

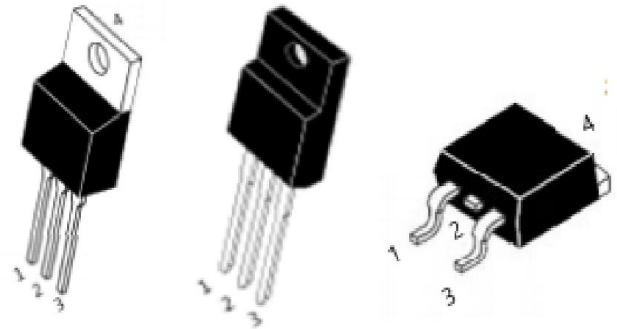
TO-220AB

ITO-220AB

TO-263

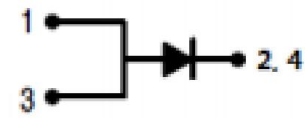
#### Feature

- Low Leakage Current at High temperature
- Low Forward Voltage Drop
- High Surge Capacity
- Soft, Fast Switch
- High Junction Temperature Capability



#### Outline

- Case: TO-220AB ITO-220AB TO-263
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish Annealed Over Copper  
Lead Frame Solderable per MIL-STD-202, E3 Suffix  
For Commercial Grade



1 – Anode

2 – Cathode

3 – Anode

4 – Tab Cathode

#### Maximum Ratings(Per Leg) @T<sub>A</sub>=25°C (unless otherwise specified)

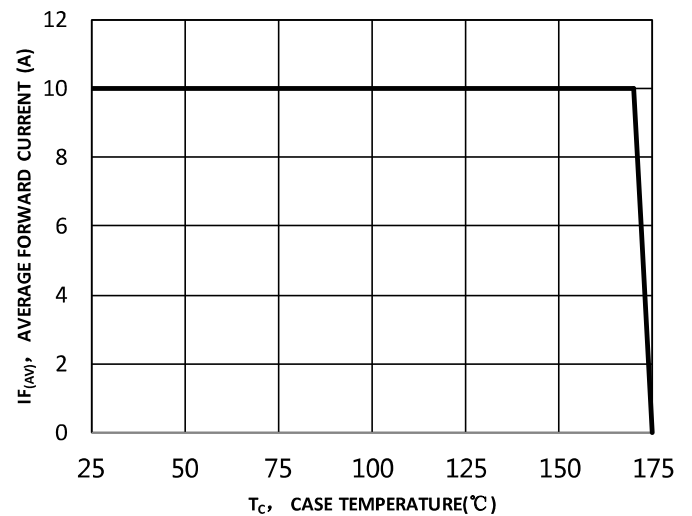
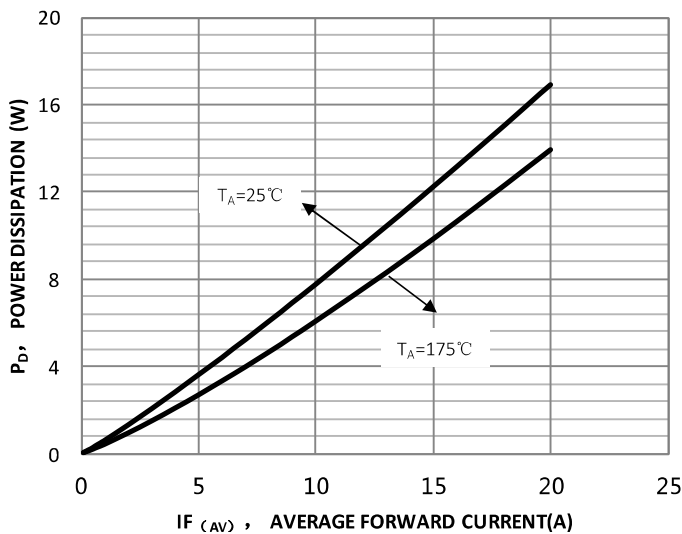
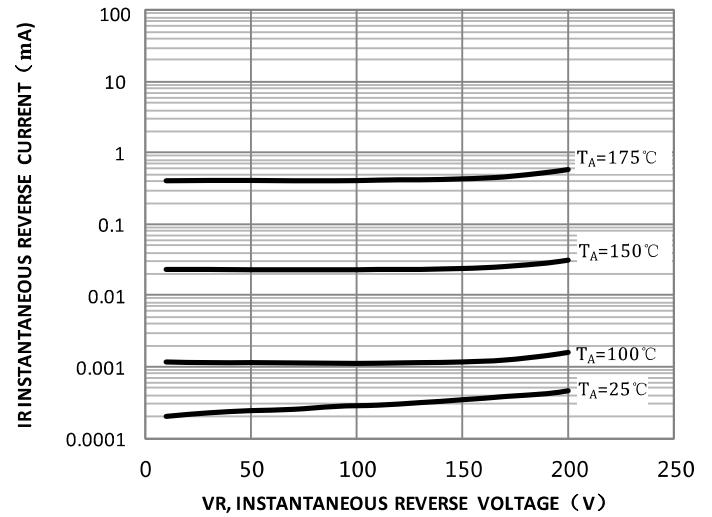
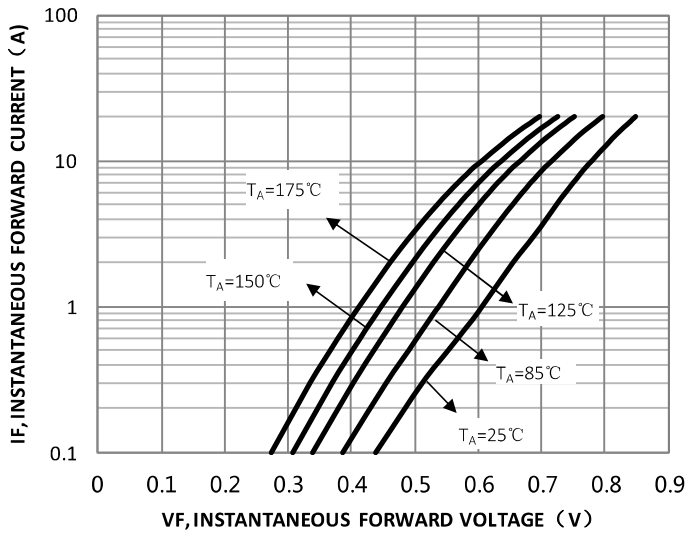
| Symbol             | Item                                                                      | Ratings     | Unit |
|--------------------|---------------------------------------------------------------------------|-------------|------|
| V <sub>RRM</sub>   | Peak Repetitive Reverse Voltage                                           | 200         | V    |
| V <sub>RWM</sub>   | Working Peak Reverse Voltage                                              |             |      |
| V <sub>RM</sub>    | DC Blocking Voltage                                                       |             |      |
| I <sub>F(AV)</sub> | Average Rectified Forward Current Per Leg (Rate VR )T <sub>C</sub> =150°C | 10          | A    |
| I <sub>FSM</sub>   | Non-repetitive Peak Surge Current (8.3ms,half sine wave)                  | 200         | A    |
| I <sub>RRM</sub>   | Peak Repetitive Reverse Surge Current (2.0μs,1.0kHz)                      | 2.5         | A    |
| T <sub>J</sub>     | Operating Junction Temperature Range                                      | -55 to +175 | °C   |
| T <sub>stg</sub>   | Storage Temperature                                                       | -55 to +175 | °C   |

#### Thermal Resistance

|                      | Parameter                           | Typ. | Max. | Unit |
|----------------------|-------------------------------------|------|------|------|
| R <sub>th(J-C)</sub> | Junction-to-Case(TO-220AB . TO-263) | -    | 0.73 | °C/W |
|                      | Junction-to-Case(ITO-220AB)         | -    | 2.73 |      |

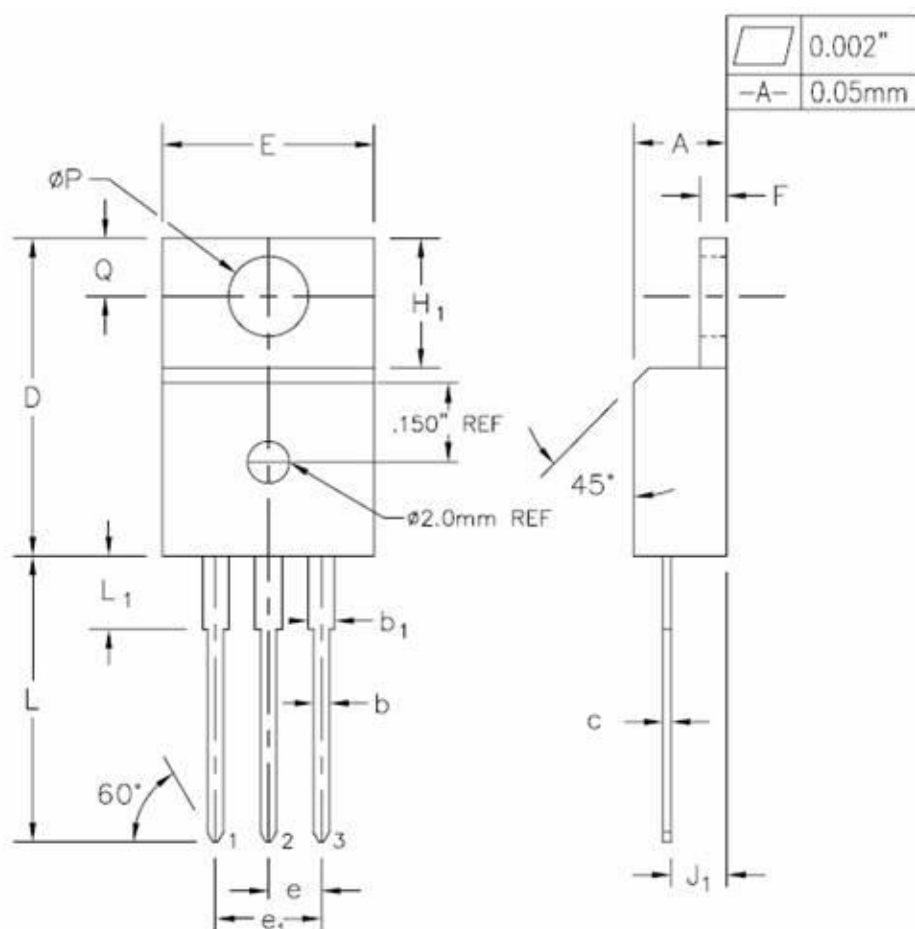
#### Electrical Characteristics(Per Leg) @ $T_A=25^{\circ}\text{C}$ (unless otherwise specified)

| Symbol   | Item                    | Parameter |      |      |               | Test Conditions                                                                             |
|----------|-------------------------|-----------|------|------|---------------|---------------------------------------------------------------------------------------------|
|          |                         | Min.      | Typ. | Max. | Units         |                                                                                             |
| $V_F$    | Forward Voltage Drop    | -         | -    | 0.77 | V             | $I_F=5\text{A}, T_J=25^{\circ}\text{C}$                                                     |
|          |                         | -         | -    | 0.61 |               | $I_F=5\text{A}, T_J=150^{\circ}\text{C}$                                                    |
|          |                         | -         | -    | 0.84 |               | $I_F=10\text{A}, T_J=25^{\circ}\text{C}$                                                    |
|          |                         | -         | -    | 0.67 |               | $I_F=10\text{A}, T_J=150^{\circ}\text{C}$                                                   |
| $I_R$    | Leakage Current         | -         | -    | 0.1  | mA            | $V_R=200\text{V}, T_J=25^{\circ}\text{C}$                                                   |
|          |                         | -         | -    | 0.1  |               | $V_R=200\text{V}, T_J=150^{\circ}\text{C}$                                                  |
|          |                         | -         | -    | 1    |               | $V_R=200\text{V}, T_J=175^{\circ}\text{C}$                                                  |
| $T_{rr}$ | Reverse Recovery Time   | -         | 22   | -    | nS            | $V_R=30\text{V}, I_F=1\text{A},$<br>$di/dt=100\text{A}/\mu\text{S}, T_J=25^{\circ}\text{C}$ |
| $Q_{rr}$ | Reverse Recovery Charge | -         | 21   | -    | $\mu\text{C}$ |                                                                                             |



#### Package Outline

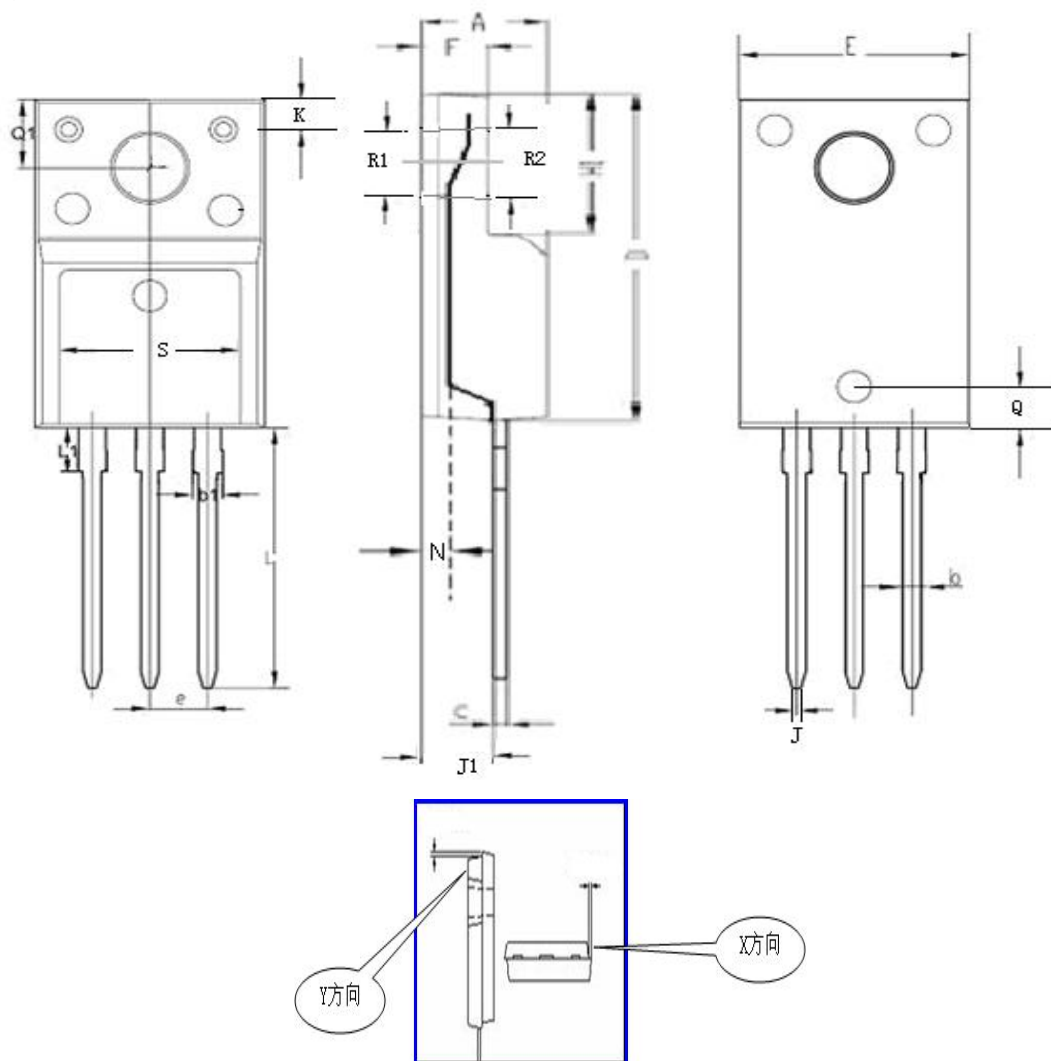
#### TO-220AB



| SYMBOL         | INCHES     |       | MILLIMETERS |       | NOTES |
|----------------|------------|-------|-------------|-------|-------|
|                | MIN        | MAX   | MIN         | MAX   |       |
| A              | 0.170      | 0.180 | 4.32        | 4.57  |       |
| b <sub>1</sub> | 0.048      | 0.055 | 1.22        | 1.40  |       |
| b              | 0.028      | 0.036 | 0.71        | 0.91  |       |
| c              | 0.014      | 0.021 | 0.36        | 0.53  |       |
| D              | 0.590      | 0.610 | 14.99       | 15.49 |       |
| E              | 0.395      | 0.410 | 10.04       | 10.41 |       |
| e              | 0.100 BSC. |       | 2.54 BSC.   |       |       |
| e <sub>1</sub> | 0.200 BSC. |       | 5.08 BSC.   |       |       |
| F              | 0.048      | 0.054 | 1.22        | 1.37  |       |
| H <sub>1</sub> | 0.235      | 0.255 | 5.97        | 6.47  |       |
| J <sub>1</sub> | 0.100      | 0.110 | 2.54        | 2.79  |       |
| L              | 0.530      | 0.550 | 13.47       | 13.97 |       |

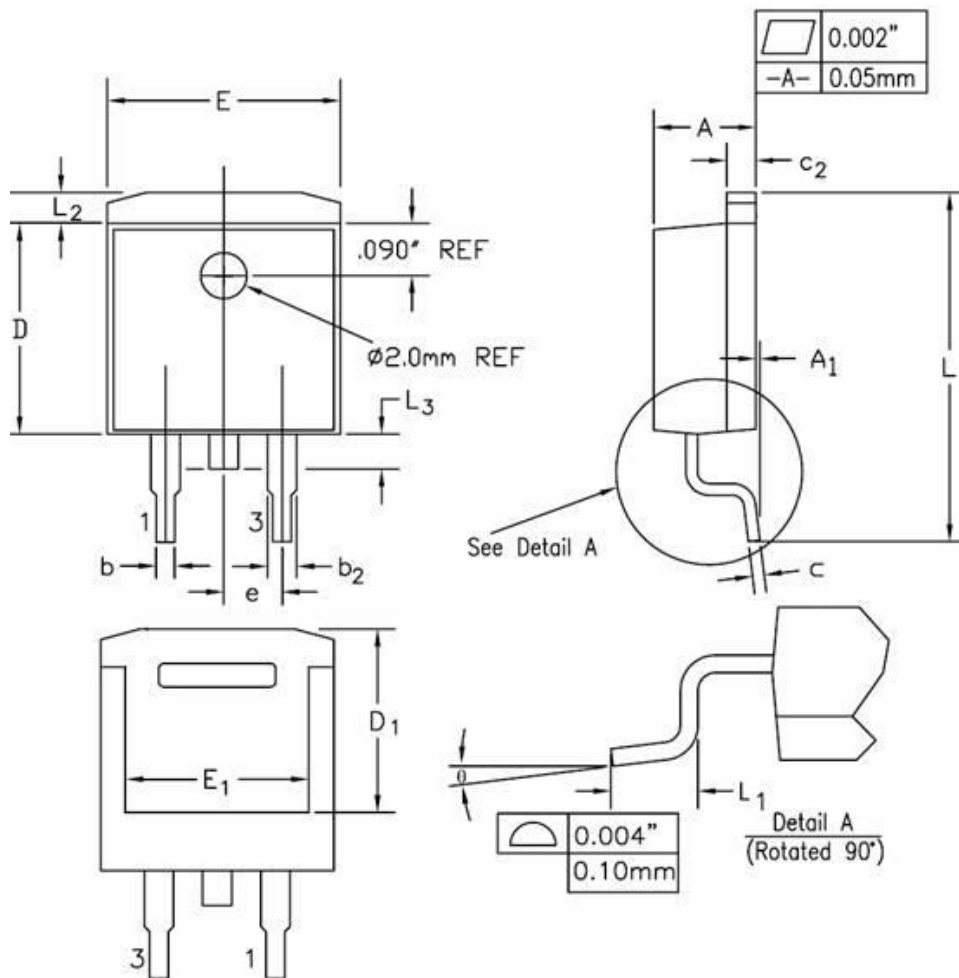
Package Outline

ITO-220AB



| SYMBOL | INCHES     |       | MILLIMETERS |       | NOTES |
|--------|------------|-------|-------------|-------|-------|
|        | MIN        | MAX   | MIN         | MAX   |       |
| A      | 0.178      | 0.194 | 4.53        | 4.93  |       |
| b      | 0.028      | 0.036 | 0.71        | 0.91  |       |
| C      | 0.018      | 0.024 | 0.45        | 0.6   |       |
| D      | 0.617      | 0.633 | 15.67       | 16.07 |       |
| E      | 0.392      | 0.408 | 9.96        | 10.36 |       |
| e      | 0.100 TYP. |       | 2.54TYP.    |       |       |
| H1     | 0.256      | 0.272 | 6.5         | 6.9   |       |
| J1     | 0.101      | 0.117 | 2.56        | 2.96  |       |
| L      | 0.503      | 0.519 | 12.78       | 13.18 |       |
| φQ     | 0.117      | 0.133 | 2.98        | 3.38  |       |
| b1     | 0.045      | 0.055 | 1.15        | 1.39  |       |
| L1     | 0.114      | 0.13  | 2.9         | 3.3   |       |

#### Package Outline TO-263



| SYMBOL   | INCHES     |       | MILLIMETERS |       | NOTES |
|----------|------------|-------|-------------|-------|-------|
|          | MIN        | MAX   | MIN         | MAX   |       |
| A        | 0.170      | 0.180 | 4.32        | 4.57  |       |
| A1       | -          | 0.010 | -           | 0.25  |       |
| b        | 0.028      | 0.037 | 0.71        | 0.94  |       |
| b2       | 0.045      | 0.055 | 1.15        | 1.40  |       |
| c        | 0.018      | 0.024 | 0.46        | 0.61  |       |
| c2       | 0.048      | 0.055 | 1.22        | 1.40  |       |
| D        | 0.350      | 0.370 | 8.89        | 9.40  |       |
| D1       | 0.315      | 0.324 | 8.01        | 8.23  |       |
| E        | 0.395      | 0.405 | 10.04       | 10.28 |       |
| E1       | 0.310      | 0.318 | 7.88        | 8.08  |       |
| e        | 0.100 BSC. |       | 2.54 BSC.   |       |       |
| L        | 0.580      | 0.620 | 14.73       | 15.75 |       |
| L1       | 0.090      | 0.110 | 2.29        | 2.79  |       |
| L2       | 0.045      | 0.055 | 1.15        | 1.39  |       |
| L3       | 0.050      | 0.070 | 1.27        | 1.77  |       |
| $\theta$ | 0°         | 8°    | 0°          | 8°    |       |

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