

## P-channel 4V (G-S) MOSFET

### FEATURES

- Low On Resistance
- Ultra High Speed Switching
- -4V Driving
- EU RoHS Compliant, Pb Free

### APPLICATION

- Switching

### PRODUCT NAME

| PRODUCT NAME   | PACKAGE | ORDER UNIT |
|----------------|---------|------------|
| XP202A0003PR-G | SOT-89  | 1,000/Reel |

\*The "-G" suffix denotes Halogen and Antimony free as well as being fully EU RoHS compliant.

\*\*The high-melting solder paste (lead-containing) is used as attachment.

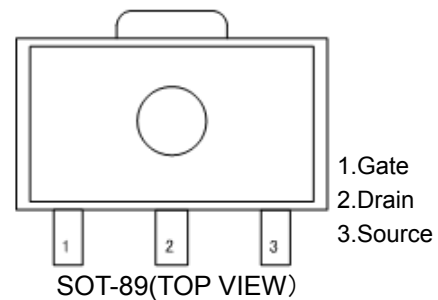
### ABSOLUTE MAXIMUM RATINGS

| PARAMETER                                 | SYMBOL    | RATINGS     | UNITS |
|---|-----------|-------------|-------|
| Drain-Source Voltage                      | $V_{DS}$  | -30         | V     |
| Gate-Source Voltage                       | $V_{GS}$  | $\pm 20$    | V     |
| Drain Current (DC)                        | $I_D$     | -5          | A     |
| Drain Current(Pulse) <sup>(*)</sup>       | $I_{DP}$  | -20         | A     |
| Channel Power Dissipation <sup>(**)</sup> | $P_d$     | 1.5         | W     |
| Channel Temperature                       | $T_{ch}$  | +150        | °C    |
| Storage Temperature                       | $T_{stg}$ | - 55 ~ +150 | °C    |

(\*) $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$

(\*\*)Ceramic Board (250mm<sup>2</sup> × 0.8mm) Mounting

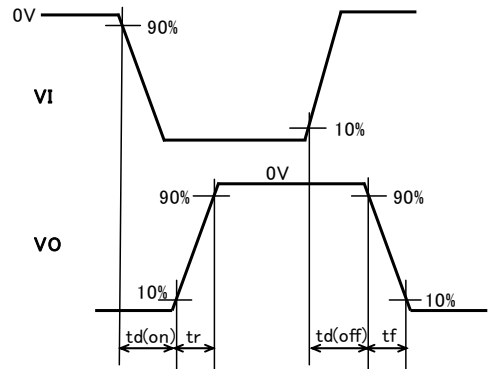
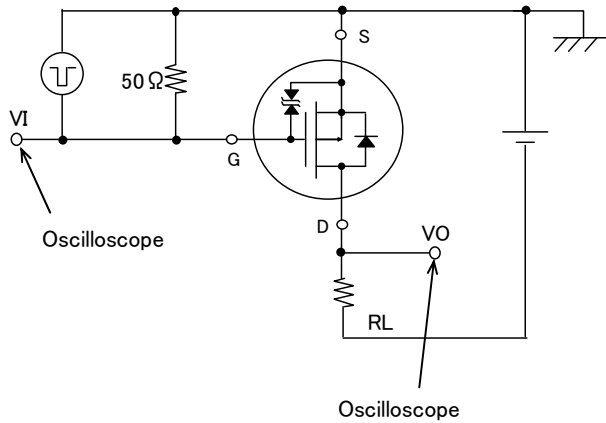
### PIN CONFIGURATION



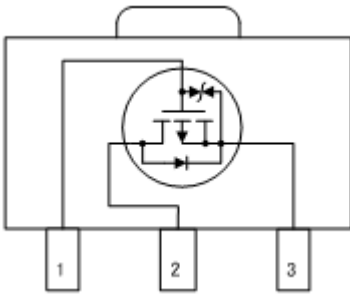
### ELECTRICAL CHARACTERISTICS

| PARAMETER                      | SYMBOL        | TEST CONDITIONS                 | LIMITS |      |          | UNITS      |
|--------------------------------|---------------|---------------------------------|--------|------|----------|------------|
|                                |               |                                 | MIN.   | TYP. | MAX.     |            |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D = -1mA, V_{GS} = 0V$       | -30    | -    | -        | V          |
| Drain-Source Cut-Off Current   | $I_{DSS}$     | $V_{DS} = -30V, V_{GS} = 0V$    | -      | -    | -1       | $\mu A$    |
| Gate-Source Leakage Current    | $I_{GSS}$     | $V_{GS} = \pm 16V, V_{DS} = 0V$ | -      | -    | $\pm 10$ | $\mu A$    |
| Gate-Source Cut-Off Voltage    | $V_{GS(off)}$ | $V_{DS} = -10V, I_D = -1mA$     | -1.2   | -    | -2.6     | V          |
| Forward Transfer Admittance    | $ y_{fs} $    | $V_{DS} = -10V, I_D = -3A$      | 2.8    | 8.0  | -        | S          |
| Drain-Source ON Resistance     | $R_{DS(ON)1}$ | $I_D = -3A, V_{GS} = -10V$      | -      | 47   | 59       | m $\Omega$ |
|                                | $R_{DS(ON)2}$ | $I_D = -1.5A, V_{GS} = -4.5V$   | -      | 70   | 100      | m $\Omega$ |
|                                | $R_{DS(ON)3}$ | $I_D = -1.5A, V_{GS} = -4V$     | -      | 80   | 113      | m $\Omega$ |
| Input Capacity                 | $C_{iss}$     | $V_{DS} = -10V, f = 1MHz$       | -      | 450  | -        | pF         |
| Output Capacity                | $C_{oss}$     | $V_{DS} = -10V, f = 1MHz$       | -      | 110  | -        | pF         |
| Feedback capacity              | $C_{rss}$     | $V_{DS} = -10V, f = 1MHz$       | -      | 80   | -        | pF         |
| Turn on Delay time             | $t_{d(on)}$   |                                 | -      | 7    | -        | ns         |
| Rise Time                      | $t_r$         |                                 | -      | 8    | -        | ns         |
| Turn off Delay Time            | $t_{d(off)}$  |                                 | -      | 31   | -        | ns         |
| Fall Time                      | $t_f$         |                                 | -      | 6    | -        | ns         |
| All Gate Charge Amount         | $Q_g$         |                                 | -      | 10   | -        | nC         |
| Gate Source Charge Amount      | $Q_{gs}$      |                                 | -      | 1.5  | -        | nC         |
| Gate Drain Charge Amount       | $Q_{gd}$      |                                 | -      | 2.5  | -        | nC         |
| Diode Forward Voltage          | $V_{SD}$      | $I_S = -5A, V_{GS} = 0V$        | -      | -0.9 | -1.2     | V          |

## SWITCHING-TIME TEST CIRCUIT

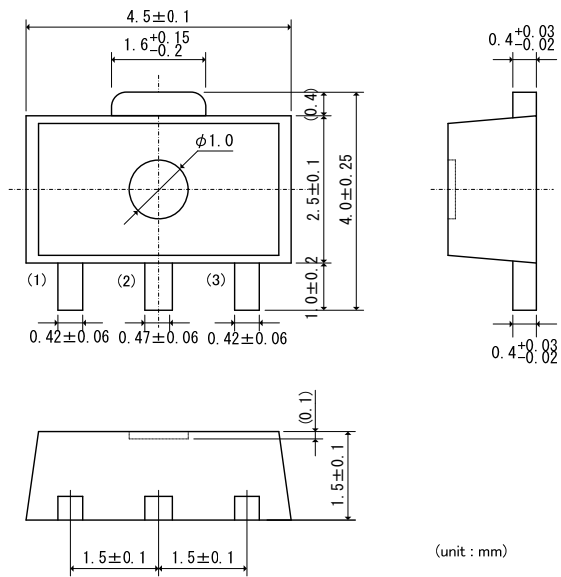


## EQUIVALENT CIRCUIT

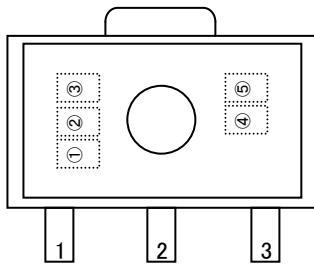


## PACKAGING INFORMATION

### ● SOT-89



## MARKING RULE



① represents product series

| MARK | PRODUCT SERIES |
|------|----------------|
| 6    | XP202*****-G   |

② ③ represents product group and number

| MARK |   | PRODUCT GROUP | PRODUCT NUMBER | PRODUCT SERIES |
|------|---|---------------|----------------|----------------|
| ②    | ③ |               |                |                |
| A    | D | 00            | 03             | XP202A0003**-G |

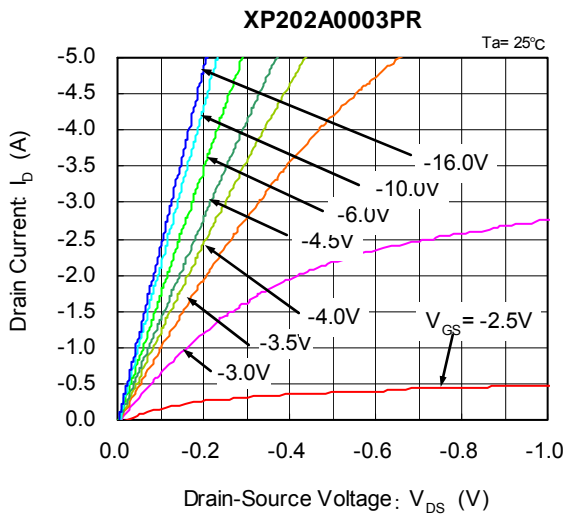
④, ⑤ represents production lot number

0 to 9, 0A to 0Z, 11 to 9Z, A1 to A9, AA to Z9, ZA to ZZ repeated (G, I, J, O, Q, W excluded)

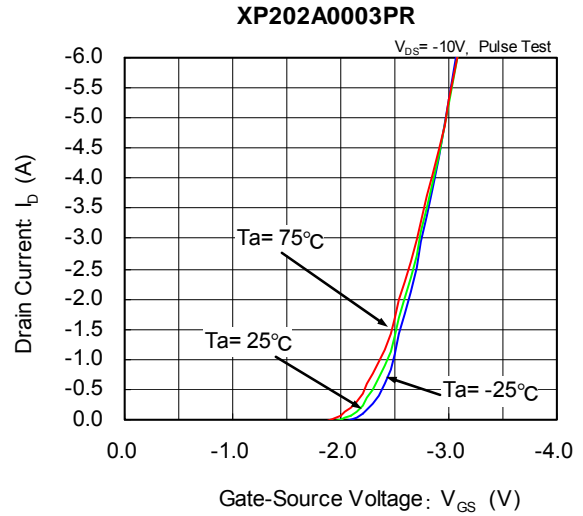
\*No character inversion used

# TYPICAL PERFORMANCE CHARACTERISTICS

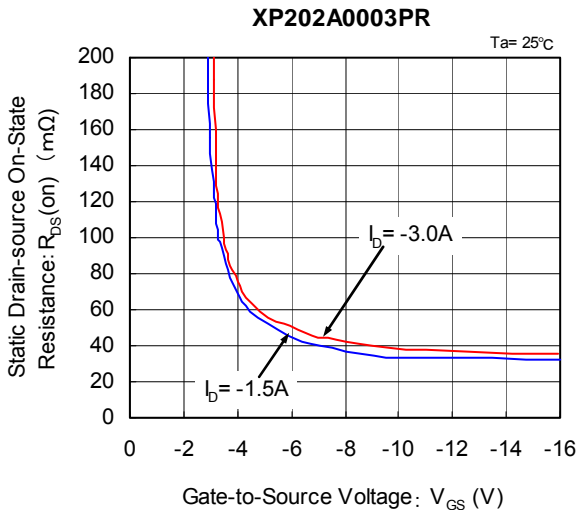
(1) Drain Current vs. Drain-Source Voltage



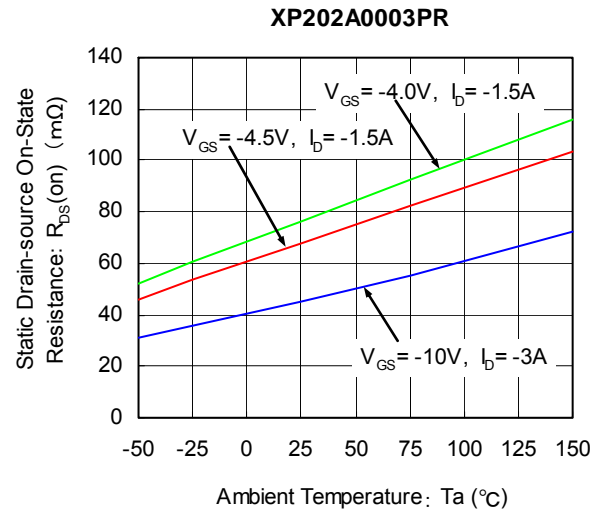
(2) Drain Current vs. Drain-Source Voltage



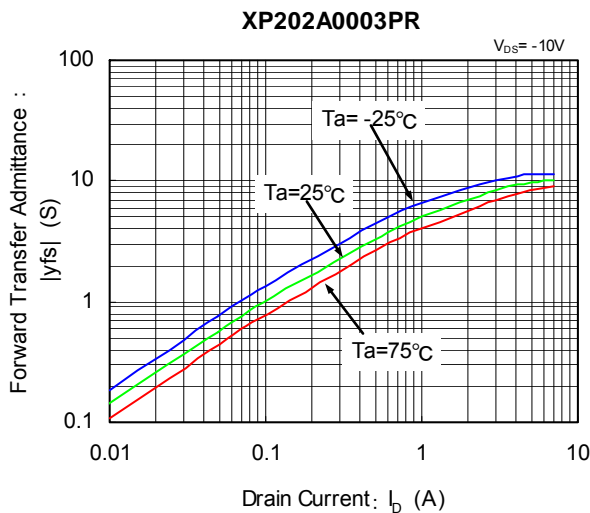
(3) Drain-Source On-State Resistance vs. Gate-Source Voltage



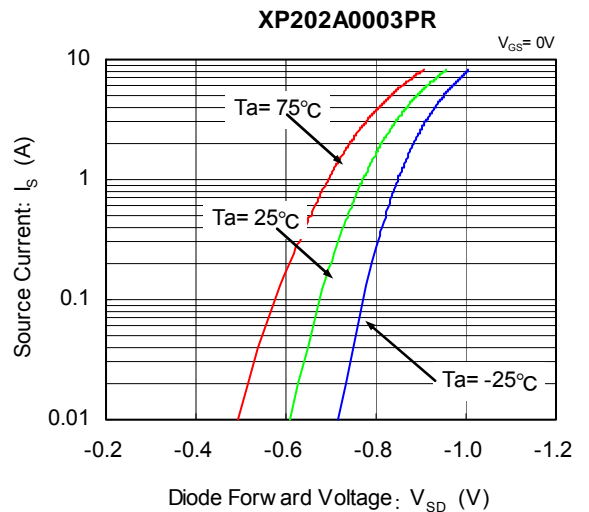
(4) Drain-Source On-State Resistance vs. Ambient Temperature



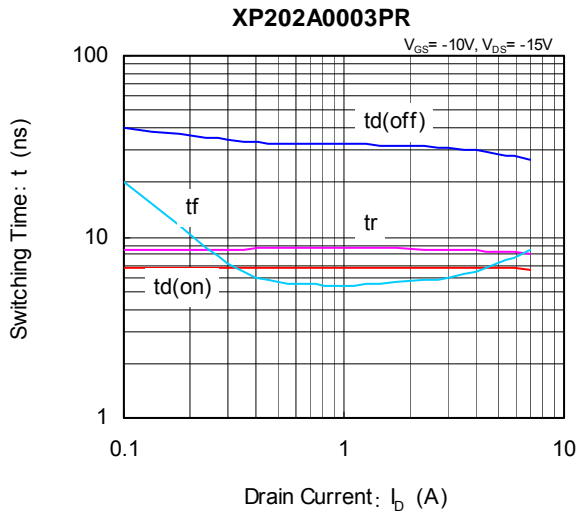
(5) Forward Transfer Admittance vs. Drain Current



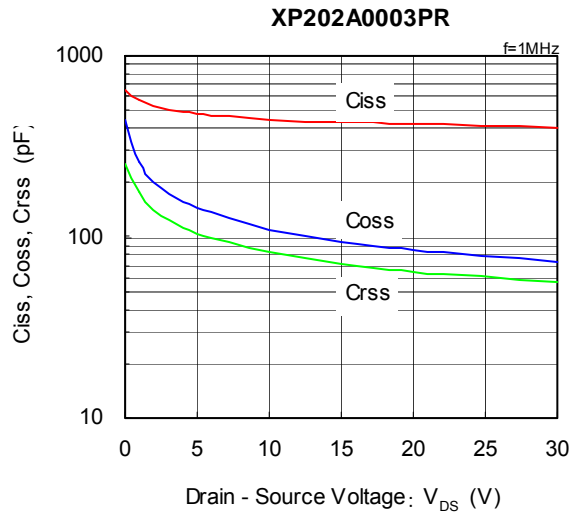
(6) Source Current vs. Diode Forward Voltage



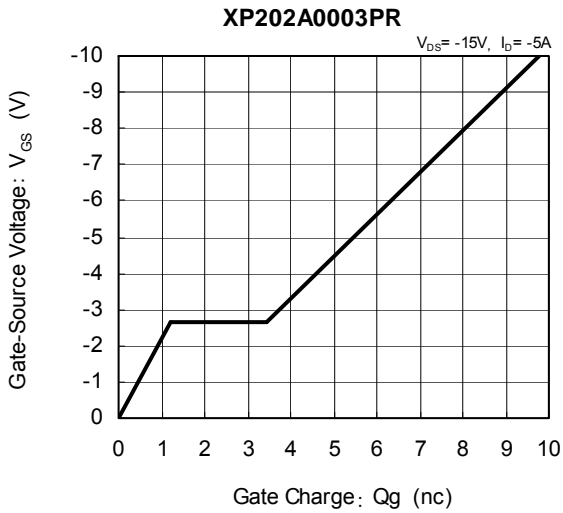
(7) Switching Time vs. Drain Current



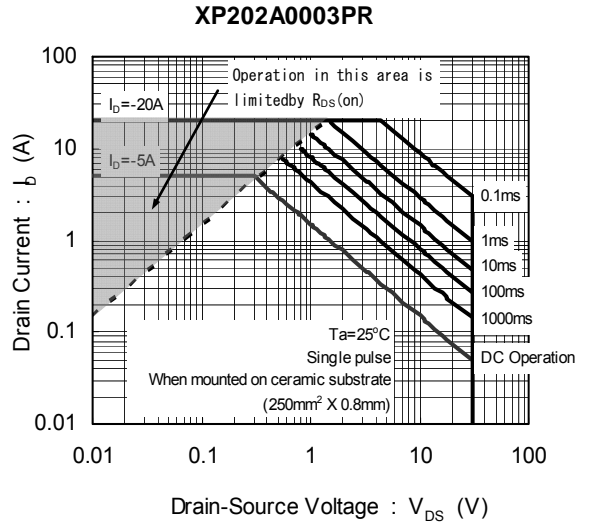
(8) Ciss, Coss, Crss vs. Drain-Source Voltage



(9) Gate-Source Voltage vs. Gate Charge



(10) Area of Safe Operation



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