

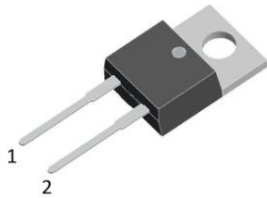
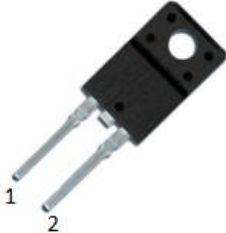
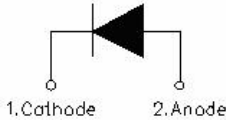
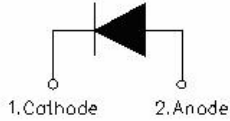
## SDUR540/SDURF540 ULTRAFAST RECTIFIER

### Applications

- Antiparallel diode for high frequency switching devices
- Anti saturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

### Features

- Ultra-Fast Switching
- High Current Capability
- Low Reverse Leakage Current
- High Surge Current Capability
- Plastic Material has UL Flammability Classification 94V-0
- This is a Pb – Free Device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

| SDUR540   | SDURF540  |
|---|---|
|   |   |
|  |  |
| TO-220AC  | ITO-220AC   |

### Maximum Ratings:

| Characteristics  | Symbol                          | Condition   | Max. | Units |
|--|---------------------------------|---|------|-------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | -   | 400  | V     |
| Average Rectified Forward Current  | $I_{F(AV)}$                     | 50% duty cycle @ $T_c=105^\circ\text{C}$ ,<br>rectangular wave form | 5    | A     |
| Peak One Cycle Non-Repetitive Surge Current  | $I_{FSM}$                       | 8.3ms, Half Sine pulse  | 80   | A     |

**Electrical Characteristics:**

| Characteristics       | Symbol   | Condition   | Typ. | Max. | Units         |
|-----------------------|----------|---|------|------|---------------|
| Forward Voltage Drop* | $V_{F1}$ | @ 5A, Pulse, $T_J = 25^\circ\text{C}$                           | 0.95 | 1.3  | V             |
|                       | $V_{F2}$ | @ 5A, Pulse, $T_J = 125^\circ\text{C}$                          | 0.87 | 1.20 | V             |
| Reverse Current*      | $I_{R1}$ | @ $V_R = \text{rated } V_R, T_J = 25^\circ\text{C}$             | 0.04 | 30   | $\mu\text{A}$ |
|                       | $I_{R2}$ | @ $V_R = \text{rated } V_R, T_J = 125^\circ\text{C}$            | 15   | 500  | $\mu\text{A}$ |
| Reverse Recovery Time | $t_{rr}$ | $I_F=500\text{mA}, I_R=1\text{A}, \text{and } I_m=250\text{mA}$ | 40   | 45   | ns            |

\* Pulse width < 300  $\mu\text{s}$ , duty cycle < 2%

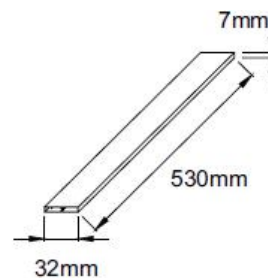
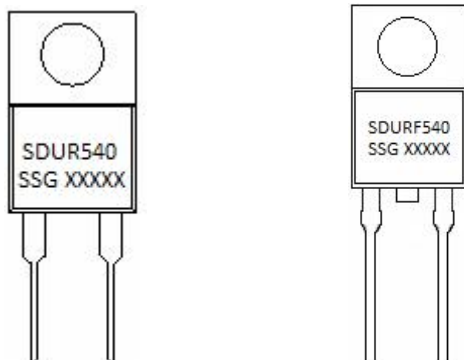
**Thermal-Mechanical Specifications:**

| Characteristics                             | Symbol          | SDUR540             | SDURF540 | Units              |
|---|-----------------|---------------------|----------|--------------------|
| Junction Temperature                        | $T_J$           | -55 to +150         |          | $^\circ\text{C}$   |
| Storage Temperature                         | $T_{stg}$       | -55 to +150         |          | $^\circ\text{C}$   |
| Typical Thermal Resistance Junction to Case | $R_{\theta JC}$ | 2.3                 | 4.2      | $^\circ\text{C/W}$ |
| Case Style                                  |                 | TO-220AC/ ITO-220AC |          |                    |

**Tube Specification**

| Device   | Package   | Weight | Shipping     |
|----------|-----------|--------|--------------|
| SDUR540  | TO-220AC  | 1.6g   | 50pcs / tube |
| SDURF540 | ITO-220AC | 1.6g   | 50pcs / tube |

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

**Tube Specification(TO-220AC/ITO-220AC)**

**Marking Diagram**


Where XXXXX is YYWWL

SDUR = Device Type  
 F = Package type  
 5 = Forward Current (5A)  
 40 = Reverse Voltage (400V)  
 SSG = SSG  
 YY = Year  
 WW = Week  
 L = Lot Number

**Cautions:** Molding resin  
 Epoxy resin UL:94V-0

**Ratings and Characteristics Curves**

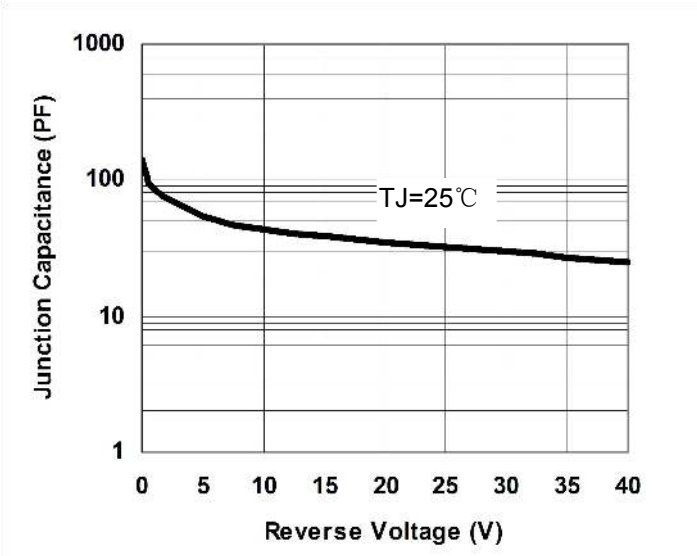


Fig.1-Typical Junction Capacitance

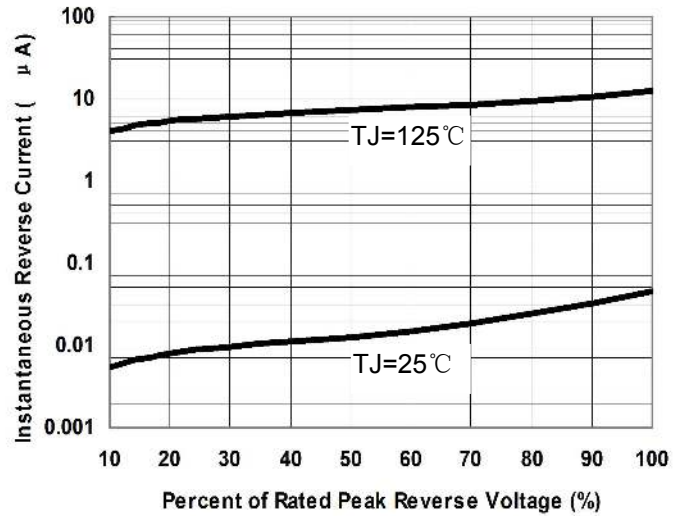


Fig.2-Typical Reverse Characteristics

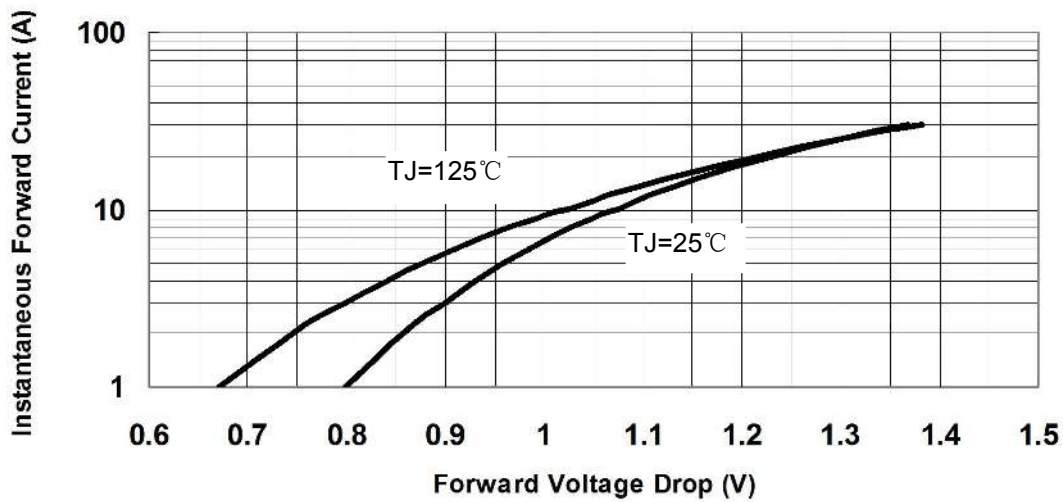
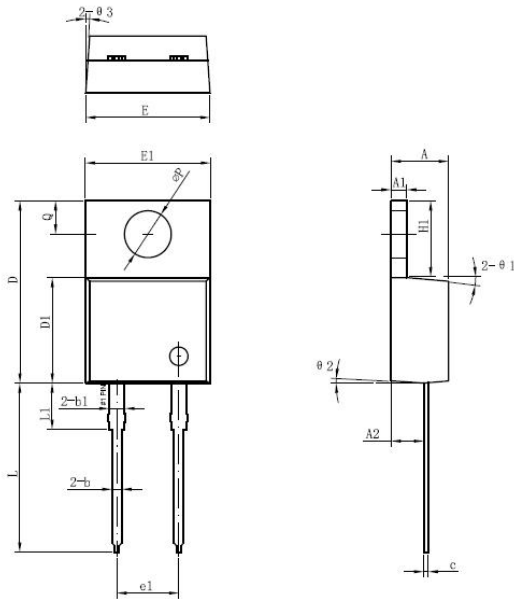


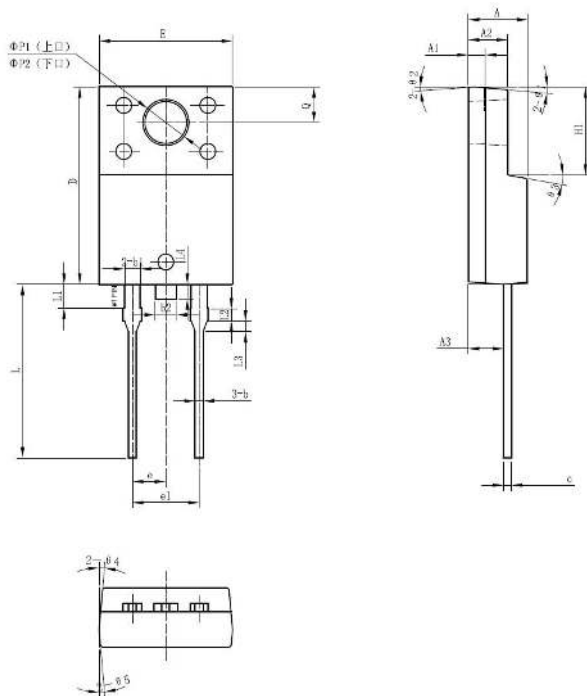
Fig.3-Typical Instantaneous Forward Voltage Characteristics

**Mechanical Dimensions TO-220AC**



| Symbol | Dimensions in millimeters |         |       |
|--------|---------------------------|---------|-------|
|        | Min.                      | Typical | Max.  |
| A      | 4.47                      | 4.70    | 4.85  |
| A1     | 1.17                      | 1.27    | 1.37  |
| A2     | 2.52                      | 2.69    | 2.89  |
| b      | 0.71                      | 0.81    | 0.96  |
| b1     | 1.17                      | 1.27    | 1.37  |
| c      | 0.31                      | 0.38    | 0.61  |
| D      | 14.64                     | 14.94   | 15.24 |
| D1     | 8.50                      | 8.07    | 8.90  |
| E      | 10.01                     | 10.16   | 10.31 |
| E1     | 9.98                      | 10.18   | 10.38 |
| e1     | 4.98                      | 5.08    | 5.18  |
| H1     | 6.04                      | 6.24    | 6.44  |
| L      | 13.00                     | 13.86   | 14.08 |
| L1     | 3.56                      | 3.80    | 3.96  |
| ΦP     | 3.74                      | 3.84    | 4.04  |
| Q      | 2.54                      | 2.74    | 2.94  |
| Θ1     |                           | 5°      |       |
| Θ2     |                           | 4°      |       |
| Θ3     |                           | 4°      |       |

**Mechanical Dimensions ITO-220AC**



| SYMBOL  | Millimeters |       |       |
|---------|-------------|-------|-------|
|         | MIN.        | TYP.  | MAX.  |
| A       | 4.30        | 4.50  | 4.70  |
| A1      | 1.10        | 1.30  | 1.50  |
| A2      | 2.80        | 3.00  | 3.20  |
| A3      | 2.50        | 2.70  | 2.90  |
| b       | 0.50        | 0.60  | 0.75  |
| b1      | 1.10        | 1.20  | 1.35  |
| b2      | 1.50        | 1.60  | 1.75  |
| c       | 0.50        | 0.60  | 0.75  |
| D       | 14.80       | 15.00 | 15.20 |
| E       | 9.96        | 10.16 | 10.36 |
| e       | -           | 2.55  | -     |
| e1      | 5.00        | 5.10  | 5.16  |
| H1      | 6.50        | 6.70  | 6.90  |
| L       | 12.70       | 13.20 | 13.70 |
| L1      | 1.60        | 1.80  | 2.00  |
| L2      | 0.80        | 1.00  | 1.20  |
| L3      | 0.60        | 0.80  | 1.00  |
| L4      | -           | 1.10  | 1.50  |
| ΦP1(上□) | 3.30        | 3.50  | 3.70  |
| ΦP2(下□) | 2.99        | 3.19  | 3.39  |
| Q       | 2.50        | 2.70  | 2.90  |
| Θ1      |             | 5°    |       |
| Θ2      |             | 4°    |       |
| Θ3      |             | 10°   |       |
| Θ4      |             | 5°    |       |
| Θ5      |             | 5°    |       |

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