# 8205A
## 20V N-Channel Trench Power MOSFET

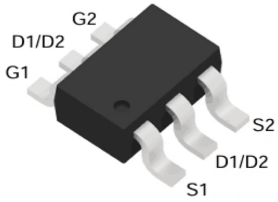
| | | |
|---|---|---|
| $V_{DSS}$ | 20 | V |
| $I_D$ | 6 | A |
| $R_{DS(ON)}$ | 20 | mΩ |

## Features

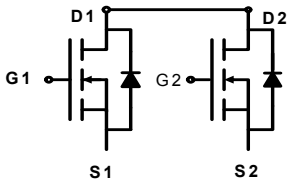
Low Gate Charge
100% UIS Tested, 100% DVDS Tested
High Power and current handing capability
Lead free product is acquired

8205

**SOT 23-6L**




**Equivalent Circuit**




## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

**Absolute Maximum Ratings** (@ $T_a$ = 25°C unless otherwise specified)

| Symbol | Parameter | Limit | Unit |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage ($V_{GS}$=0V) | 20 | V |
| $V_{GS}$ | Gate-Source Voltage ($V_{DS}$=0V) | ±12 | V |
| $I_D$ | Drain Current-Continuous($T_A$=25℃) | 6 | A |
| | Drain Current-Continuous($T_A$=100℃) | 4.3 | A |
| $I_{DM\ (pluse)}$ | Drain Current-Continuous@ Current-Pulsed (Note 1) | 27.2 | A |
| $P_D$ | Maximum Power Dissipation($T_A$=25℃) | 1.3 | W |
| | Maximum Power Dissipation($T_A$=100℃) | 0.53 | W |
| $E_{AS}$ | Avalanche energy (Note 2) | 25 | mJ |
| $T_J$, $T_{STG}$ | Operating Junction and Storage Temperature Range | -55 To 150 | ℃ |

**Thermal Characteristic**

| Symbol | Parameter | Typ | Max | Unit |
|---|---|---|---|---|
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | | 95 | ℃/W |

## RATING AND CHARACTERISTIC CURVES

**Figure 1. Output Characteristics**

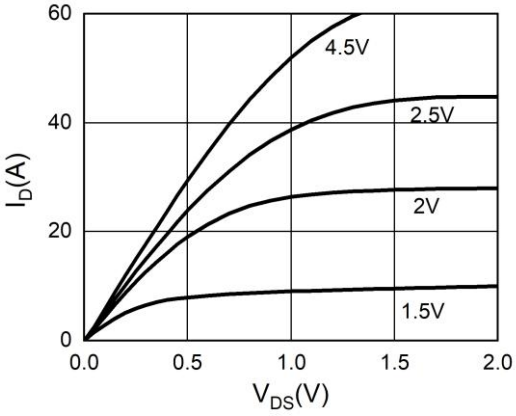



**Figure 2. Transfer Characteristics**

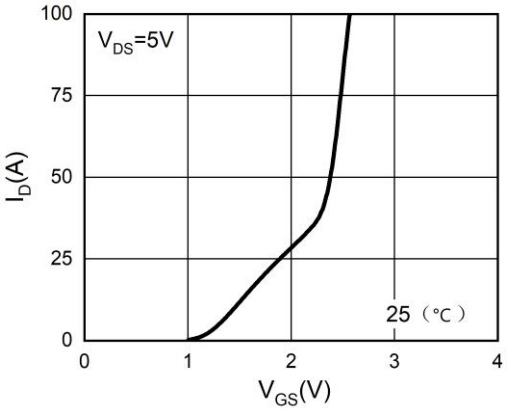



**Figure 3. Power Dissipation**

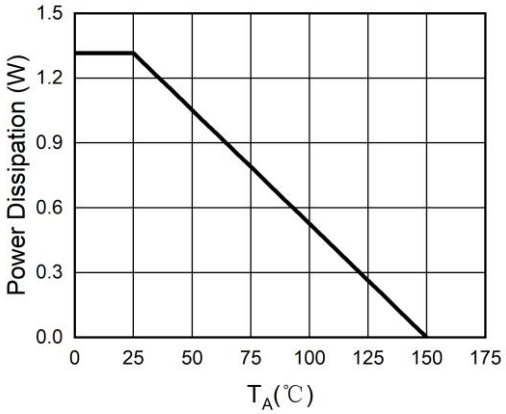



**Figure 4. Drain Current**

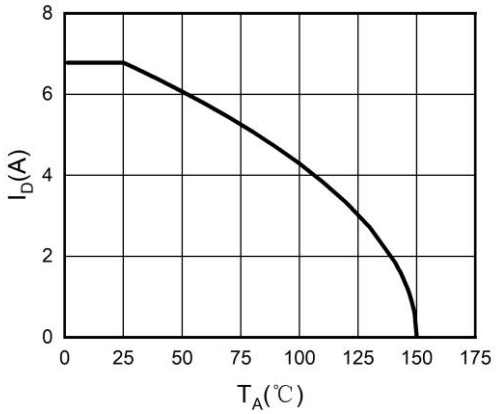



**Figure 5. $BV_{DSS}$ vs Junction Temperature**

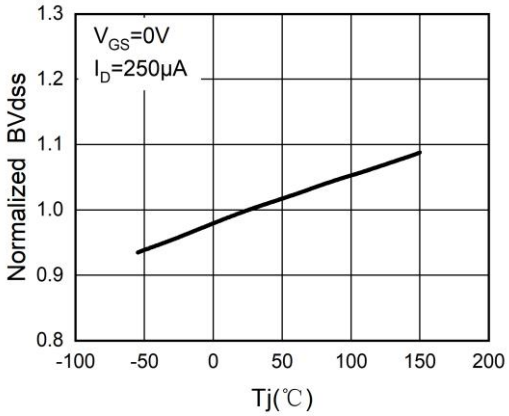
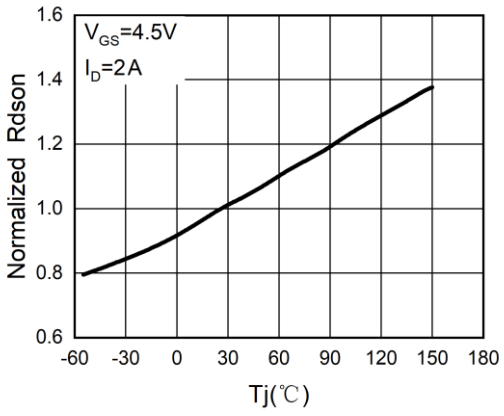



**Figure 6. $R_{DS(ON)}$ vs Junction Temperature**



## RATING AND CHARACTERISTIC CURVES

**Figure 7. Gate Charge Waveforms**

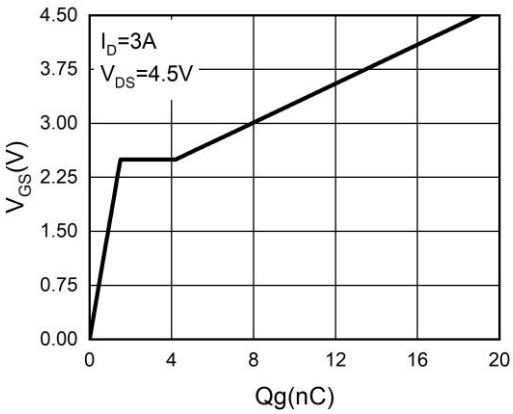



**Figure 8. Capacitance**

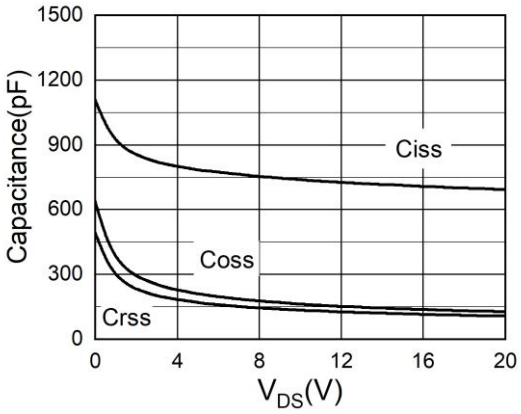



**Figure 9. Body-Diode Characteristics**

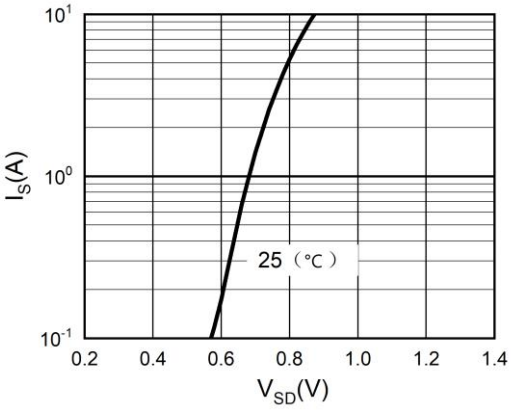
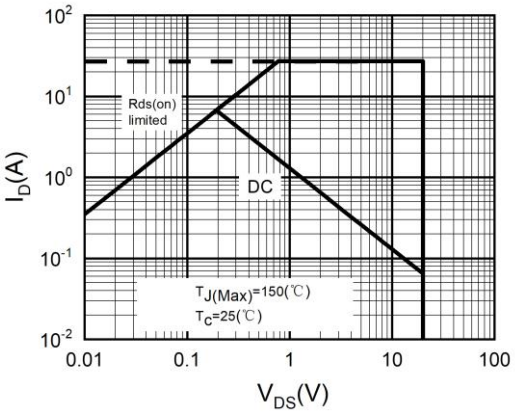


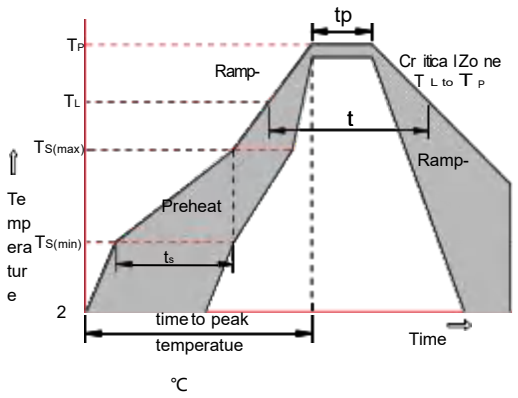

**Figure 10. Maximum Safe Operating Area**



## Soldering parameters

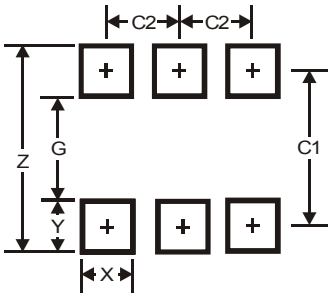
| Reflow Condition | | Pb-Free assembly (see as bellow) |
|---|---|---|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150℃ |
| | -Temperature Max($T_{s(max)}$) | +200℃ |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp ($T_L$) to peak) | | 3℃/sec. Max |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate | | 3℃/sec. Max |
| Reflow | -Temperature($T_L$)(Liquid us) | +217℃ |
| | -Temperature($t_L$) | 60-150 secs. |
| Peak Temp ($T_p$) | | +260(+0/-5)℃ |
| Time within 5℃ of actual Peak Temp ($t_p$) | | 30 secs. Max |
| Ramp-down Rate | | 6℃/sec. Max |
| Time 25℃ to Peak Temp ($T_P$) | | 8 min. Max |
| Do not exceed | | +260℃ |

**FIG5:** Reflow condition




## Package Dimensions & Suggested Pad Layout

**SOT23-6L**




| Dimensions | Value (in mm) |
|---|---|
| **Z** | 3.50 |
| **G** | 1.30 |
| **X** | 0.65 |
| **Y** | 1.10 |
| **C1** | 2.40 |
| **C2** | 0.95 |

Dimensions in millimeters

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