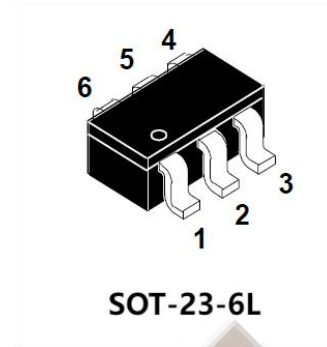


## General Description

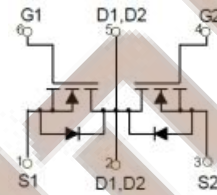


| V <sub>DSS</sub> | R <sub>DS(on)</sub> MAX | I <sub>D</sub> Max. |
|------------------|-------------------------|---------------------|
| 20V              | 25mΩ@4.5V               | 6A                  |
|                  | 32mΩ@2.5V               |                     |



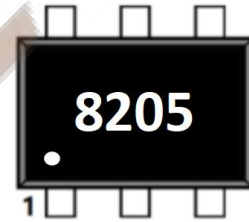
## Features

- SOT-23-6L Package
- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 3
- High temperature soldering guaranteed 260°C/10seconds at terminals



## Applications

- Load switch
- Power management



## Package Marking and Ordering Information

| Product ID | Pack      | Marking | Qty(PCS) |
|------------|-----------|---------|----------|
| 8205       | SOT-23-6L | .8205   | 3000     |

## Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

| Parameter                                          | Symbols          | Rating   | Units |
|----------------------------------------------------|------------------|----------|-------|
| Drain-Source Voltage                               | V <sub>DS</sub>  | 20       | V     |
| Gate-Source Voltage                                | V <sub>GS</sub>  | ±10      | V     |
| Continuous Drain Current                           | I <sub>D</sub>   | 6        | A     |
| Pulsed Drain Current(note1)                        | I <sub>DM</sub>  | 25       |       |
| Junction Temperature                               | T <sub>j</sub>   | 150      | °C    |
| Storage Temperature                                | T <sub>stg</sub> | -55-+150 | °C    |
| Thermal Resistance From Junction to Ambient(note2) | R θ JA           | 357      | °C/W  |

### Electrical Characteristics (Ta=25℃, unless otherwise noted)

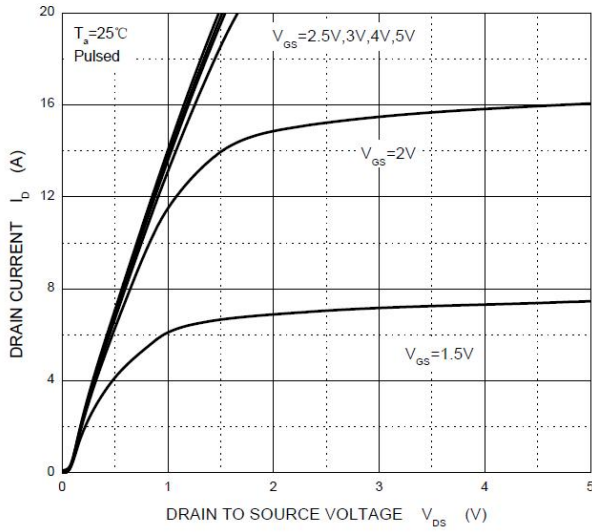
| Parameter                          | Symbol   | Test Conditions                          | Min. | Typ. | Max. | Unit |
|------------------------------------|----------|------------------------------------------|------|------|------|------|
| Static                             |          |                                          |      |      |      |      |
| Drain-Source Breakdown Voltage     | V(BR)DSS | VGS=0V, ID=250uA                         | 20   |      |      | V    |
| Gate-Threshold Voltage(note3)      | VGS (th) | VDS=VGS, ID=250uA                        | 0.5  |      | 0.9  | V    |
| Gate-body Leakage Current          | IGSS     | VDS=0V, VGS=±10V                         |      |      | ±100 | nA   |
| Zero Gate Voltage Drain Current    | IDSS     | VDS=18V, VGS=0V                          |      |      | 1.0  | uA   |
| Drain-Source On-Resistance (note3) | RDS(ON)  | VGS=4.5V, ID=6A                          |      |      | 25   | mΩ   |
|                                    |          | VGS=2.5V, IC=5A                          |      |      | 32   |      |
| Forward trans conductance(note3)   | gfs      | VDS=5V, ID=4.5A                          |      | 10   |      | S    |
| Diode forward voltage(note3)       | VSD      | IS=1.25A, VGS=0V                         |      |      | 1.2  | V    |
| Dynamic Characteristics(note4)     |          |                                          |      |      |      |      |
| Input capacitance                  | Ciss     | VDS=8V, VGS=0V,f=1MHz                    |      | 800  |      | pF   |
| Output capacitance                 | Coss     |                                          |      | 155  |      |      |
| Reverse Transfer capacitance       | Crss     |                                          |      | 125  |      |      |
| Total gate charge                  | Qg       | VDS=10V, VGS=4.5V, ID=4A                 |      | 11   |      | nC   |
| Gate-source charge                 | Qgs      |                                          |      | 2.3  |      |      |
| Gate-drain charge                  | Qgd      |                                          |      | 2.5  |      |      |
| Switching (b)                      |          |                                          |      |      |      |      |
| Turn-on Time                       | td(on)   | VDD=10V, RGEN=10 Ω ,<br>VGS=4V, ID=1.0A, |      | 18   |      | ns   |
| Rise time                          | tr       |                                          |      | 5    |      |      |
| Turn-off Time                      | td(off)  |                                          |      | 43   |      |      |
| Fall time                          | tf       |                                          |      | 20   |      |      |

Notes :

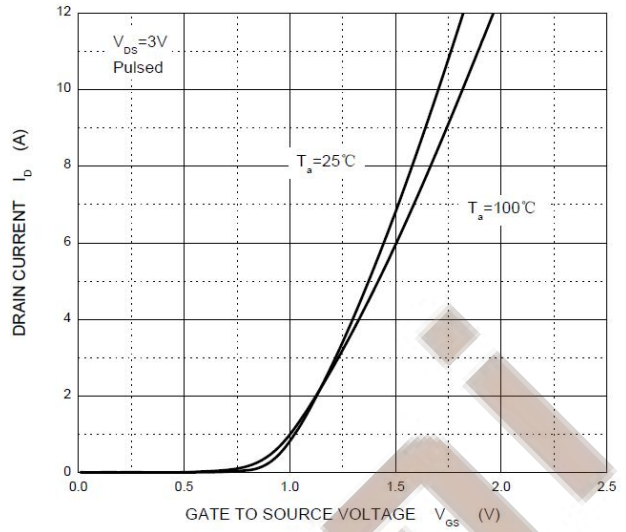
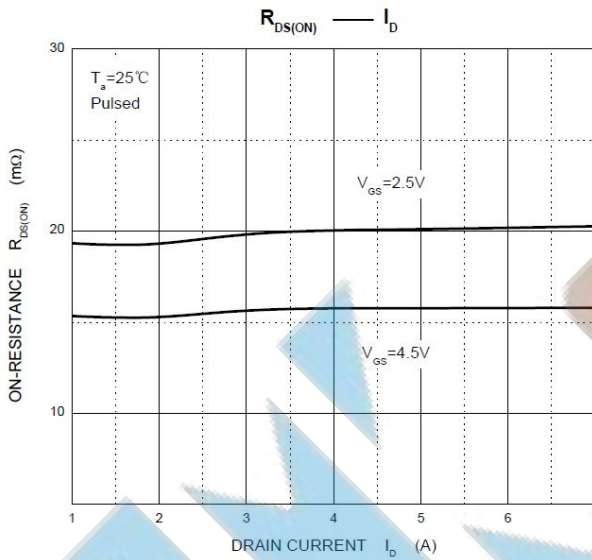
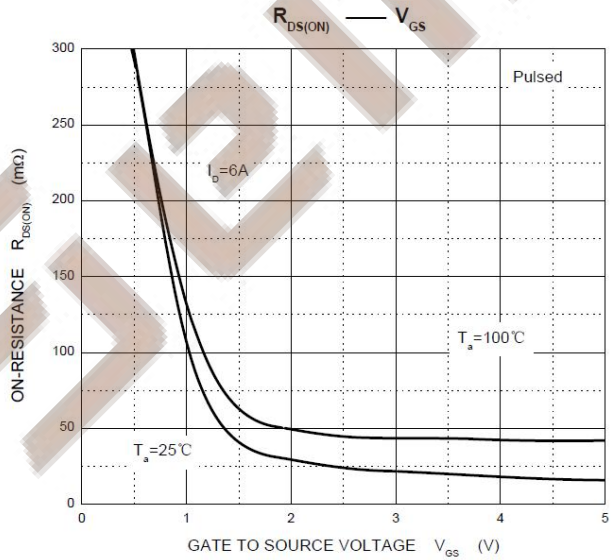
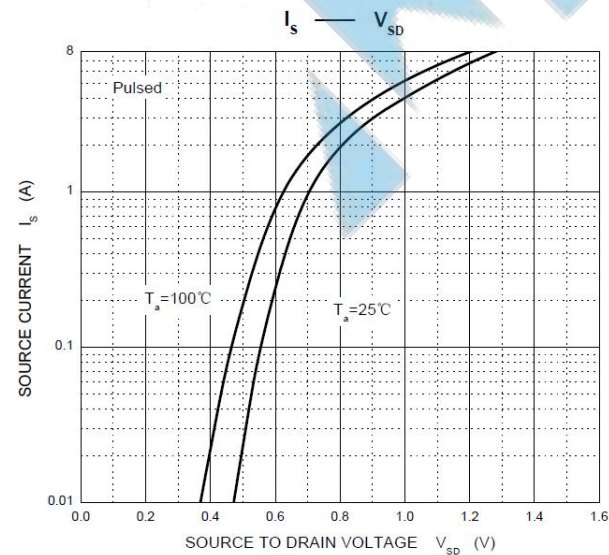
- 1, Repetitive rating: Pulse width limited by junction temperature.
- 2, Surface mounted on FR4 board, t≤10s.
- 3, Pulse Test: Pulse Width ≤300us, Duty Cycle≤2%.
4. Guaranteed by design, not subject to production.

# Typical Characteristics

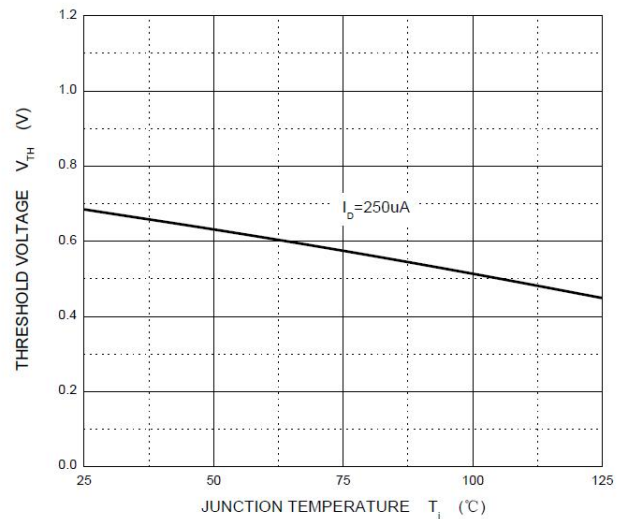
Output Characteristics



Transfer Characteristics

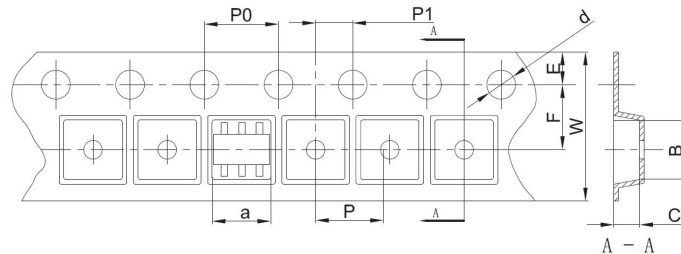


Threshold Voltage

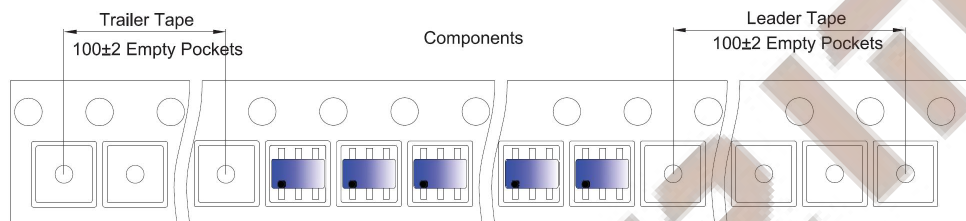


## Package Information

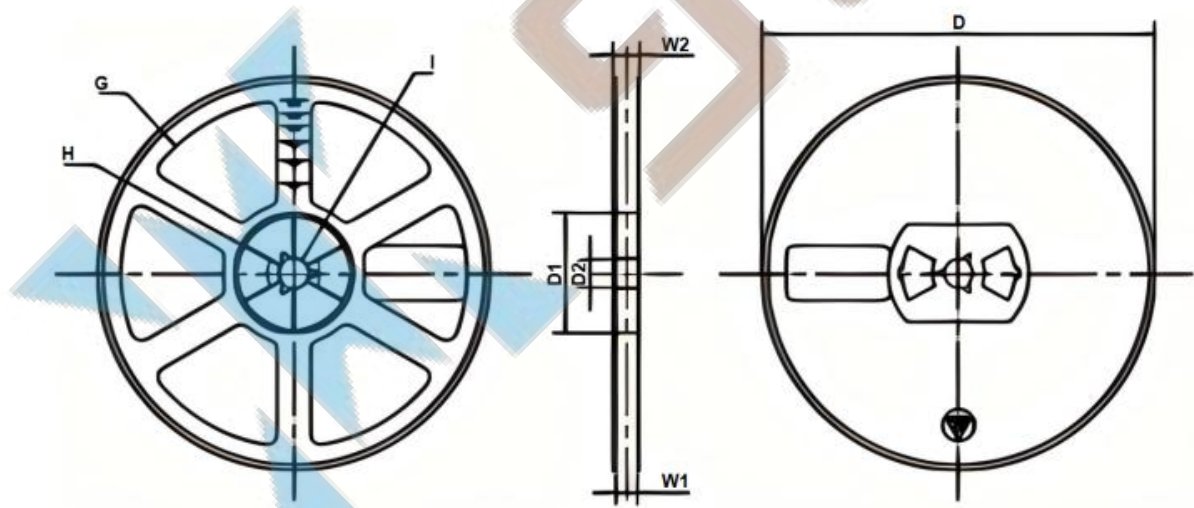
### Carrier Dimension(mm)



| Dimensions are in millimeter |      |      |      |       |      |      |      |      |      |      |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| Pkg Type                     | a    | B    | C    | d     | E    | F    | P0   | P    | P1   | W    |
| SOT-23-6L                    | 3.23 | 3.17 | 1.37 | Ø1.55 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |



### Reel Dimension(mm)



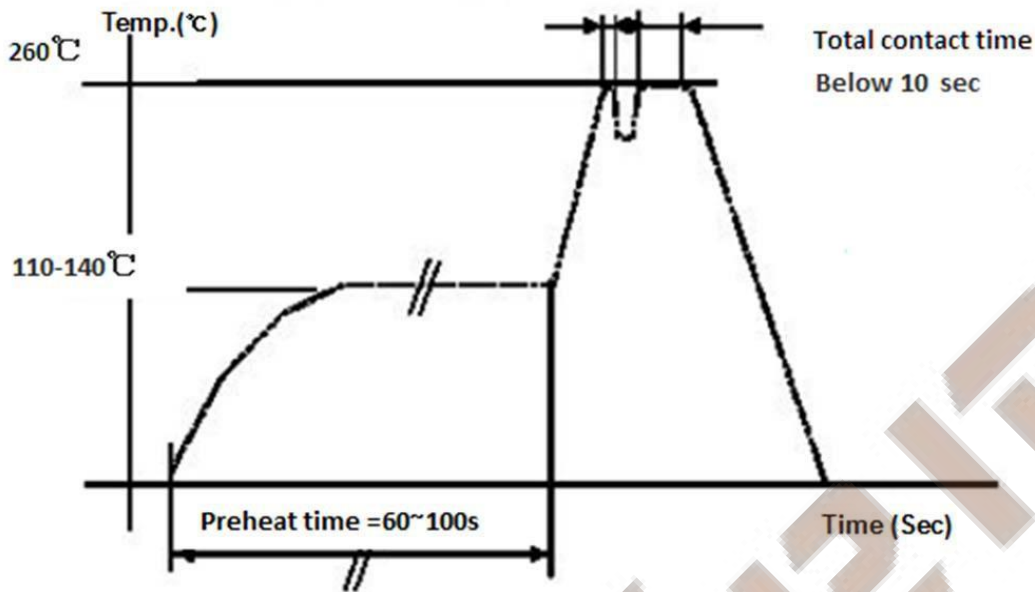
| Reel Option | D       | D1    | D2    | G      | H      | I     | W1   | W2    |
|-------------|---------|-------|-------|--------|--------|-------|------|-------|
| 7"Dia       | Φ178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |
| Tolerance   | ±2      | ±1    | ±1    | ±1     | ±1     | ±1    | ±1   | ±1    |

## Package Specifications

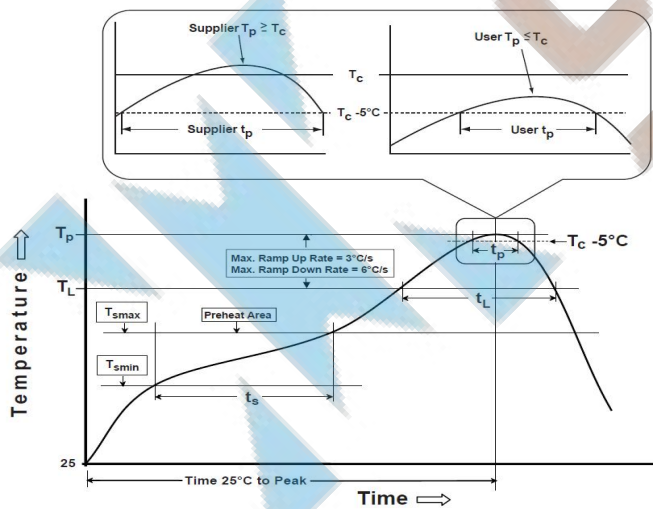
| Package   | Reel Size | Reel DIA.<br>(mm) | Q'TY/Reel<br>(Kpcs) | Box Size<br>(mm) | QTY/Box<br>(Kpcs) | Carton Size<br>(mm) | Q'TY/Carton<br>(Kpcs) |
|-----------|-----------|-------------------|---------------------|------------------|-------------------|---------------------|-----------------------|
| SOT-23-6L | 7'        | 178               | 3                   | 210*208*203      | 45                | 440*400*230         | 180                   |

## Recommended Soldering Profile for Rectifier Diodes (Pb Free)

### a) Wave Soldering Profile



### b) Reflow Soldering Profile (Pb Free Application), refer to IPC/JEDEC J-STD-020

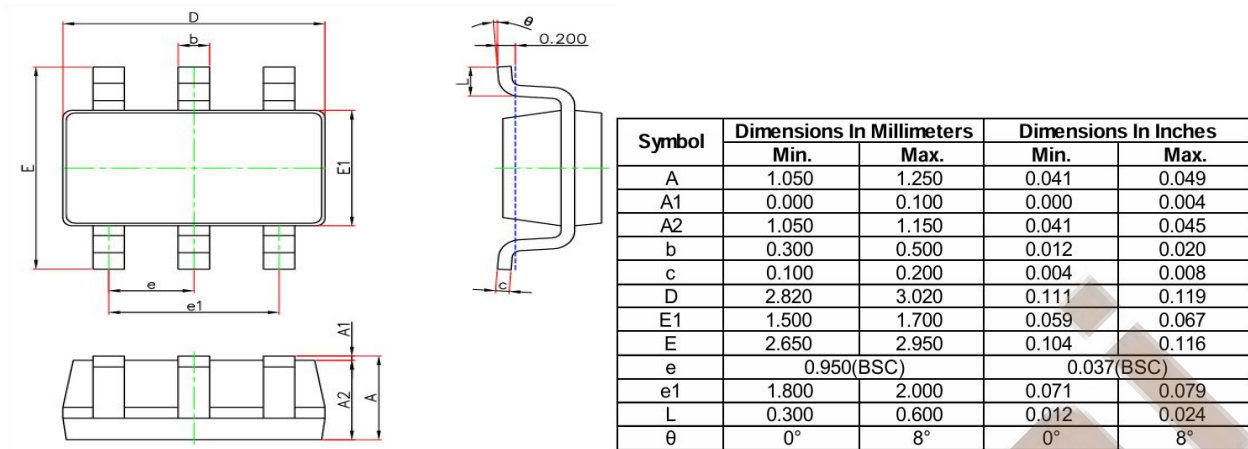


| Preheat/Soak Temperature Min (Tsmin) Temperature Max (Tsmax) Time (ts) from (Tsmin to Tsmax) | 50 °C<br>200 °C<br>60-120 seconds |
|----------------------------------------------------------------------------------------------|-----------------------------------|
| Melting Point of Solder (Sn Ag Cu)                                                           | 217°C                             |
| Ramp-up Rate to 217°C(Melting Point of Solder)                                               | 3°C/sec                           |
| Time at Temp.>217°C (Melting Point of Solder)                                                | 60~150 Sec                        |
| Peak Temperature                                                                             | 255±5°C                           |
| Time within 5°Cbelow Peak Temp.                                                              | 20~40 Sec                         |
| Cooling Rate                                                                                 | 6°C/sec (max)                     |
| Time from 25°C to Peak Temp.                                                                 | 8min (max)                        |

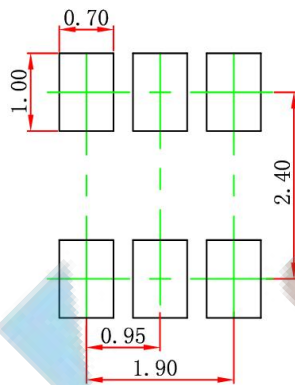
### c) Manual Soldering

When using an electric soldering iron for manual soldering, it is recommended that the temperature does not exceed 300°C and the soldering time is less than 10 seconds.

## Package Mechanical Data



## Suggested Pad Layout



Note:  
1. Controlling dimension: in millimeters.  
2. General tolerance:  $\pm 0.05\text{mm}$ .  
3. The pad layout is for reference purposes only.

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