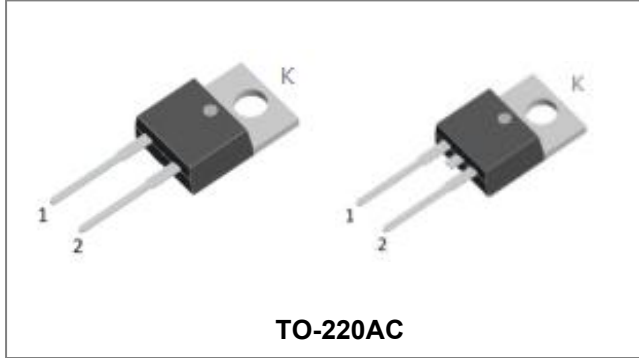


## SDUR2040 ULTRAFAST RECTIFIER



### 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

### Circuit Diagram



### Features

- Ultra-Fast switching
- High current capability
- Low reverse leakage current
- High surge current capability
- Terminals finish: Tin Lead-free plated
- This is a Pb – free device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

### Maximum Ratings(at 25 °C unless otherwise specified)

| Characteristics                             | Symbol      | Condition              | Max. | Units |
|---|-------------|------------------------|------|-------|
| Peak Repetitive Reverse Voltage             | $V_{RRM}$   | -                      | 400  | V     |
| Working Peak Reverse Voltage                | $V_{RWM}$   |                        |      |       |
| DC Blocking Voltage                         | $V_R$       |                        |      |       |
| Average Rectified Forward Current in DC     | $I_{F(AV)}$ | $T_c=114^{\circ}C$     | 20   | A     |
| Peak One Cycle Non-Repetitive Surge Current | $I_{FSM}$   | 8.3ms, Half Sine pulse | 150  | A     |

### Electrical Characteristics:

| Characteristics       | Symbol   | Condition   | Typ. | Max. | Units   |
|-----------------------|----------|---|------|------|---------|
| Forward Voltage Drop* | $V_{F1}$ | @20A, Pulse, $T_J = 25^{\circ}C$                    | 0.99 | 1.51 | V       |
|                       | $V_{F2}$ | @20A, Pulse, $T_J = 125^{\circ}C$                   | 1.88 | 1.40 | V       |
| Reverse Current*      | $I_{R1}$ | @ $V_R = \text{rated } V_R$<br>$T_J = 25^{\circ}C$  | 0.4  | 15   | $\mu A$ |
|                       | $I_{R2}$ | @ $V_R = \text{rated } V_R$<br>$T_J = 125^{\circ}C$ | 283  | 500  | $\mu A$ |
| Reverse Recovery Time | $t_{rr}$ | $I_F=500mA, I_R=1A, \text{ and } I_{m}=250mA$       | 30   | 45   | ns      |

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

**Thermal-Mechanical Specifications:**

| Characteristics                             | Symbol          | Condition    | Specification | Units |
|---|-----------------|--------------|---------------|-------|
| Junction Temperature                        | $T_J$           | -            | -55 to +150   | °C    |
| Storage Temperature                         | $T_{stg}$       | -            | -55 to +150   | °C    |
| Typical Thermal Resistance Junction to Case | $R_{\theta JC}$ | DC operation | 1.2           | °C/W  |
| Approximate Weight                          | wt              | -            | 1.6           | g     |
| Case Style                                  | TO-220AC        |              |               |       |

**Ratings and Characteristics Curves**

Figure 1 Typical Forward Characteristics

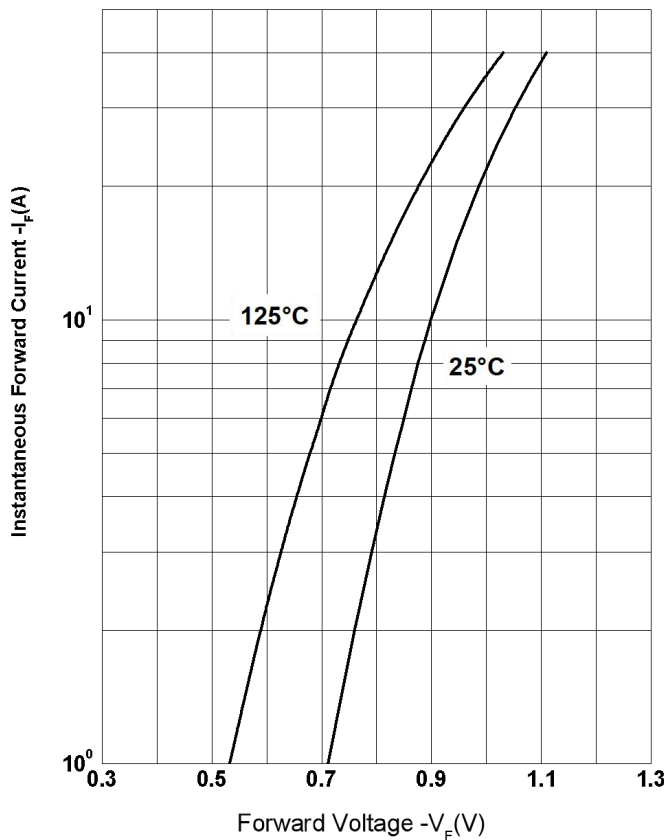


Figure 2 Typical Reverse Characteristics

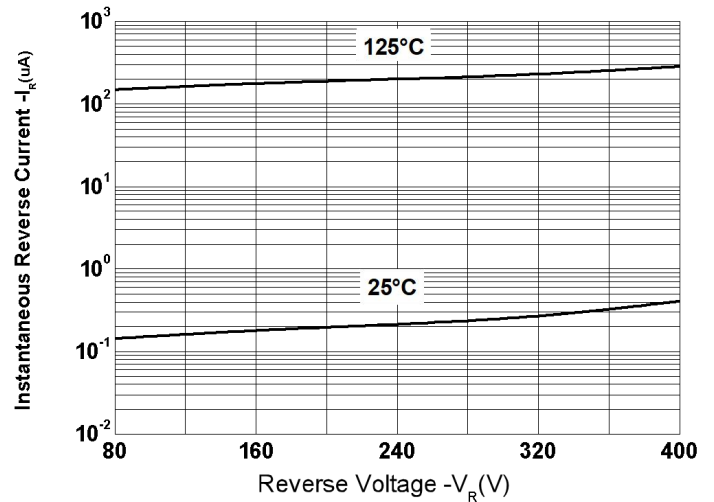
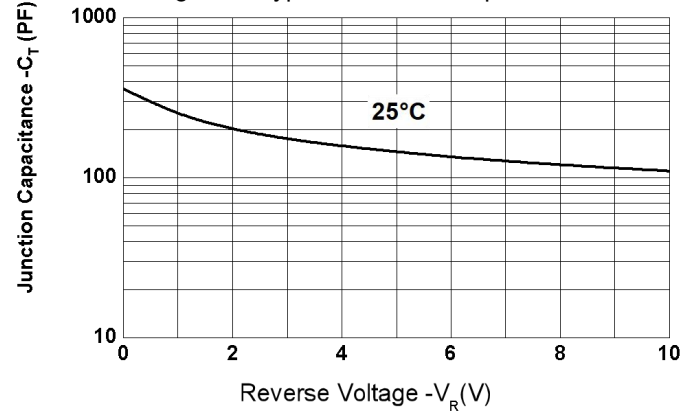
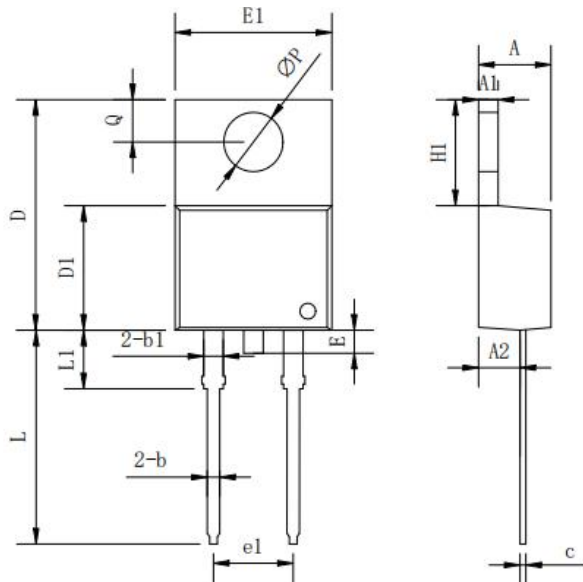
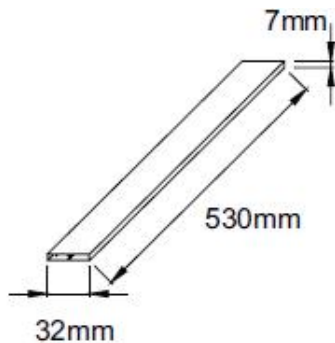


Figure 3 Typical Junction Capacitance



**Mechanical Dimensions TO-220AC**


| Symbol | Dimensions in millimeters |         |       |
|--------|---------------------------|---------|-------|
|        | Min.                      | Typical | Max.  |
| A      | 3.56                      | -       | 4.83  |
| A1     | 0.51                      | -       | 1.4   |
| A2     | 2.03                      | -       | 2.92  |
| b      | 0.38                      | -       | 1.02  |
| b1     | 1.14                      | -       | 1.78  |
| c      | 0.31                      | -       | 0.61  |
| D      | 14.22                     | -       | 16.51 |
| D1     | 8.38                      | -       | 9.42  |
| E      | -                         | -       | 1.78  |
| E1     | 9.65                      | 10.16   | 10.67 |
| e1     | -                         | 5.08    | -     |
| H1     | 5.84                      | -       | 6.86  |
| L      | 12.7                      | -       | 14.73 |
| L1     | -                         | -       | 6.35  |
| ΦP     | -                         | 3.56    | -     |
| Q      | 2.54                      | -       | 3.43  |

**Tube Specification**

**Marking Diagram**


Where XXXXX is YYWWL

SDUR = Device Type  
 20 = Forward Current (20A)  
 40 = Reverse Voltage(400V)  
 SSG = SSG  
 YY = Year  
 WW = Week  
 L = Lot Number

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

**Ordering Information**

| Device   | Package            | Shipping     |
|----------|--------------------|--------------|
| SDUR2040 | TO-220AC (Pb-Free) | 50 pcs/ tube |

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