

**Features**

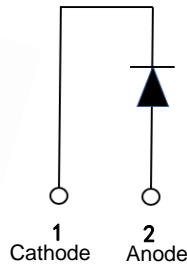
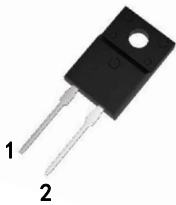
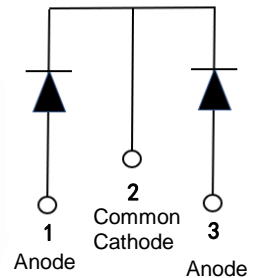
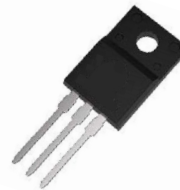
- Low Leakage Current
- Low Forward Voltage Drop
- High Surge Capacity
- Soft, Fast Switch
- High Junction Temperature Capability

**Product Summary**

|       |                   |
|-------|-------------------|
| $V_R$ | 300V              |
| $I_F$ | 20A (Per Leg)     |
| $T_J$ | 150°C             |
| $V_F$ | 0.91V @20A (Typ.) |

**Applications**

- AC-DC power adapter
- Rectifier, Convert


**TO-220F-2L Package**

**TO-220F-3L Package**

**Package Marking and Ordering Information**

| Part #      | Marking | Package    | Packing | Qty |
|-------------|---------|------------|---------|-----|
| FSD30S20ET  | D30S20  | TO-220F-2L | Tube    | 50  |
| FSD30S40FTD | D30S40D | TO-220F-3L | Tube    | 50  |

**Maximum Ratings (Per Leg) @TA=25°C unless otherwise specified**

| Symbol      | Parameter   | Values      | Units |
|-------------|---|-------------|-------|
| $V_{RRM}$   | Peak Repetitive Reverse Voltage   | 300         | V     |
| $V_{RWM}$   | Working Peak Reverse Voltage  |             |       |
| $V_{RM}$    | DC Blocking Voltage   |             |       |
| $I_{F(AV)}$ | Average Rectified Forward Current Per Leg (Rate $V_R$ ) $T_C=150^\circ\text{C}$ Per Package | 20          | A     |
| $I_{FSM}$   | Non-repetitive Peak Surge Current (8.3ms, half sine wave)                                   | 310         | A     |
| $I_{RRM}$   | Peak Repetitive Reverse Surge Current (2.0 $\mu\text{s}$ , 1.0kHz)                          | 2.5         | A     |
| $T_J$       | Operating Junction Temperature Range  | -55 to +150 | °C    |
| $T_{stg}$   | Storage Temperature   | -55 to +150 | °C    |

**Thermal Characteristics (Per Leg)**

| Symbol     | Parameter  | Values |      |      | Unit |
|------------|--|--------|------|------|------|
|            |  | Min.   | Typ. | Max. |      |
| $R_{thJC}$ | Thermal resistance, Junction-case                    | -      | -    | 0.81 | °C/W |
| $R_{thJA}$ | Thermal resistance, Junction-ambient(min. footprint) | -      | -    | 60   | °C/W |

**Electrical Characteristics (Per Leg)**

| Symbol   | Parameter               | Test Conditions  | Min. | Typ. | Max. | Units |
|----------|-------------------------|--|------|------|------|-------|
| $V_F$    | Diode forward voltage   | $I_F=3A, T_j=25^\circ C$                                   | -    | 0.73 | 0.83 | V     |
|          |                         | $I_F=3A, T_j=150^\circ C$                                  | -    | 0.58 | 0.65 |       |
|          |                         | $I_F=20A, T_j=25^\circ C$                                  | -    | 0.91 | 0.97 |       |
|          |                         | $I_F=20A, T_j=150^\circ C$                                 | -    | 0.78 | 0.85 |       |
| $I_R$    | Reverse current         | $V_R=300V, T_j=25^\circ C$                                 | -    | -    | 3    | μA    |
|          |                         | $V_R=300V, T_j=150^\circ C$                                | -    | -    | 1    | mA    |
| $T_{rr}$ | Reverse Recovery Time   | $V_R=30V, I_F=0.5A,$<br>$di/dt=100A/\mu S, T_j=25^\circ C$ | -    | 27   | -    | nS    |
| $Q_{rr}$ | Reverse Recovery Charge |  | -    | 25   | -    | μC    |



Typical Performance Characteristics(Per Leg)

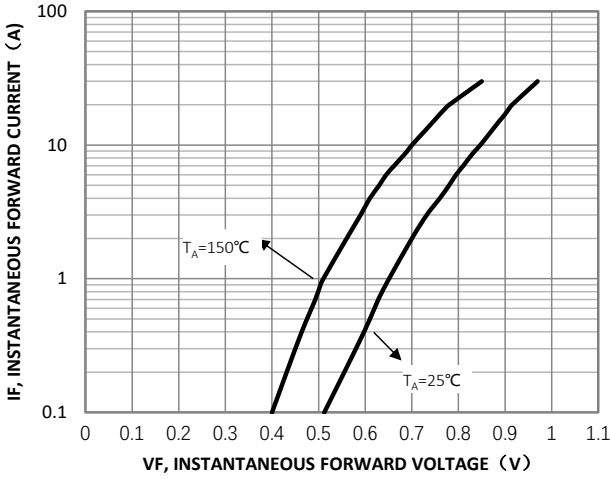


Fig1. Typical Forward Characteristics

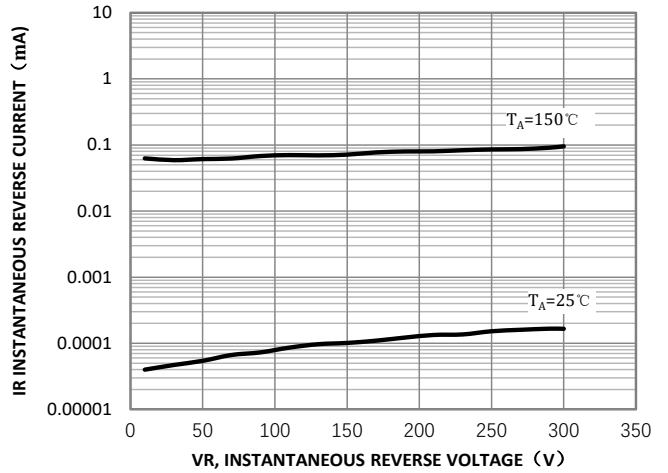


Fig2. Typical Reverse Characteristics

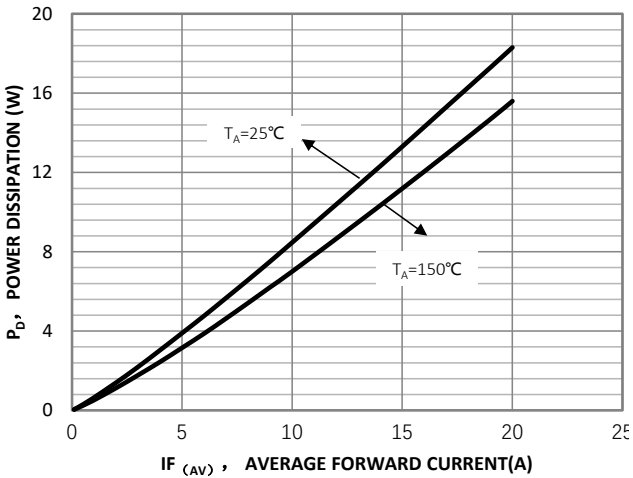


Fig3. Typical Power Dissipation

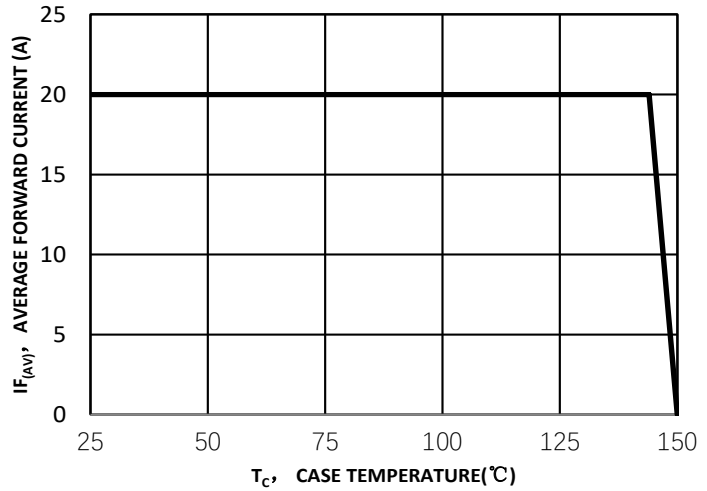
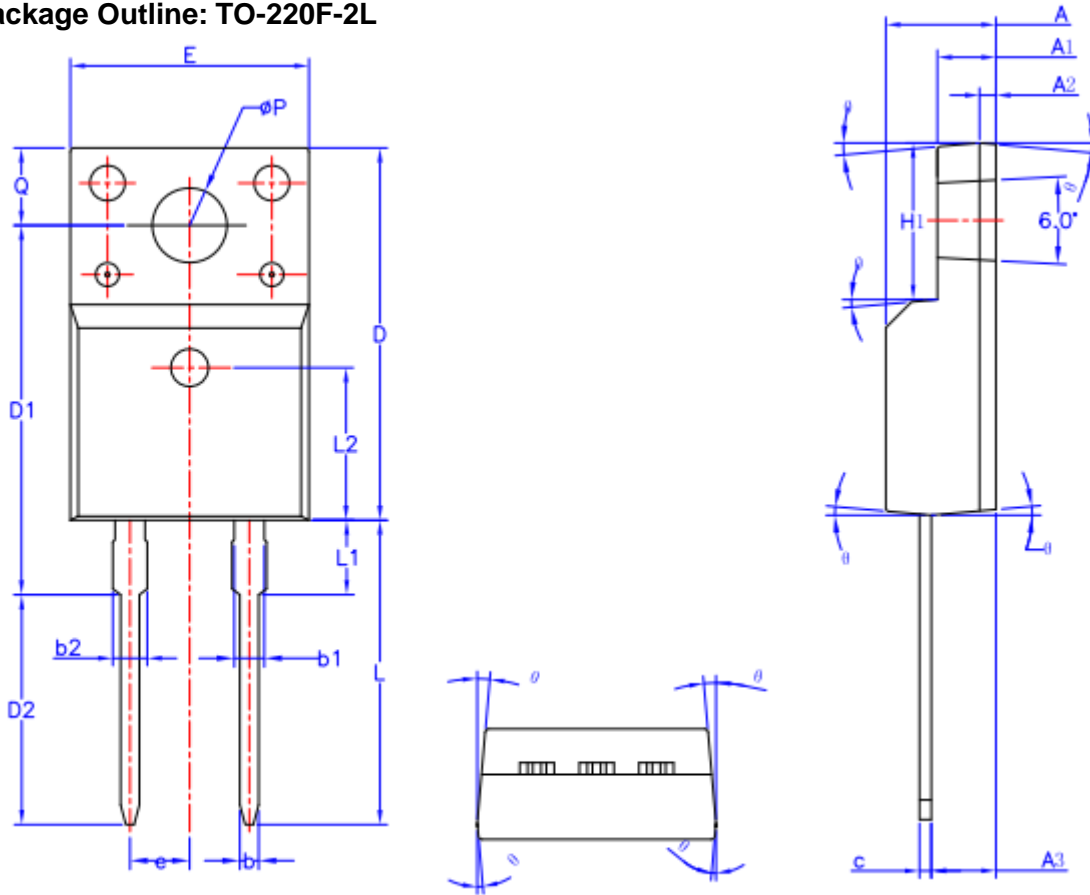
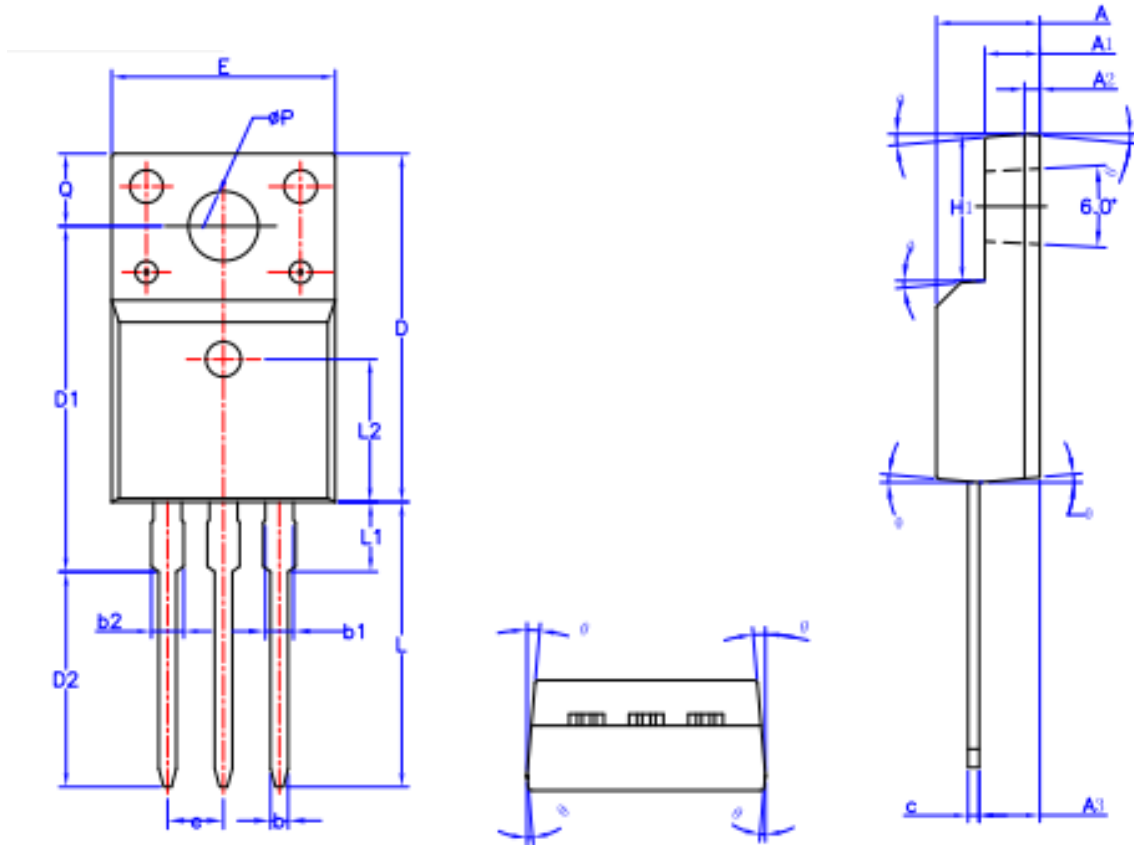


Fig4. Forward Current Derating Curve

**Package Outline: TO-220F-2L**


| SYMBOL | MIN      | NOM   | MAX   |
|--------|----------|-------|-------|
| A      | 4.50     | 4.70  | 4.90  |
| A1     | 2.34     | 2.54  | 2.74  |
| A2     | 0.70 REF |       |       |
| A3     | 2.56     | 2.76  | 2.96  |
| b      | 0.70     | -     | 0.90  |
| b1     | 1.18     | -     | 1.38  |
| b2     | -        | -     | 1.47  |
| c      | 0.45     | 0.50  | 0.60  |
| D      | 15.67    | 15.87 | 16.07 |
| D1     | 15.55    | 15.75 | 15.95 |
| D2     | 9.60     | 9.80  | 10.00 |
| E      | 9.96     | 10.16 | 10.36 |
| e      | 2.54BSC  |       |       |
| H1     | 6.48     | 6.68  | 6.88  |
| L      | 12.68    | 12.98 | 13.28 |
| L1     | -        | -     | 3.50  |
| L2     | 6.50REF  |       |       |
| øP     | 3.08     | 3.18  | 3.28  |
| Q      | 3.20     | -     | 3.40  |
| θ1     | 1°       | 3°    | 5°    |

**Package Outline: TO-220F-3L**


| SYMBOL | MIN      | NOM   | MAX   |
|--------|----------|-------|-------|
| A      | 4.50     | 4.70  | 4.83  |
| A1     | 2.34     | 2.54  | 2.74  |
| A2     | 0.70 REF |       |       |
| A3     | 2.56     | 2.76  | 2.93  |
| b      | 0.70     | -     | 0.90  |
| b1     | 1.18     | -     | 1.38  |
| b2     | -        | -     | 1.47  |
| c      | 0.45     | 0.50  | 0.60  |
| D      | 15.67    | 15.87 | 16.07 |
| D1     | 15.55    | 15.75 | 15.95 |
| D2     | 9.60     | 9.80  | 10.00 |
| E      | 9.96     | 10.16 | 10.36 |
| e      | 2.54BSC  |       |       |
| H1     | 6.48     | 6.68  | 6.88  |
| L      | 12.68    | 12.98 | 13.28 |
| L1     | -        | -     | 3.50  |
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| ∅P     | 3.08     | 3.18  | 3.28  |
| Q      | 3.20     | -     | 3.40  |
| θ1     | 1°       | 3°    | 5°    |