



# PJX8803

## 20V P-Channel Enhancement Mode MOSFET – ESD Protected

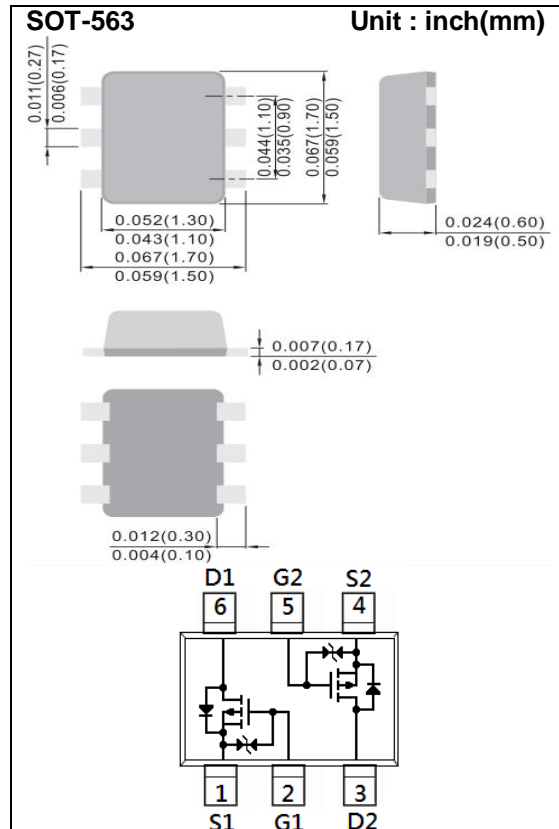
**Voltage**    **-20 V**    **Current**    **-0.6A**

### Features

- RDS(ON) , VGS@-4.5V, ID@-0.6A<340mΩ
- RDS(ON) , VGS@-2.5V, ID@-0.4A<420mΩ
- RDS(ON) , VGS@-1.8V, ID@-0.2A<600mΩ
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected 2KV HBM
- 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



### Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER  |                      | SYMBOL                            | LIMIT   | UNITS |
|--|----------------------|-----------------------------------|---------|-------|
| Drain-Source Voltage                             |                      | V <sub>DS</sub>                   | -20     | V     |
| Gate-Source Voltage                              |                      | V <sub>GS</sub>                   | ±8      | V     |
| Continuous Drain Current                         |                      | I <sub>D</sub>                    | -0.6    | A     |
| Pulsed Drain Current                             |                      | I <sub>DM</sub>                   | -2.4    | A     |
| Power Dissipation                                | T <sub>a</sub> =25°C | P <sub>D</sub>                    | 300     | mW    |
|  | Derate above 25°C    |                                   | 2.4     | mW/°C |
| Operating Junction and Storage Temperature Range |                      | T <sub>J</sub> , T <sub>STG</sub> | -55~150 | °C    |
| Typical Thermal Resistance                       |                      | R <sub>θJA</sub>                  | 417     | °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      |
|---|--------------|--|------|-----------|----------|------------|
| <b>Static</b>   |              |  |      |           |          |            |
| 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 | -0.64     | -1.0     | V          |
| Drain-Source On-State Resistance                      | $R_{DS(on)}$ | $V_{GS}=-4.5V, I_D=-0.6A$  | -    | 280       | 340      | m $\Omega$ |
|   |              | $V_{GS}=-2.5V, I_D=-0.4A$  | -    | 330       | 420      |            |
|   |              | $V_{GS}=-1.8V, I_D=-0.2A$  | -    | 420       | 600      |            |
| Zero Gate Voltage Drain Current                       | $I_{DSS}$    | $V_{DS}=-20V, V_{GS}=0V$   | -    | -0.01     | -1       | $\mu A$    |
| Gate-Source Leakage Current                           | $I_{GSS}$    | $V_{GS}=\pm 8V, V_{DS}=0V$   | -    | $\pm 3.5$ | $\pm 10$ | $\mu A$    |
| <b>Dynamic</b>  |              |  |      |           |          |            |
| Total Gate Charge                                     | $Q_g$        | $V_{DS}=-10V, I_D=-0.6A,$<br>$V_{GS}=-4.5V$ (Note 1,2)                   | -    | 2.2       | -        | nC         |
| Gate-Source Charge                                    | $Q_{gs}$     |  | -    | 0.4       | -        |            |
| Gate-Drain Charge                                     | $Q_{gd}$     |  | -    | 0.5       | -        |            |
| Input Capacitance                                     | $C_{iss}$    | $V_{DS}=-10V, V_{GS}=0V,$<br>$f=1.0\text{MHZ}$                           | -    | 151       | -        | pF         |
| Output Capacitance                                    | $C_{oss}$    |  | -    | 27        | -        |            |
| Reverse Transfer Capacitance                          | $C_{rss}$    |  | -    | 9         | -        |            |
| <b>Switching</b>                                      |              |  |      |           |          |            |
| Turn-On Delay Time                                    | $t_{d(on)}$  | $V_{DD}=-10V, I_D=-0.6A,$<br>$V_{GS}=-4.5V,$<br>$R_G=6\Omega$ (Note 1,2) | -    | 9         | -        | ns         |
| Turn-On Rise Time                                     | $t_r$        |  | -    | 37        | -        |            |
| Turn-Off Delay Time                                   | $t_{d(off)}$ |  | -    | 128       | -        |            |
| Turn-Off Fall Time                                    | $t_f$        |  | -    | 72        | -        |            |
| <b>Drain-Source Diode</b>                             |              |  |      |           |          |            |
| Maximum Continuous Drain-Source Diode Forward Current | $I_S$        | ---  | -    | -         | -0.4     | A          |
| Diode Forward Voltage                                 | $V_{SD}$     | $I_S=-1A, V_{GS}=0V$   | -    | -0.95     | -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



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## TYPICAL CHARACTERISTIC CURVES

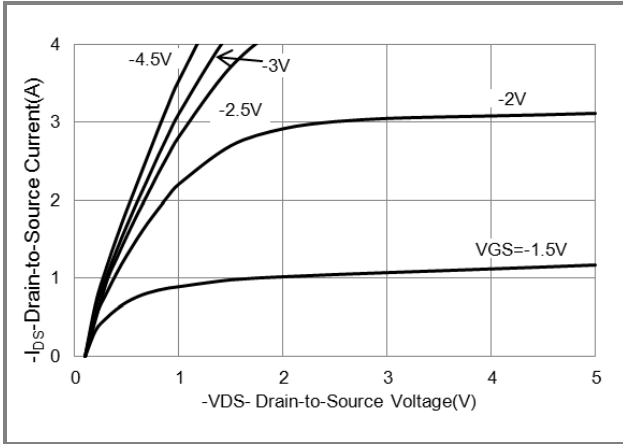


Fig.1 On-Region Characteristics

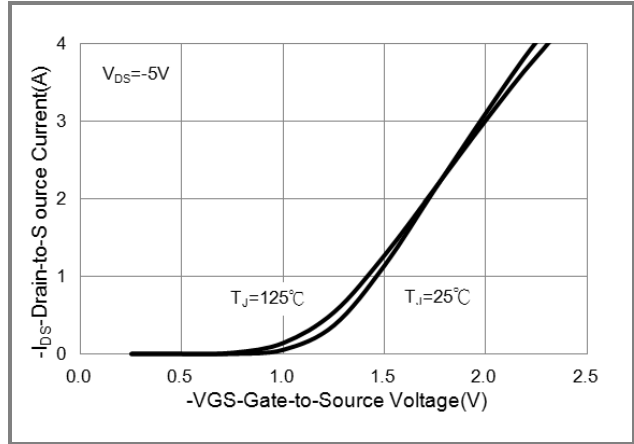


Fig.2 Transfer Characteristics

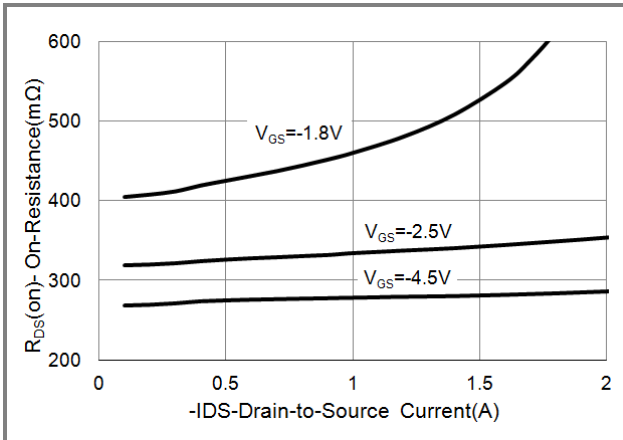


Fig.3 On-Resistance vs. Drain Current

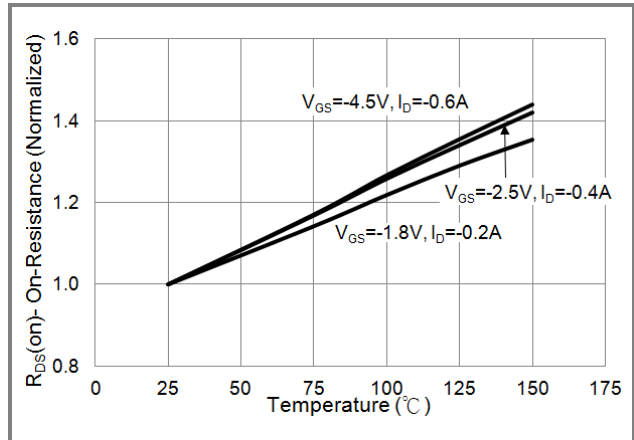


Fig.4 On-Resistance vs. Junction temperature

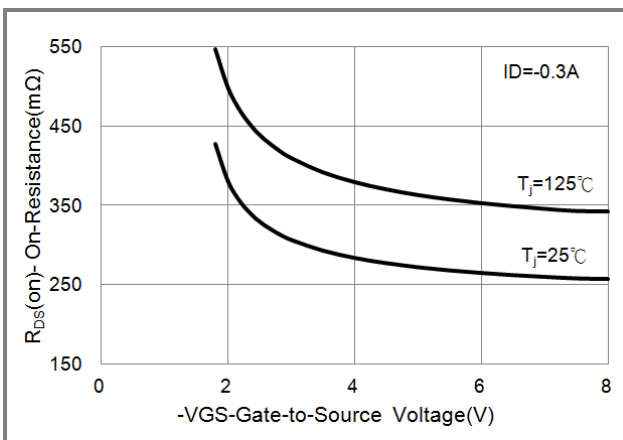


Fig.5 On-Resistance Variation with VGS.

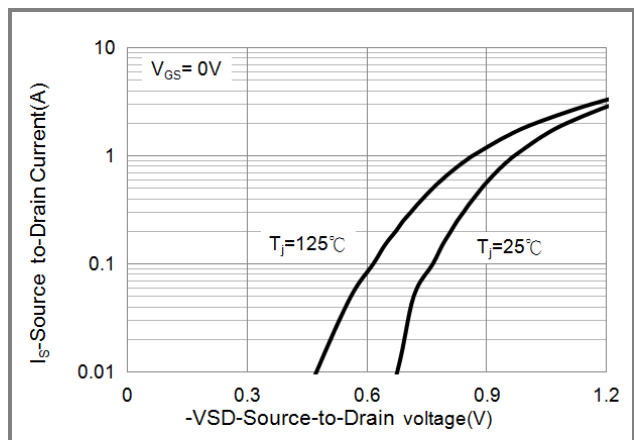


Fig.6 Body Diode Characteristics



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## TYPICAL CHARACTERISTIC CURVES

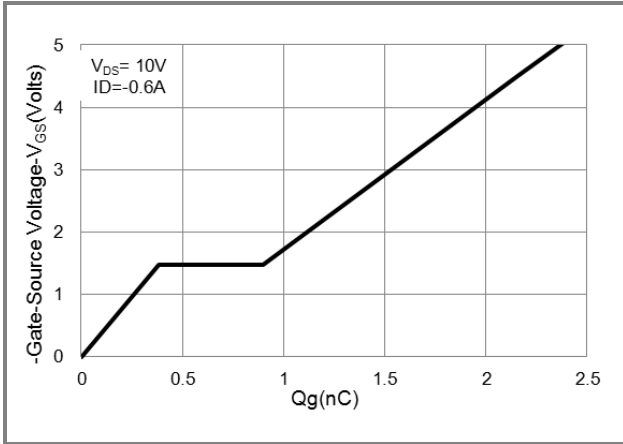


Fig.7 Gate-Charge Characteristics

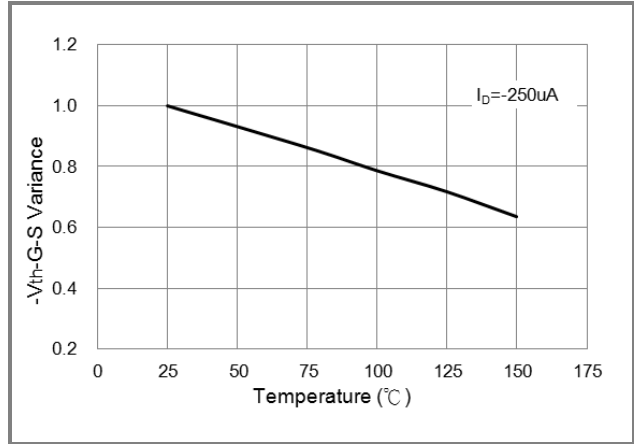


Fig.8 Threshold Voltage Variation with Temperature

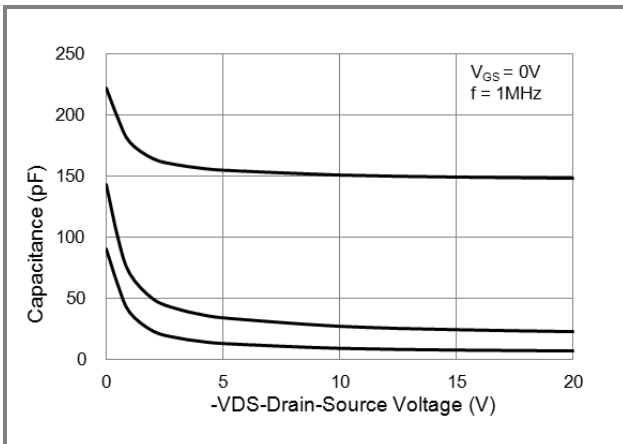


Fig.9 Capacitance vs. Drain-Source Voltage

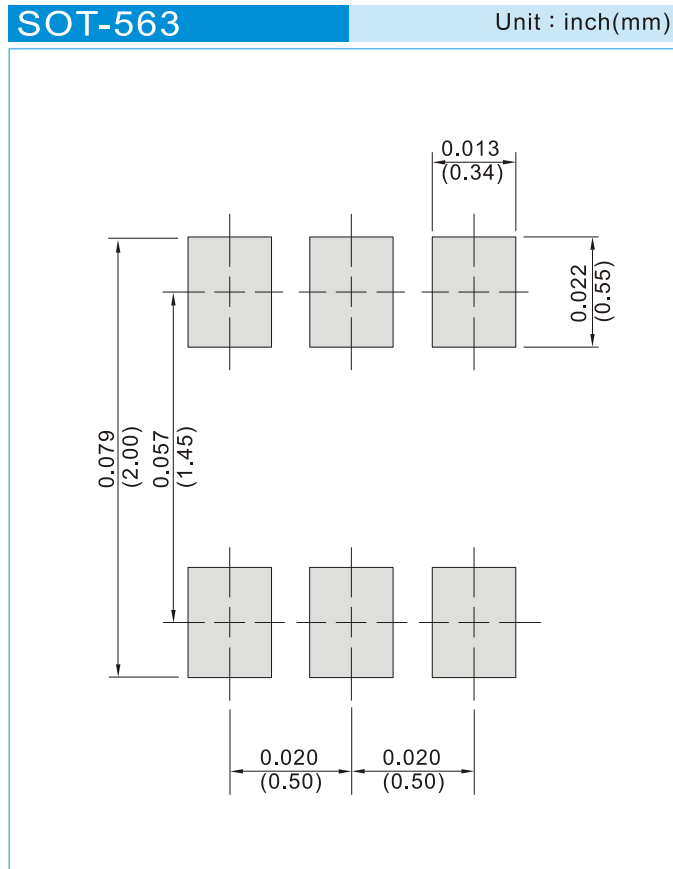


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## PART NO PACKING CODE VERSION

| Part No Packing Code | Package Type | Packing Type       | Marking | Version      |
|----------------------|--------------|--------------------|---------|--------------|
| PJX8803_R1_00001     | SOT-563      | 4K pcs / 7" reel   | X03     | Halogen free |
| PJX8803_R2_00001     | SOT-563      | 10K pcs / 13" reel | X03     | Halogen free |
| PJX8803_R1_00002     | SOT-563      | 8K pcs / 7" reel   | X03     | Halogen free |
| PJX8803_R2_00002     | SOT-563      | 20K pcs / 13" reel | X03     | Halogen free |

## MOUNTING PAD LAYOUT





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