# PJA87P03

## 30V P-Channel ENHANCEMENT MODE MOSFET

| Voltage | 30 V | Current | 4 A |
|---|---|---|---|

### Features

- $R_{DS(ON)}$, $V_{GS}$@-4.5V,$I_D$@-3A<87 mΩ
- $R_{DS(ON)}$, $V_{GS}$@-10V,$I_D$@-4.1A<55 mΩ
- Advanced Trench Process Technology
- High Density Cell Design For Ultra Low On-Resistance
- Specially Designed for DC/DC Converters
- Low Gate Charge
- Lead free in comply with EU RoHS 2011/65/EU directives.
- Green molding compound as per IEC61249 Std. (Halogen Free)

SOT-23

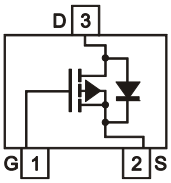


Fig.80 (TOP VIEW)

### Mechanical Data

- Case: SOT-23 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Apporx. Weight: 0.0003 ounces, 0.0084 grams
- Marking:87

### Maximum Ratings and Thermal Characteristics ($T_A$=25°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 | Ta=25°C | $I_D$ | -4 | A |
| | Ta=70°C | | -3.5 | |
| Pulsed Drain Current (Note 1) | | $I_{DM}$ | 20 | A |
| Power Dissipation (Note 1) | $T_a$=25°C | $P_D$ | 1.19 | W |
| | $T_a$=70°C | | 0.75 | |
| Operating Junction and Storage Temperature Range | | $T_J$,$T_{STG}$ | -55 to +150 | °C |
| Thermal resistance - Junction to Ambient (Note 1) | | $R_{\theta JA}$ | 125 | °C/W |

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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 | -1.55 | -3 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}$=-10V,$I_D$=-4.1A | - | 46 | 55 | mΩ |
| | | $V_{GS}$=-4.5V,$I_D$=-3A | - | 69 | 87 | |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=-30V,$V_{GS}$=0V | - | - | -1 | uA |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V,$V_{DS}$=0V | - | - | ±100 | nA |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=-1A,$V_{GS}$=0V | - | -0.81 | -1 | V |
| **Dynamic** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=-15V, $I_D$=-4A, $V_{GS}$=-4.5V | - | 6.1 | - | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 2 | - | |
| Gate-Drain Charge | $Q_{gd}$ | | - | 2.3 | - | |
| Input Capacitance | Ciss | $V_{DS}$=-15V, $V_{GS}$=0V, f=1.0MHZ | - | 629 | - | pF |
| Output Capacitance | Coss | | - | 73 | - | |
| Reverse Transfer Capacitance | Crss | | - | 61 | - | |
| **Switching** | | | | | | |
| Turn-On Delay Time | $td_{(on)}$ | $V_{DS}$=-15V, $V_{GS}$=-10V, $R_G$=3.3Ω,$R_G$=3.9Ω, | - | 55 | - | ns |
| Turn-Off Delay Time | $td_{(off)}$ | | - | 22.5 | - | |
| Turn-On Rise Time | $t_r$ | | - | 33.9 | - | |
| Turn-Off Fall Time | $t_f$ | | - | 9.8 | - | |

NOTES:

1. Mounted on 1 $in^2$ FR-4 PCB.

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## TYPICAL CHARACTERISTIC CURVES

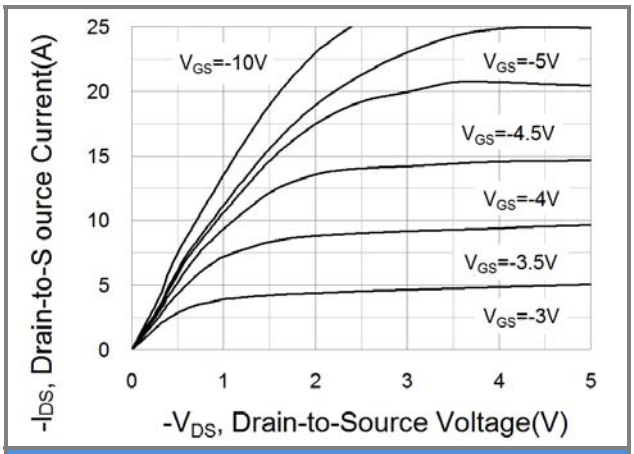


Fig.1 Output Characteristics

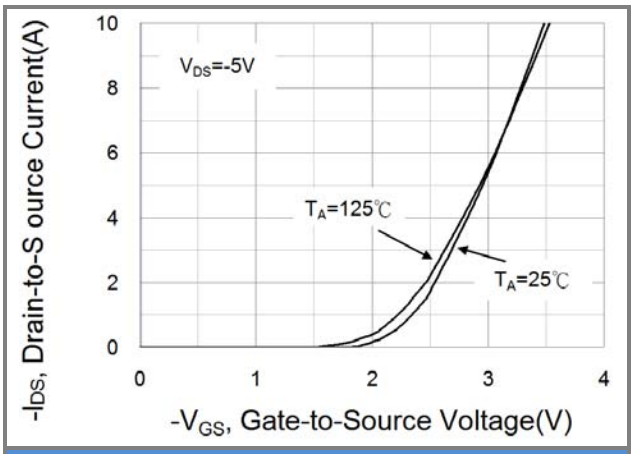


Fig.2 Transfer Characteristics

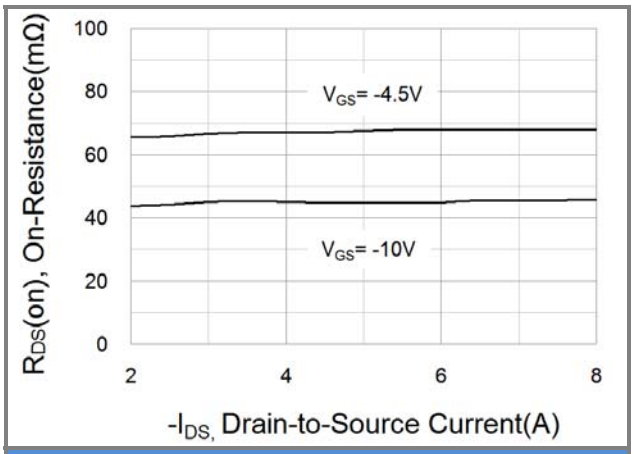


Fig.3 On-Resistance vs. Drain Current

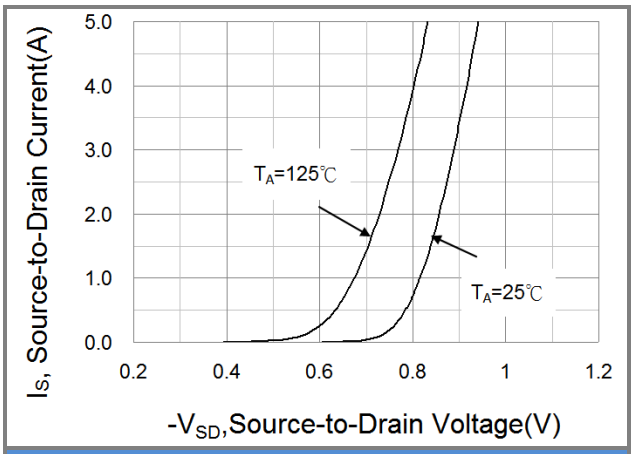


Fig.4 Source-Drain Diode Forward Voltage

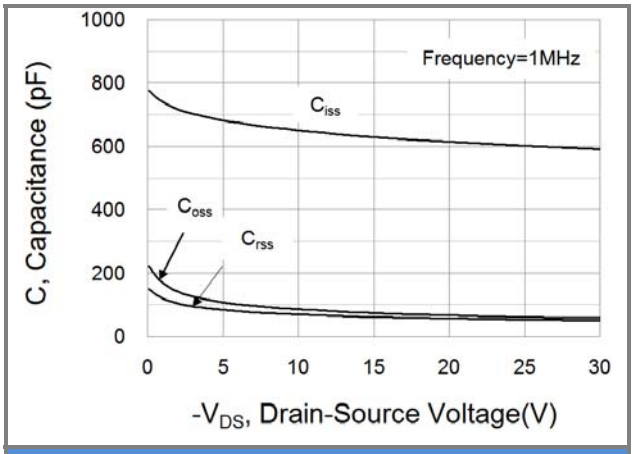


Fig.5 Capacitance vs. Drain-Source Voltage

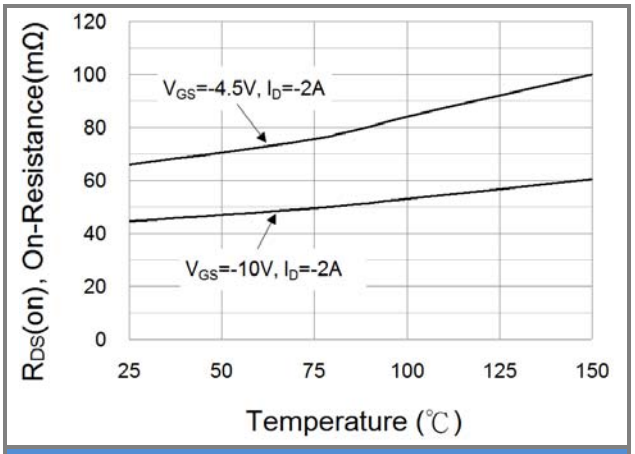


Fig.6 On-Resistance vs. Junction temperature

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## TYPICAL CHARACTERISTIC CURVES

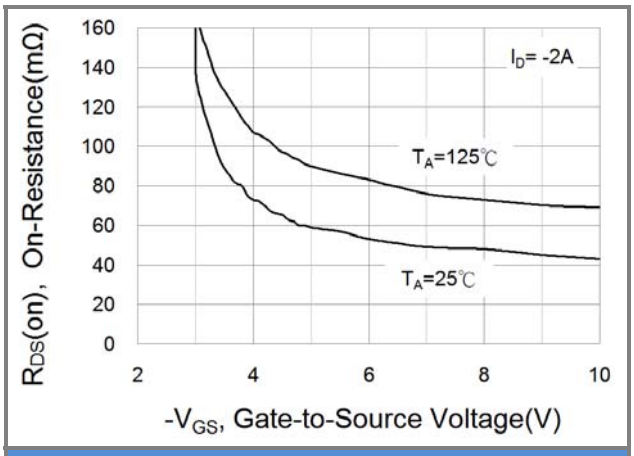


**Fig.7 On-Resistance vs. Gate-Source Voltage**

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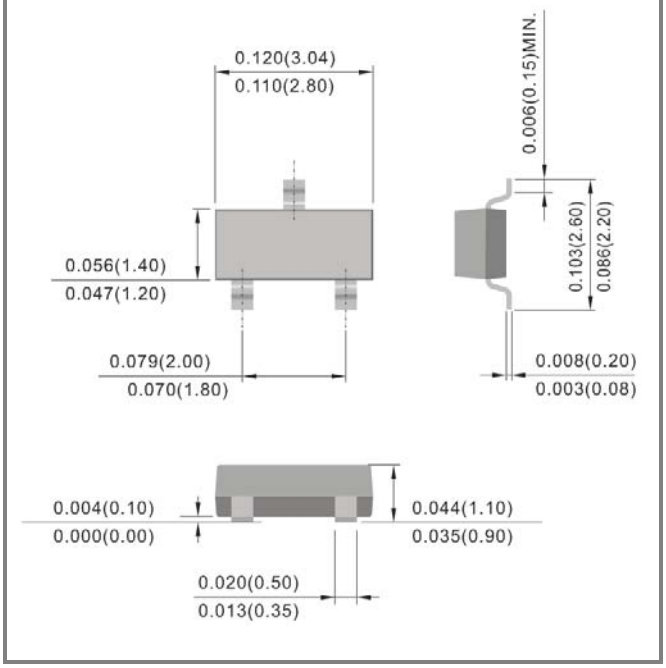
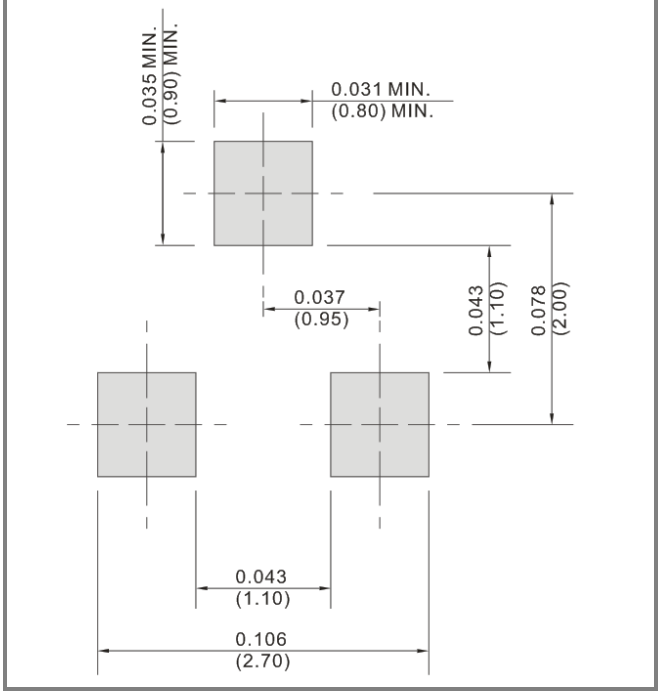
## MECHANICAL DATA

SOT-23 Dimension — Unit: inch (mm)




SOT-23 Pad Layout — Unit: inch (mm)




## ORDER INFORMATION

PJA87P03 _R1_00001

Serial number
**0001**: Standard
Version code
**0**: HF
Packing size code
**1**: 13”
Packing type
**R**: Tape and Reel (T/R)

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