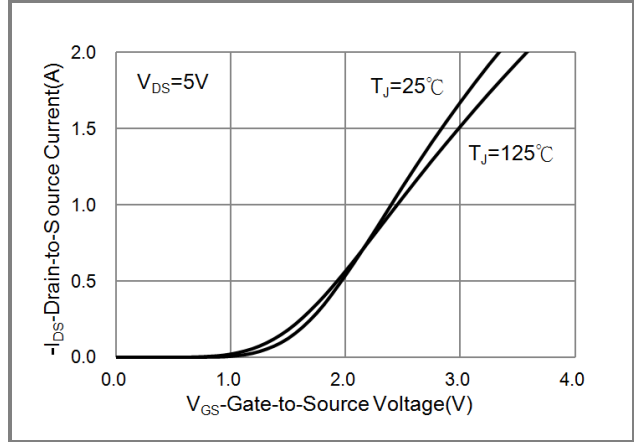


Fig.2 Transfer Characteristics

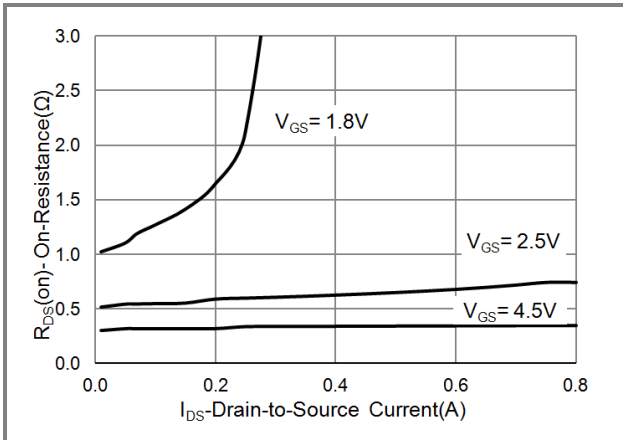


Fig.3 On-Resistance vs. Drain Current

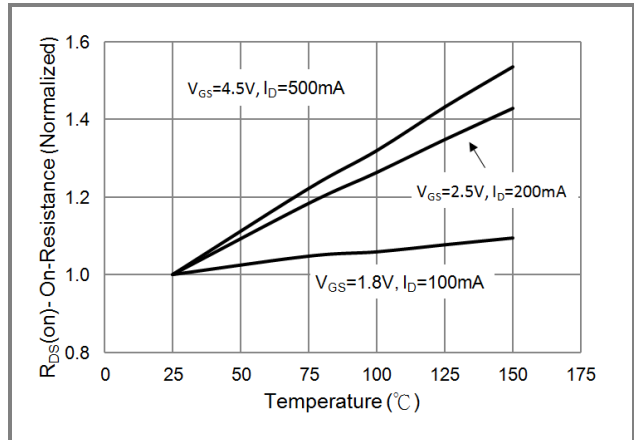


Fig.4 On-Resistance vs. Junction temperature

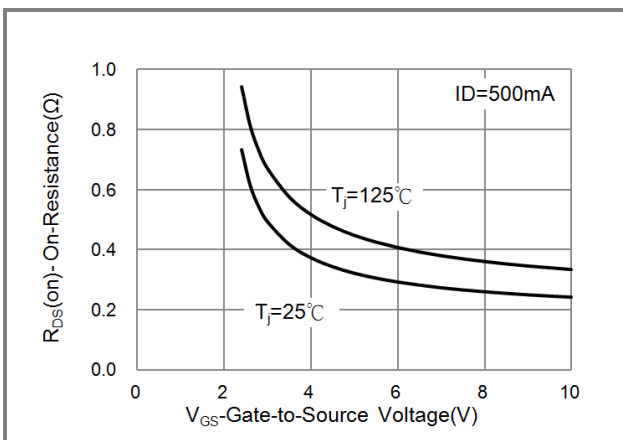


Fig.5 On-Resistance Variation with VGS.

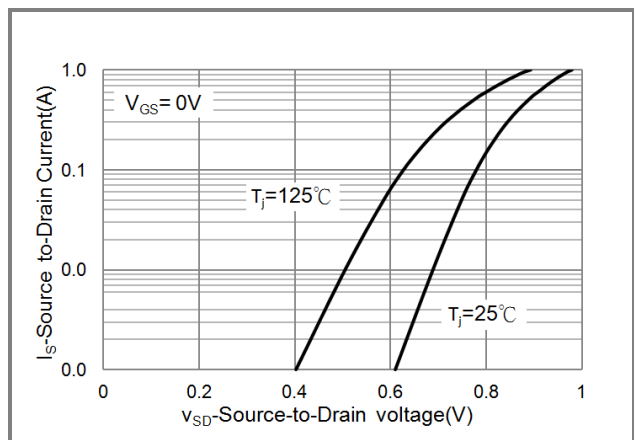


Fig.6 Body Diode Characteristics



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TYPICAL CHARACTERISTIC CURVES

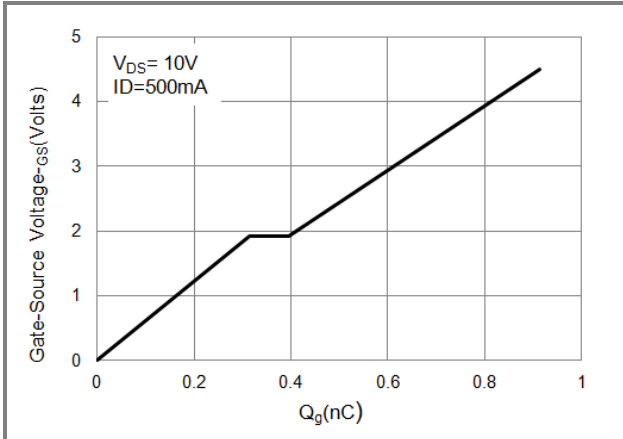


Fig.7 Gate-Charge Characteristics

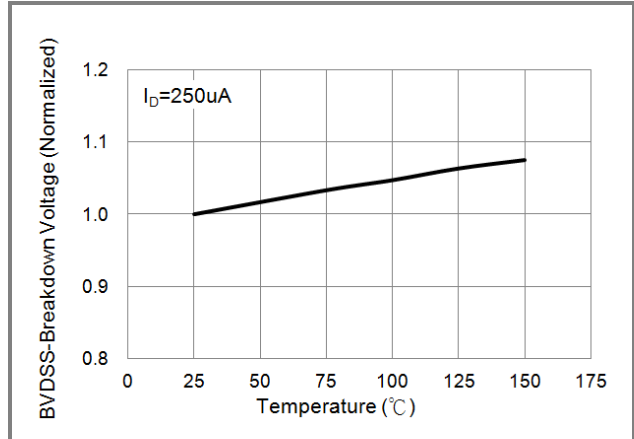


Fig.8 Breakdown Voltage Variation vs. Temperature

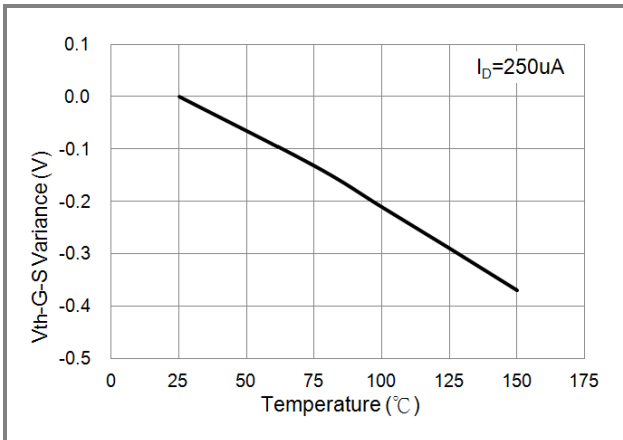


Fig.9 Threshold Voltage Variation with Temperature

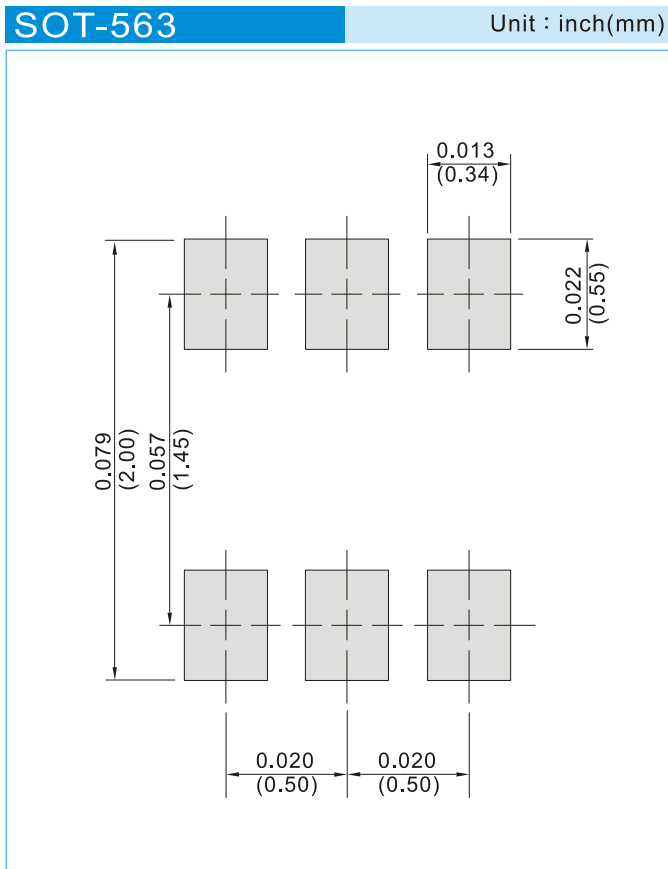


PJX8806

PART NO PACKING CODE VERSION

| PART NO PACKING CODE VERSION | Package Type | Packing type | Marking | Version |
|---------------------------------|--------------|--------------------|---------|--------------|
| PJX8806_R1_00001 | SOT-563 | 4K pcs / 7" reel | X06 | Halogen free |
| PJX8806_R2_00001 | SOT-563 | 10K pcs / 13" reel | X06 | Halogen free |

MOUNTING PAD LAYOUT





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