

## Features

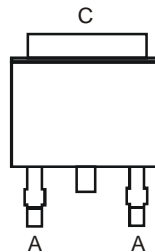
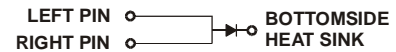
- Ultra-Fast Die Construction
- Soft, Fast Switching Capability
- Low Leakage Current
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **"Green" Molding Compound (No Br, Sb)**

## Mechanical Data

- Case: TO252-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram



Top View


 Top View  
Pin-Out


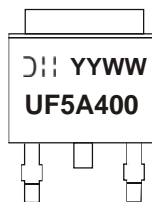
Note: Pins Left & Right must be electrically connected at the printed circuit board.

## Ordering Information (Note 2)

| Part Number  | Case     | Packaging        |
|--------------|----------|------------------|
| UF5A400D1-13 | TO252-3L | 2500 pieces/reel |

- Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.  
2. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



UF5A400 = Product Type Marking Code  
 D||| = Manufacturers' Code Marking  
 YYWW = Date code marking  
 YY = Last two digits of year (ex: 09 for 2009)  
 WW = Week code (01 to 53)

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitance load, derate current by 20%.

| Characteristic  | Symbol    | Value | Unit |
|---|-----------|-------|------|
| Peak Repetitive Reverse Voltage   | $V_{RRM}$ | 400   | V    |
| Working Peak Reverse Voltage  | $V_{RWM}$ |       |      |
| DC Blocking Voltage   | $V_R$     |       |      |
| Average Rectified Output Current  | $I_O$     | 5     | A    |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 100   | A    |

### Thermal Characteristics

| Characteristic  | Symbol          | Value       | Unit               |
|---|-----------------|-------------|--------------------|
| Typical Thermal Resistance Junction to Case             | $R_{\theta JC}$ | 2.0         | $^\circ\text{C/W}$ |
| Typical Thermal Resistance Junction to Ambient (Note 3) | $R_{\theta JA}$ | 34          | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range                 | $T_J, T_{STG}$  | -65 to +175 | $^\circ\text{C}$   |

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

| Characteristic                   | Symbol   | Min | Typ          | Max        | Unit                | Test Condition  |
|----------------------------------|----------|-----|--------------|------------|---------------------|---|
| Forward Voltage                  | $V_F$    | —   | 0.91<br>0.77 | 1.4<br>1.0 | V                   | $I_F = 5\text{A}, T_J = 25^\circ\text{C}$<br>$I_F = 5\text{A}, T_J = 125^\circ\text{C}$   |
| Reverse Leakage Current (Note 4) | $I_R$    | —   | —            | 10<br>0.2  | $\mu\text{A}$<br>mA | $V_R = 400\text{V}, T_J = 25^\circ\text{C}$<br>$V_R = 400\text{V}, T_J = 125^\circ\text{C}$   |
| Reverse Recovery Time            | $t_{rr}$ | —   | 30<br>24     | 35<br>30   | ns                  | $I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$<br>$I_F = 1\text{A}, V_R = 30\text{V}, di/dt = 100\text{A}/\mu\text{s}$ |
| Maximum Junction Capacitance     | $C_J$    | —   | 31           | 50         | pf                  | $V_R = 10\text{V}_{DC}, f = 1\text{MHz}$  |

Notes: 3. Device mounted on Polyimide PCB, with 16X recommended pad layout.  
4. Short duration pulse test used to minimize self-heating effect.

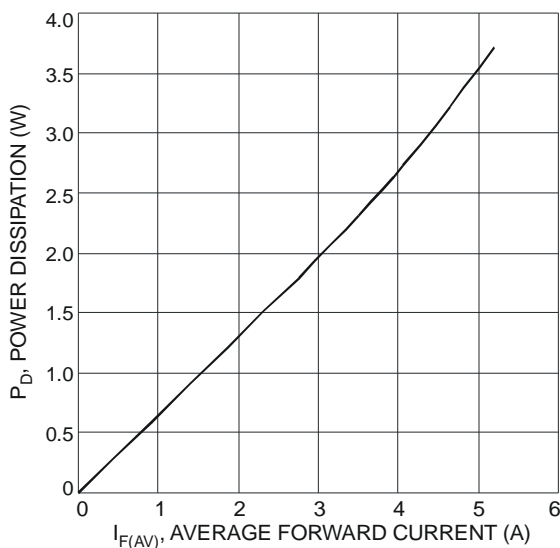


Fig. 1 Forward Power Dissipation

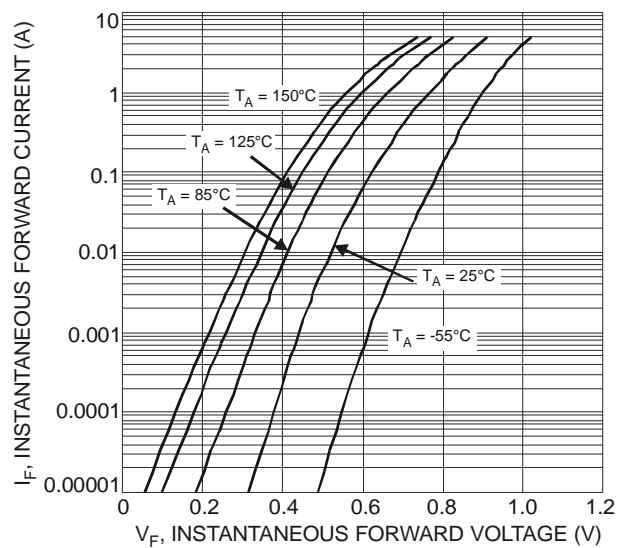


Fig. 2 Typical Forward Characteristics

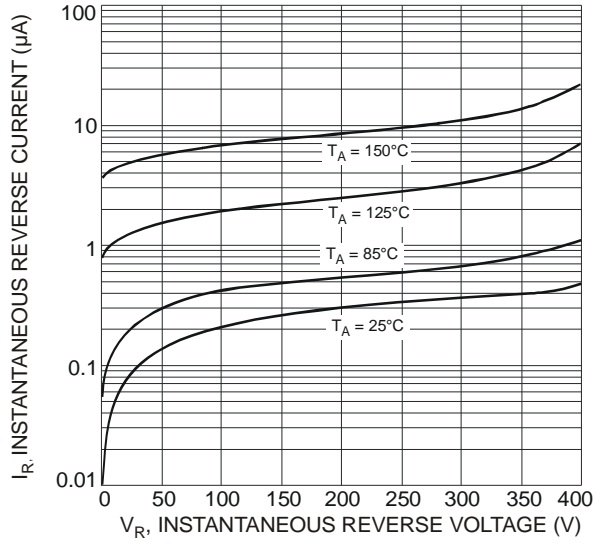


Fig. 3 Typical Reverse Characteristics

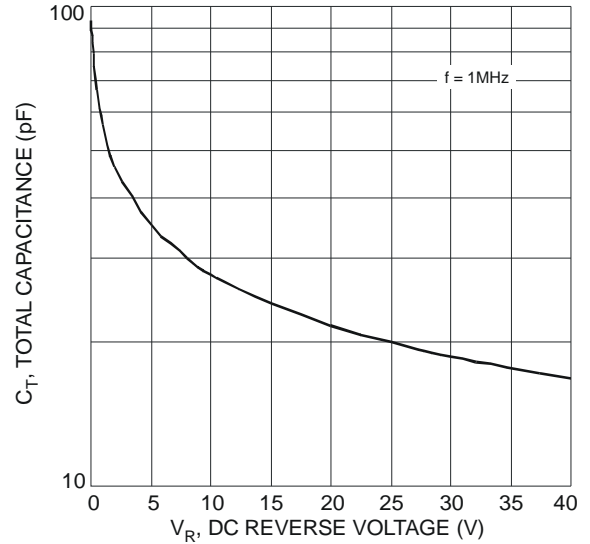


Fig. 4 Total Capacitance vs. Reverse Voltage

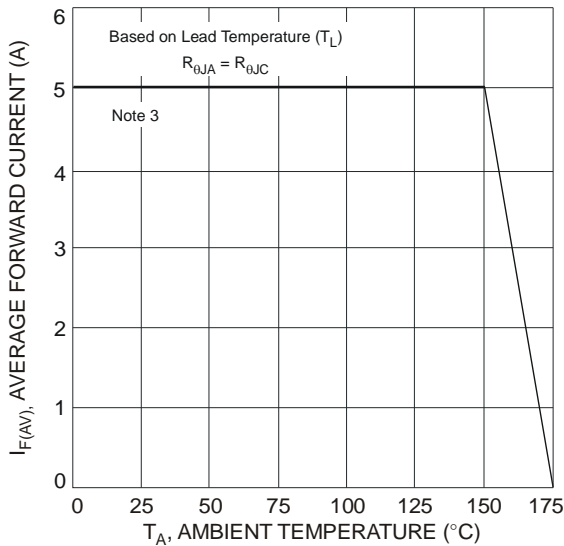


Fig. 5 Forward Current Derating Curve

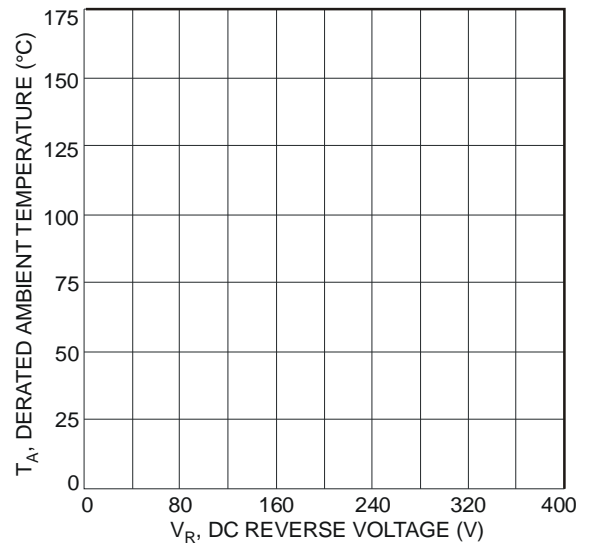
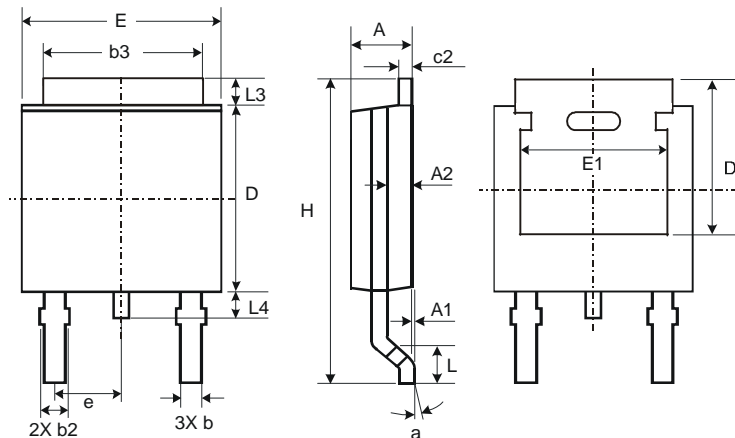


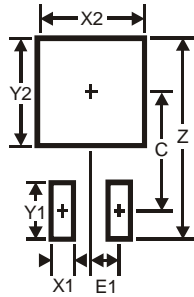
Fig. 6 Operating Temperature Derating

**Package Outline Dimensions**



| TO252-3L                    |      |       |       |
|-----------------------------|------|-------|-------|
| Dim                         | Min  | Max   | Typ   |
| A                           | 2.19 | 2.39  | 2.29  |
| A1                          | 0.00 | 0.13  | 0.08  |
| A2                          | 0.97 | 1.17  | 1.07  |
| b                           | 0.64 | 0.88  | 0.783 |
| b2                          | 0.76 | 1.14  | 0.95  |
| b3                          | 5.21 | 5.46  | 5.33  |
| c2                          | 0.45 | 0.58  | 0.531 |
| D                           | 6.00 | 6.20  | 6.10  |
| D1                          | 5.21 | -     | -     |
| e                           | -    | -     | 2.286 |
| E                           | 6.45 | 6.70  | 6.58  |
| E1                          | 4.32 | -     | -     |
| H                           | 9.40 | 10.41 | 9.91  |
| L                           | 1.40 | 1.78  | 1.59  |
| L3                          | 0.88 | 1.27  | 1.08  |
| L4                          | 0.64 | 1.02  | 0.83  |
| a                           | 0°   | 10°   | -     |
| <b>All Dimensions in mm</b> |      |       |       |

## Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 11.6          |
| X1         | 1.5           |
| X2         | 7.0           |
| Y1         | 2.5           |
| Y2         | 7.0           |
| C          | 6.9           |
| E1         | 2.3           |

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