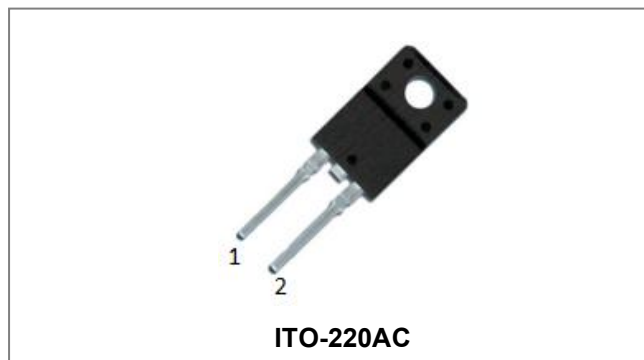


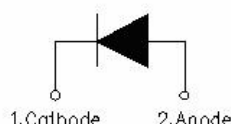
SDURF1060 ULTRAFAST RECTIFIER



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: 100% Pure Tin
- This is a Pb – free device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

Maximum Ratings:

| Characteristics | Symbol | Condition | Max. | Units |
|--|---------------------------------|---|------|-------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | - | 600 | V |
| Average Rectified Forward Current | $I_F (AV)$ | 50% duty cycle @ $T_c=105^\circ\text{C}$, rectangular wave form | 10 | A |
| Peak One Cycle Non-Repetitive Surge Current | I_{FSM} | 8.3ms, Half Sine pulse, $T_c=25^\circ\text{C}$ | 100 | A |
| Power Dissipation | P_D | $T_c=25^\circ\text{C}$ | 31 | W |

Thermal-Mechanical Specifications:

| Characteristics | Symbol | Condition | Specification | 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 | $R_{\theta JC}$ | DC operation | 4 | $^\circ\text{C/W}$ |
| Approximate Weight | wt | - | 1.6 | g |
| Case Style | ITO-220AC | | | |

Electrical Characteristics:

| Characteristics | Symbol | Condition | Typ. | Max. | Units |
|-------------------------------|-----------|--|------|------|---------------|
| Forward Voltage Drop* | V_{F1} | @10A, Pulse, $T_J = 25^{\circ}\text{C}$ | 1.66 | 2.2 | V |
| | V_{F2} | @10A, Pulse, $T_J = 125^{\circ}\text{C}$ | 1.58 | 2.0 | V |
| Reverse Current* | I_{R1} | @ $V_R = \text{rated } V_R$, $T_J = 25^{\circ}\text{C}$ | 0.3 | 10 | μA |
| | I_{R2} | @ $V_R = \text{rated } V_R$, $T_J = 125^{\circ}\text{C}$ | 150 | 500 | μA |
| Junction Capacitance(Peg Leg) | C_T | @ $V_R = 5\text{V}$, $T_C = 25^{\circ}\text{C}$, $f_{\text{SIG}} = 1\text{MHz}$ | 50 | - | pF |
| Reverse Recovery Time | t_{rr} | $I_F = 500\text{mA}$, $I_R = 1\text{A}$, and $I_{rm} = 250\text{mA}$ | 26 | 32 | ns |
| Reverse Recovery Time | t_{rr} | $I_F = 10\text{A}$, $di_F/dt = -200\text{A}/\mu\text{s}$ $V_R = 400\text{V}$, $T_J = 25^{\circ}\text{C}$ | 47 | 70 | ns |
| Reverse Recovery Charge | Q_{rr} | | 99 | - | nC |
| Reverse Recovery Current | I_{RRM} | $I_F = 10\text{A}$, $di_F/dt = -200\text{A}/\mu\text{s}$ $V_R = 400\text{V}$, $T_J = 125^{\circ}\text{C}$ | 4.2 | - | A |
| Reverse Recovery Time | t_{rr} | | 68 | 100 | ns |
| Reverse Recovery Charge | Q_{rr} | $I_F = 10\text{A}$, $di_F/dt = -200\text{A}/\mu\text{s}$ $V_R = 400\text{V}$, $T_J = 125^{\circ}\text{C}$ | 185 | - | nC |
| Reverse Recovery Current | I_{RRM} | | 5.4 | - | A |
| Reverse Recovery Time | t_{rr} | $I_F = 1\text{A}$, $di_F/dt = -100\text{A}/\mu\text{s}$ $V_R = 30\text{V}$, $T_J = 25^{\circ}\text{C}$ | 32 | 50 | ns |
| Reverse Recovery Charge | Q_{rr} | | 26 | - | nC |
| Reverse Recovery Current | I_{RRM} | $I_F = 1\text{A}$, $di_F/dt = -100\text{A}/\mu\text{s}$ $V_R = 30\text{V}$, $T_J = 25^{\circ}\text{C}$ | 1.6 | - | A |
| Reverse Recovery Time | t_{rr} | | 47 | - | ns |
| Reverse Recovery Charge | Q_{rr} | $I_F = 1\text{A}$, $di_F/dt = -100\text{A}/\mu\text{s}$ $V_R = 30\text{V}$, $T_J = 125^{\circ}\text{C}$ | 52 | - | nC |
| Reverse Recovery Current | I_{RRM} | | 2.2 | - | A |
| Reverse Recovery Time | t_{rr} | $I_F = 10\text{A}$, $di_F/dt = -100\text{A}/\mu\text{s}$ $V_R = 30\text{V}$, $T_J = 25^{\circ}\text{C}$ | 51 | - | ns |
| Reverse Recovery Charge | Q_{rr} | | 64 | - | nC |
| Reverse Recovery Current | I_{RRM} | $I_F = 10\text{A}$, $di_F/dt = -100\text{A}/\mu\text{s}$ $V_R = 30\text{V}$, $T_J = 25^{\circ}\text{C}$ | 2.5 | - | A |
| Reverse Recovery Time | t_{rr} | | 70 | - | ns |
| Reverse Recovery Charge | Q_{rr} | $I_F = 10\text{A}$, $di_F/dt = -100\text{A}/\mu\text{s}$ $V_R = 30\text{V}$, $T_J = 125^{\circ}\text{C}$ | 123 | - | nC |
| Reverse Recovery Current | I_{RRM} | | 3.5 | - | A |

* Pulse width < 300 μs , duty cycle < 2%

Ratings and Characteristics Curves

Figure 1
Typical Forward Characteristics

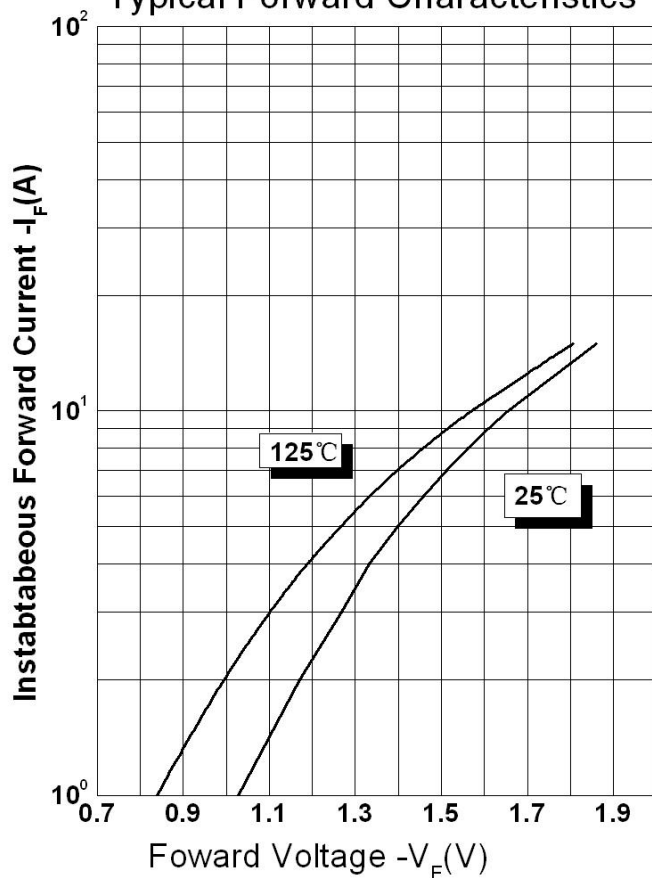


Figure 2
Typical Reverse Characteristics

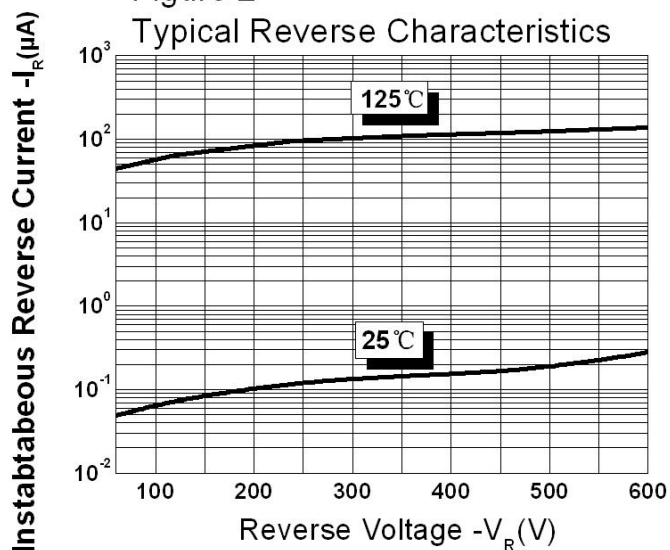
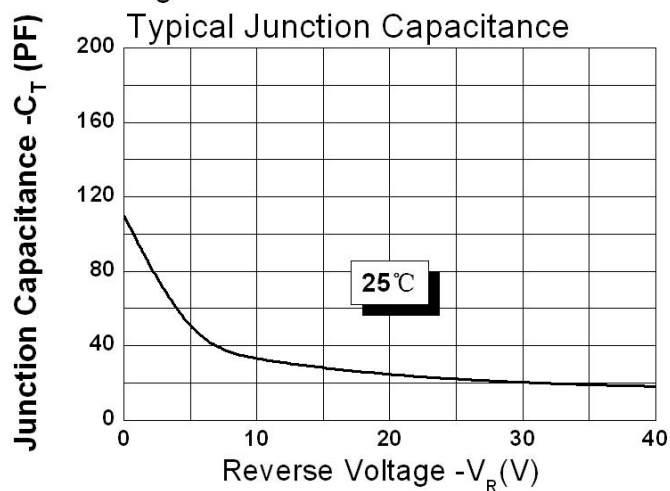


Figure 3
Typical Junction Capacitance



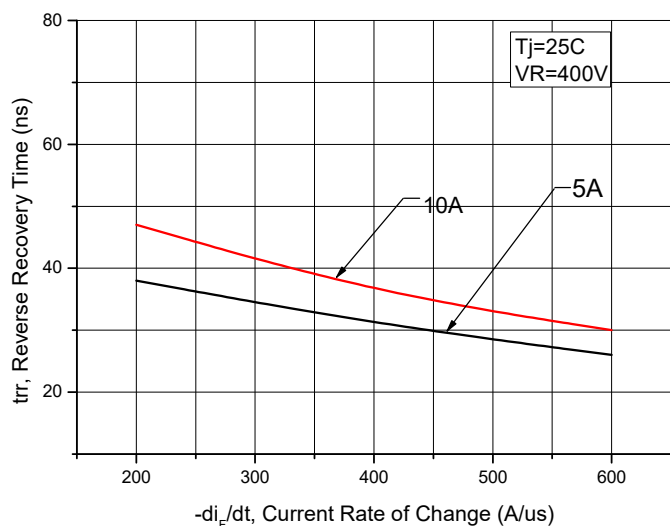


Figure 4. Reverse Recovery Time vs. Current Rate of Change

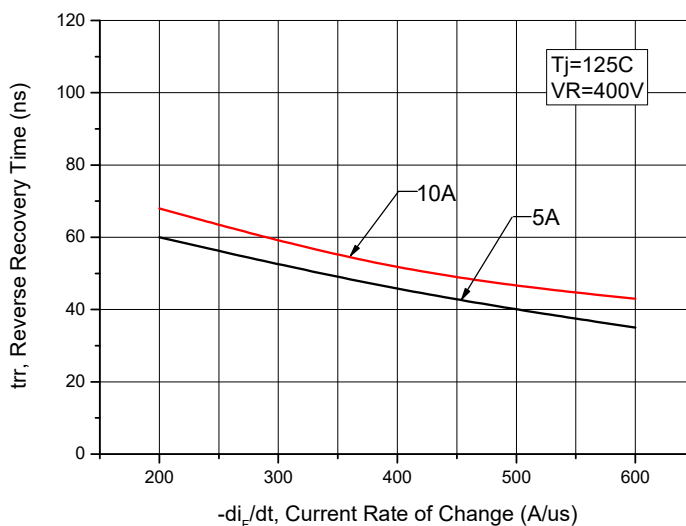


Figure 5. Reverse Recovery Time vs. Current Rate of Change

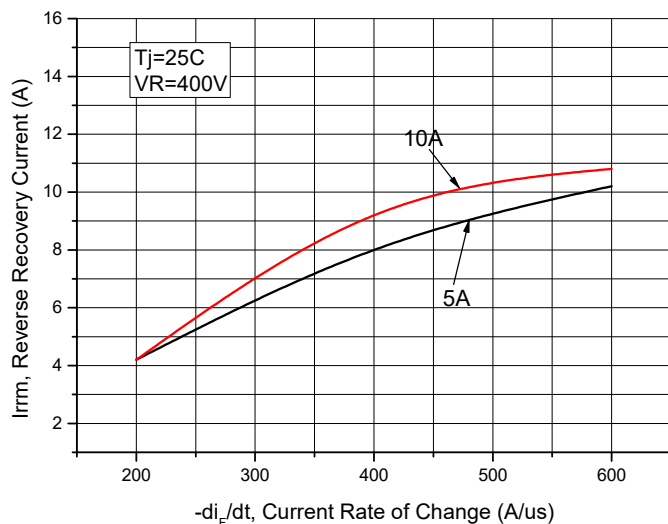


Figure 6. Reverse Recovery Current vs. Current Rate of Change

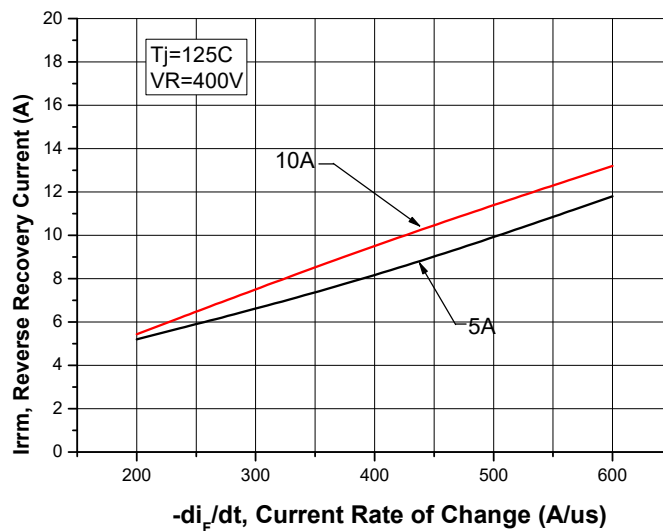


Figure 7. Reverse Recovery Current vs. Current Rate of Change

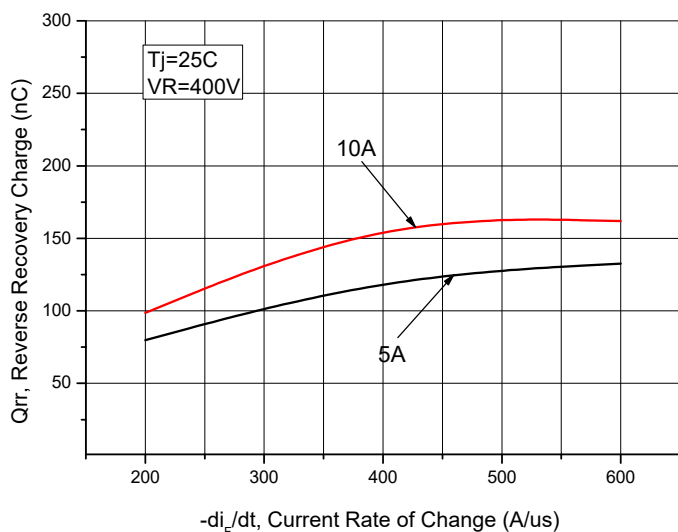


Figure 8. Reverse Recovery Charge vs. Current Rate of Change

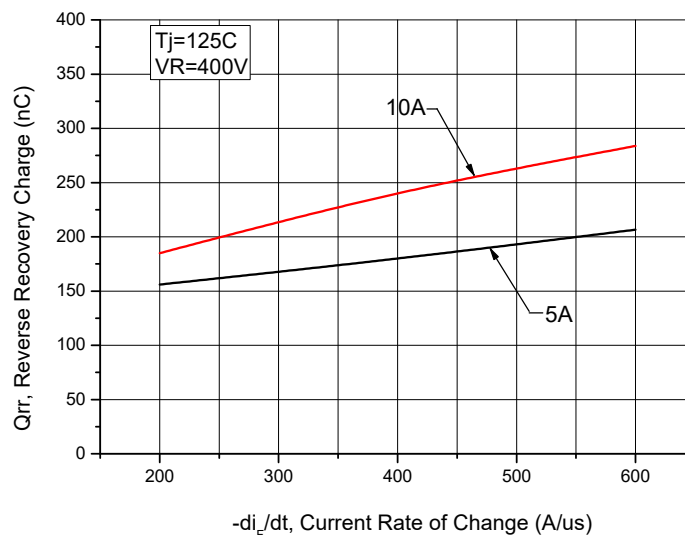


Figure 9. Reverse Recovery Charge vs. Current Rate of Change

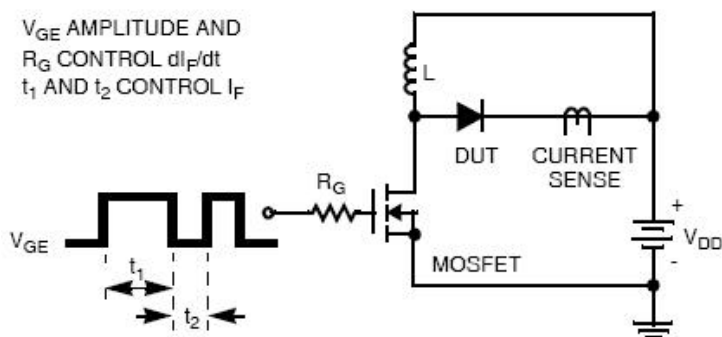


Figure 10. Diode Test Circuit

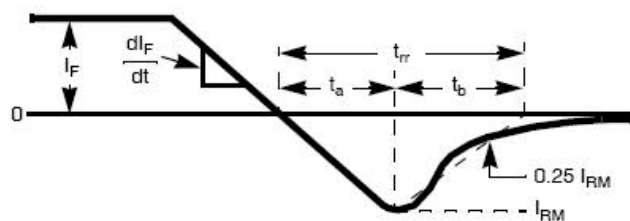
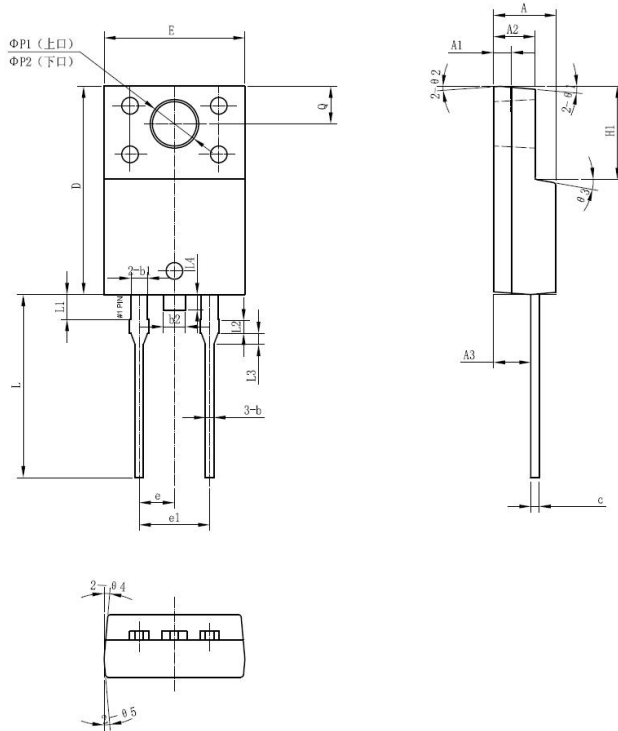


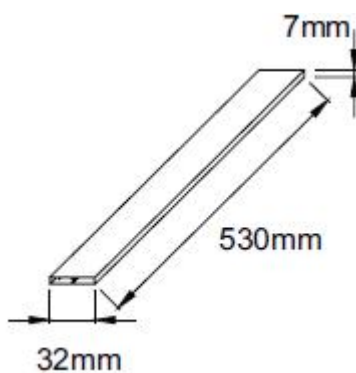
Figure 11. Diode Reverse Recovery Waveform

Mechanical Dimensions ITO-220AC

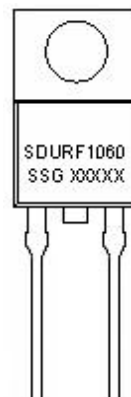


| SYMBOL | Millimeters | | |
|---------|-------------|-------|-------|
| | MIN. | TYP. | MAX. |
| A | 4.30 | 4.50 | 4.70 |
| A1 | 1.10 | 1.30 | 1.50 |
| A2 | 2.80 | 3.00 | 3.20 |
| A3 | 2.50 | 2.70 | 2.90 |
| b | 0.50 | 0.60 | 0.75 |
| b1 | 1.10 | 1.20 | 1.35 |
| b2 | 1.50 | 1.60 | 1.75 |
| c | 0.55 | 0.60 | 0.75 |
| D | 14.80 | 15.00 | 15.20 |
| E | 9.96 | 10.16 | 10.36 |
| e | - | 2.55 | - |
| e1 | - | 5.10 | - |
| 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(上口) | 3.30 | 3.50 | 3.70 |
| ΦP2(下口) | 2.99 | 3.19 | 3.39 |
| Q | 2.50 | 2.70 | 2.90 |
| Θ1 | | 5° | |
| Θ2 | | 4° | |
| Θ3 | | 10° | |
| Θ4 | | 5° | |
| Θ5 | | 5° | |

Tube Specification



Marking Diagram



Where XXXXX is YYWWL

SDUR = Device Type
F = Package type
10 = Forward Current (10A)
60 = Reverse Voltage (600V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

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

Ordering Information:

| Device | Package | Shipping |
|-----------|---------------------|--------------|
| SDURF1060 | ITO-220AC (Pb-Free) | 50 pcs/ tube |

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