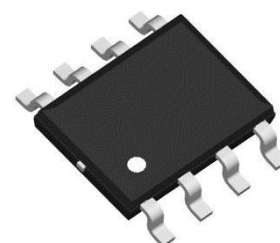


# -30V<sub>DS</sub>/±20V<sub>GS</sub> P-Channel Enhancement Mode MOSFET

## Features

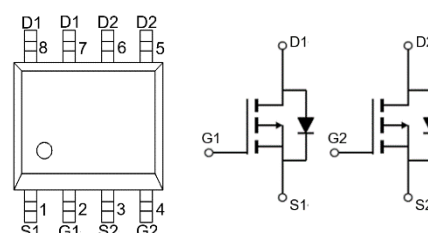
- $V_{DS}=-30V, I_D=-8A$
- $R_{DS(ON)}=25m\Omega$  (TYP.)  $V_{GS}=-10V$
- $R_{DS(ON)}=40m\Omega$  (TYP.)  $V_{GS}=-4.5V$
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance

SOP8



## Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion



## Ordering Information

| Device | package | Device Marking | Package Qty. |
|--------|---------|----------------|--------------|
| AO4805 | SOP-8   | 4805           | 3000/PCS     |

## Absolute Maximum Ratings (T<sub>C</sub>=25°C, unless otherwise noted)

| Parameter                                         | Symbol                           | Value   | Unit |
|---------------------------------------------------|----------------------------------|---------|------|
| Drain-Source Voltage (V <sub>GS</sub> =0V)        | V <sub>DS</sub>                  | -30     | V    |
| Gate-Source Voltage (V <sub>GS</sub> =0V,static)  | V <sub>GS</sub>                  | ±20     | V    |
| Continuous Drain Current (T <sub>C</sub> =25°C)   | I <sub>D</sub>                   | -8      | A    |
| Continuous Drain Current (T <sub>C</sub> =100°C)  |                                  | -6      | A    |
| Pulesd Drain Current                              | I <sub>DM</sub>                  | -30     | A    |
| Single Pulsed Avalanche Energy                    | E <sub>AS</sub>                  | 19      | mJ   |
| Maximum Power Dissipation (T <sub>C</sub> =25°C)  | P <sub>D</sub>                   | 3       | W    |
| Maximum Power Dissipation (T <sub>C</sub> =100°C) |                                  | 1.7     | W    |
| Operating,Storage Temperature Range               | T <sub>J</sub> ,T <sub>STG</sub> | -55~150 | °C   |

## Thermal Characteristics

| Parameter                              | Symbol           | Min. | Typ. | Max. | Unit  |
|----------------------------------------|------------------|------|------|------|-------|
| Thermal Resistance,Junction-to-Case    | R <sub>θJC</sub> | -    | 23   | -    | °C/ W |
| Thermal Resistance,Junction-to-Ambient | R <sub>θJA</sub> | -    | 81   | -    | °C/ W |

## Electrical Characteristics

| Parameter                        | Symbol       | Test Conditions                | Min. | Typ. | Max.      | Unit       |
|----------------------------------|--------------|--------------------------------|------|------|-----------|------------|
| Drain-Source Breakdown Voltage   | $BV_{DSS}$   | $V_{GS}=0V, I_D=-250\mu A$     | -30  | -    | -         | V          |
| Zero Gate Voltage Drain Current  | $I_{DSS}$    | $V_{DS}=-30V, V_{GS}=0V$       | -    | -    | -1        | $\mu A$    |
| Gate -Source Leakage Current     | $I_{GSS}$    | $V_{GS}=\pm 20V, V_{DS}=0V$    | -    | -    | $\pm 100$ | nA         |
| Gate Threshold Voltage           | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -0.6 | -0.9 | -1.2      | V          |
| Drain-Source On-stage Resistance | $R_{DS(on)}$ | $V_{GS}=-10V, I_D=-1A$         | -    | 20   | 30        | m $\Omega$ |
|                                  |              | $V_{GS}=-4.5V, I_D=-1A$        | -    | 25   | 45        |            |

## Dynamic Characteristics

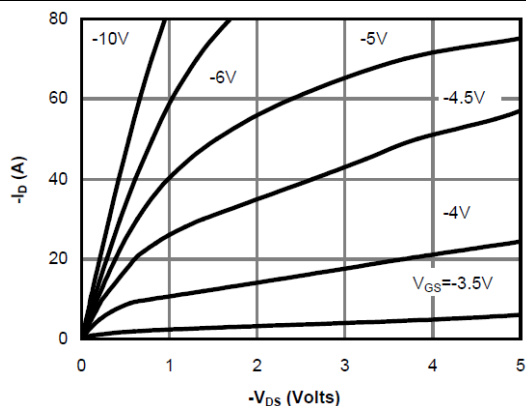
| Parameter                    | Symbol       | Test Conditions                                                    | Min. | Typ. | Max. | Unit     |
|------------------------------|--------------|--------------------------------------------------------------------|------|------|------|----------|
| Input capacitance            | $C_{iss}$    | $V_{DS}=-15V$<br>$V_{GS}=0V$<br>$f=1MHz$                           | -    | 1200 |      | pF       |
| Output capacitance           | $C_{oss}$    |                                                                    | -    | 155  | -    |          |
| Reverse transfer capacitance | $C_{rss}$    |                                                                    | -    | 135  | -    |          |
| Gate Resistance              | $R_g$        | $f=1MHz$                                                           | -    | 3.3  | -    | $\Omega$ |
| Total Gate Charge            | $Q_g$        | $V_{DS}=-15V$<br>$V_{GS}=-10V$<br>$I_D=-8A$                        | -    | 33   | -    | nC       |
| Gate Source Charge           | $Q_{gs}$     |                                                                    | -    | 4.8  | -    |          |
| Gate Drain Charge            | $Q_{gd}$     |                                                                    | -    | 11   | -    |          |
| Turn-on delay Time           | $t_{d(on)}$  | $V_{GS}=-10V$<br>$V_{DS}=-15V$<br>$R_L=1.7\Omega$<br>$R_G=3\Omega$ | -    | 12   | -    | ns       |
| Rise time                    | $t_r$        |                                                                    | -    | 9.8  | -    |          |
| Turn-off delay Time          | $t_{d(off)}$ |                                                                    | -    | 25   | -    |          |
| Fall time                    | $t_f$        |                                                                    | -    | 13   | -    |          |

## Reverse Diode Characteristics

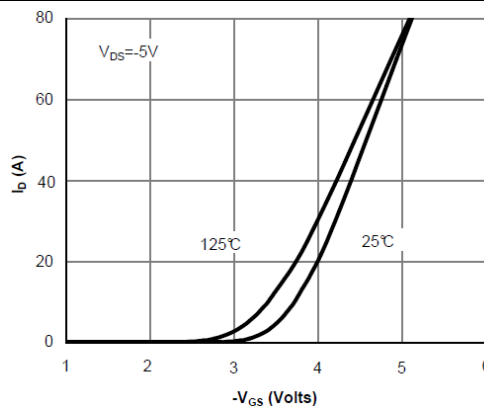
| Parameter                  | Symbol   | Test Conditions                                 | Min. | Typ. | Max. | Unit |
|----------------------------|----------|-------------------------------------------------|------|------|------|------|
| Body Diode Forward Voltage | $V_{SD}$ | $V_{GS}=0V, I_{SD}=-1A$                         | -    | -0.9 | -1.2 | V    |
| Reverse Recovery Time      | $t_{rr}$ | $V_{GS}=0V, I_{SD}=-8A$<br>$d_i/d_t=100A/\mu s$ | -    | 33   | -    | ns   |
| Reverse Recovery Charge    | $Q_{rr}$ |                                                 | -    | 25   | -    | nC   |

## Electrical Characteristics Diagrames

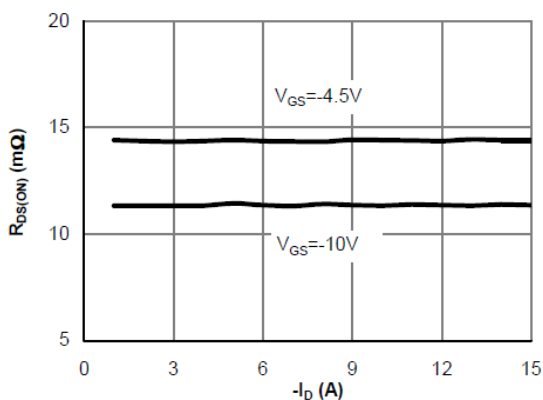
**Figure 1. On-Regin Characteristics**



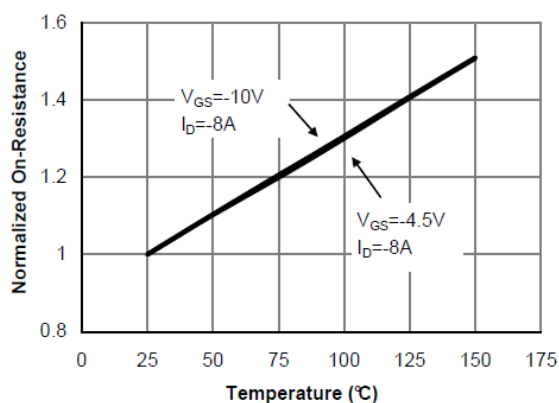
**Figure 2. Transfer Characteristics**



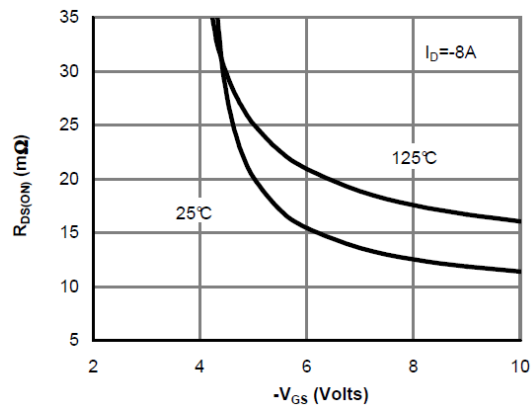
**Figure 3. On-Resistance vs. Drain Current and Gate Voltage**



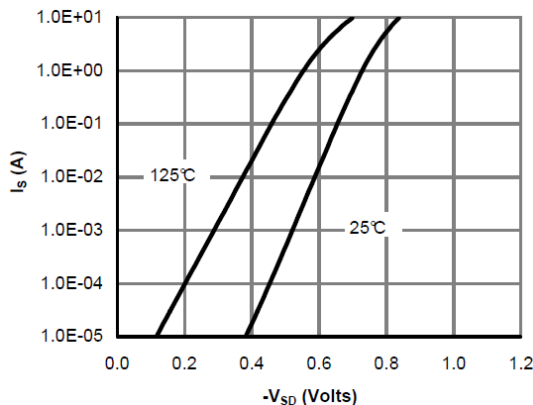
**Figure 4. On-Resistance vs. Junction Temperature**



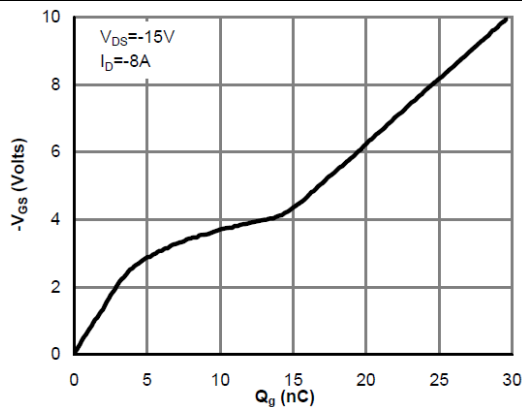
**Figure 5. On-Resistance vs. Gate-Source Voltage**



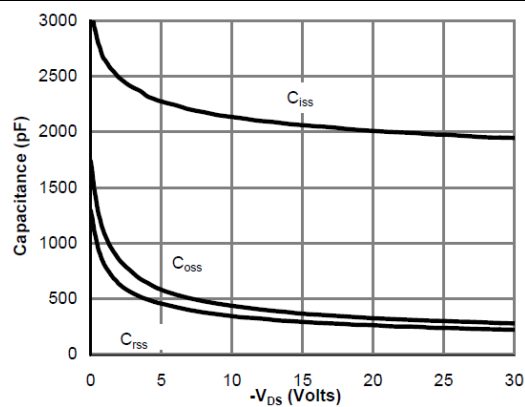
**Figure 6. Body-Diode Characteristics**



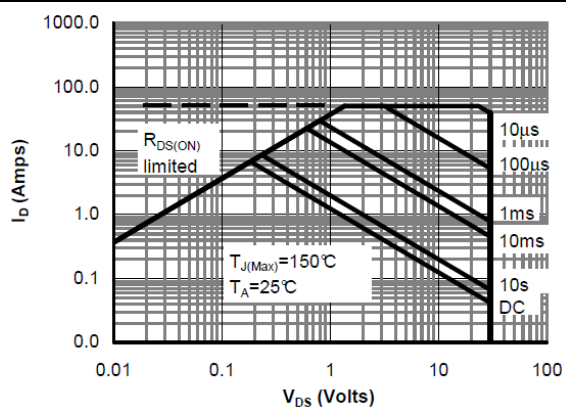
**Figure 7. Gate-Charge Characteristics**



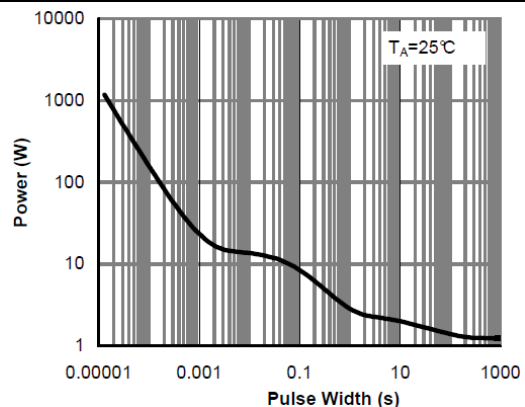
**Figure 8. Capacitance Characteristics**



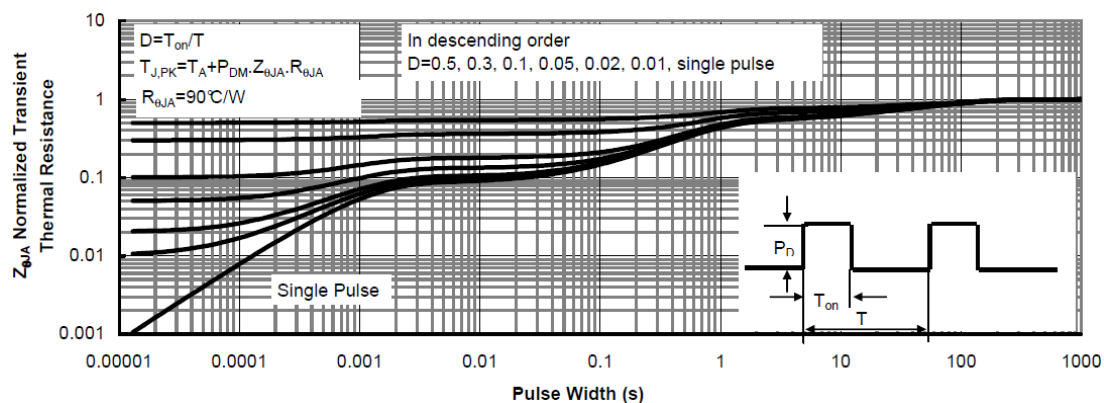
**Figure 9. Maximum Forward Biased Safe Operating Area**



**Figure 10. Single Pulse Power Rating Junction-to-Ambient**

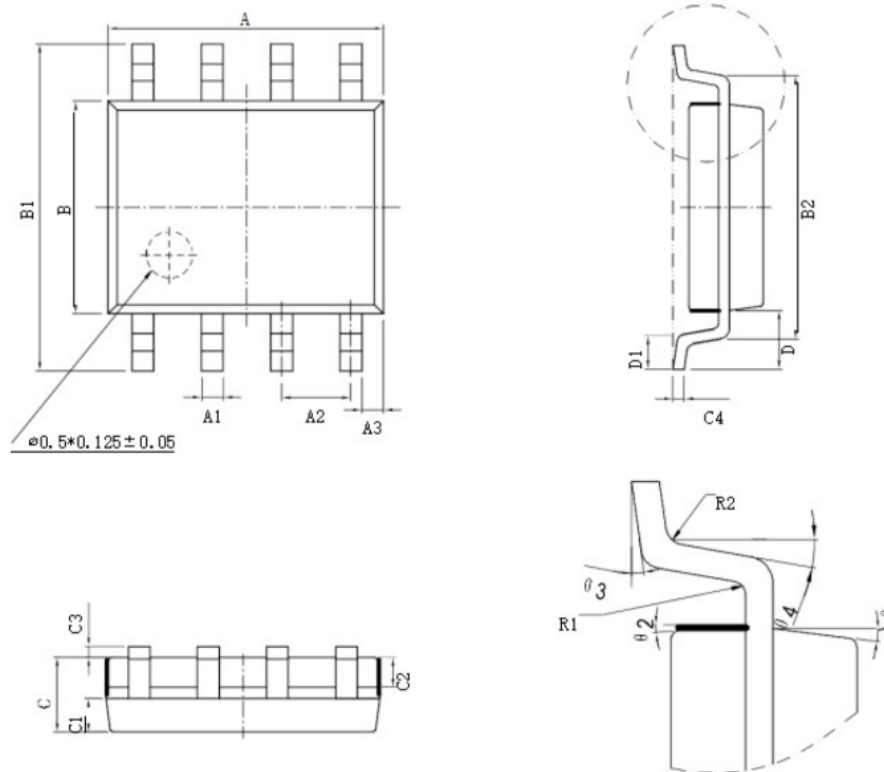


**Figure 11. Normalized Maximum Transient Thermal Impedance**



## Physical Dimensions

### SOP8



| 符号 | 尺寸 (mm)   |       | 符号         | 尺寸 (mm)  |       |
|----|-----------|-------|------------|----------|-------|
|    | 最小值       | 最大值   |            | 最小值      | 最大值   |
| A  | 4.80      | 5.00  | C3         | 0.05     | 0.20  |
| A1 | 0.356     | 0.456 | C4         | 0.203    | 0.233 |
| A2 | 1.27 TYP  |       | D          | 1.05 TYP |       |
| A3 | 0.345 TYP |       | D1         | 0.40     | 0.80  |
| B  | 3.80      | 4.00  | R1         | 0.20 TYP |       |
| B1 | 5.80      | 6.20  | R2         | 0.20 TYP |       |
| B2 | 5.00 TYP  |       | $\theta 1$ | 17° TYP4 |       |
| C  | 1.30      | 1.60  | $\theta 2$ | 13° TYP4 |       |
| C1 | 0.55      | 0.65  | $\theta 3$ | 0° ~ 8°  |       |
| C2 | 0.55      | 0.65  | $\theta 4$ | 4° ~ 12° |       |

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