Technical Data
Data Sheet N2546, Rev.B

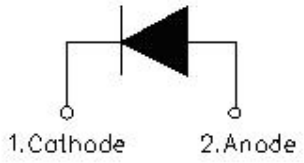
# SDUR60M60W ULTRAFAST RECTIFIER


TO-247AC

## 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
- Plastic Material has UL Flammability Classification 94V-O
- 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 (limiting values, $T_C$ =25°C unless otherwise specified)

| Characteristics | Symbol | Condition | Max. | Units |
|---|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | - | 600 | V |
| Average Rectified Forward Current | $I_{F\ (AV)}$ | Tc=120°C | 60 | A |
| Peak One Cycle Non-Repetitive Surge Current | $I_{FSM}$ | 8.3ms, Half Sine pulse | 500 | A |

## Electrical Characteristics

| Characteristics | Symbol | Condition | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Forward Voltage Drop* | $V_{F1}$ | @ 30A, Pulse, $T_J$ = 25°C<br>@ 60A, Pulse, $T_J$ = 25°C | 1.20<br>1.35 | 1.80 | V |
| | $V_{F2}$ | @ 30A, Pulse, $T_J$ = 125°C<br>@ 60A, Pulse, $T_J$ = 125°C | 1.05<br>1.26 | - | V |
| | $V_{F3}$ | @ 30A, Pulse, $T_J$ = 150°C<br>@ 60A, Pulse, $T_J$ = 150°C | 1.00<br>1.21 | - | V |
| Reverse Current* | $I_{R1}$ | @$V_R$ = rated $V_R$, $T_J$ =25°C | 0.02 | 10 | uA |
| | $I_{R2}$ | @$V_R$ = rated $V_R$, $T_J$ =125°C | 16 | 500 | uA |
| | $I_{R3}$ | @$V_R$ = rated $V_R$, $T_J$ =150°C | 71 | - | uA |
| Reverse Recovery Time | $t_{rr}$ | $I_F$=500mA,$I_R$=1A,and $I_{rr}$=250mA,, $T_J$ =25°C | 52 | 65 | ns |
| Reverse Recovery Time | $t_{rr}$ | $I_F$=1A, $dI_F/dt$=-100A/μs, $V_R$=30V, $T_J$ =25°C | 39 | - | ns |
| Reverse Recovery Charge | $Q_{rr}$ | | 48 | - | nC |
| Reverse Recovery Current | $I_{rr}$ | | 2.5 | - | A |
| Reverse Recovery Time | $t_{rr}$ | $I_F$=30A, $dI_F/dt$=-200A/μs, $V_R$=300V, $T_J$ =25°C | 136 | - | ns |
| Reverse Recovery Charge | $Q_{rr}$ | | 488 | - | nC |
| Reverse Recovery Current | $I_{rr}$ | | 7 | - | A |
| Reverse Recovery Time | $t_{rr}$ | $I_F$=30A, $dI_F/dt$=-200A/μs, $V_R$=300V, $T_J$ =125°C | 165 | - | ns |
| Reverse Recovery Charge | $Q_{rr}$ | | 1057 | - | nC |
| Reverse Recovery Current | $I_{rr}$ | | 13 | - | A |

* Pulse width < 300 μs, 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 | 0.34 | °C/W |
| Approximate Weight | wt | - | 6.28 | g |
| Case Style | TO-247AC | | | |

## Ratings and Characteristics Curves

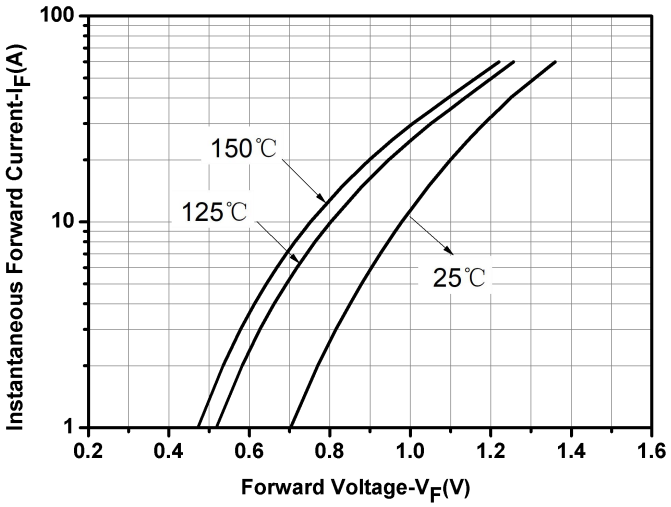



Fig.1-Typical Forward Voltage Characteristics

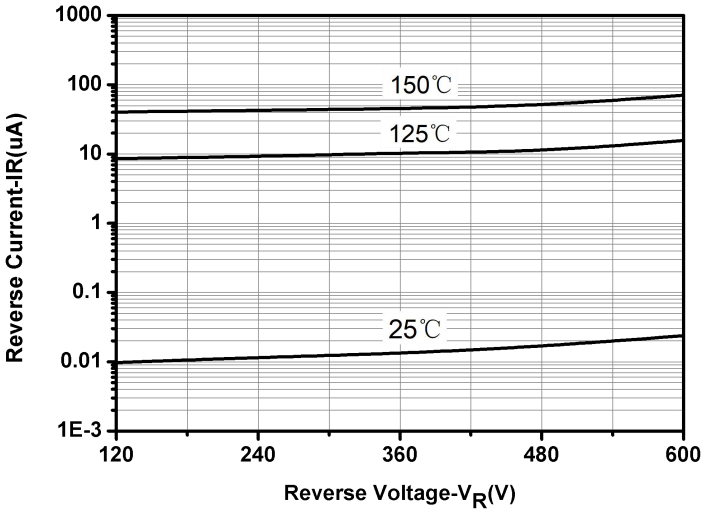



Fig.2-Typical Reverse Characteristics

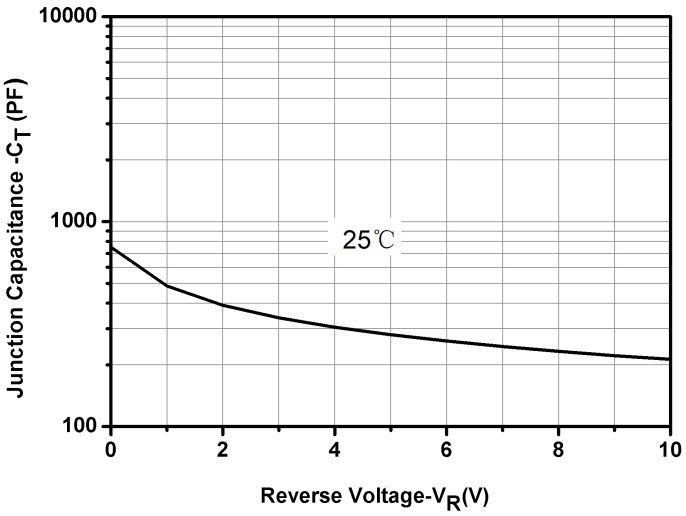



Fig.3-Capacitance vs. Reverse Voltage

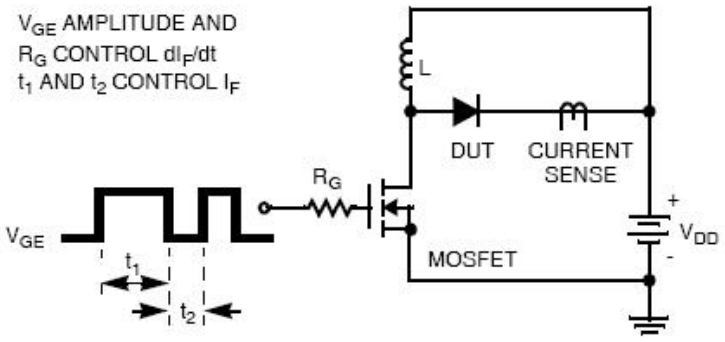
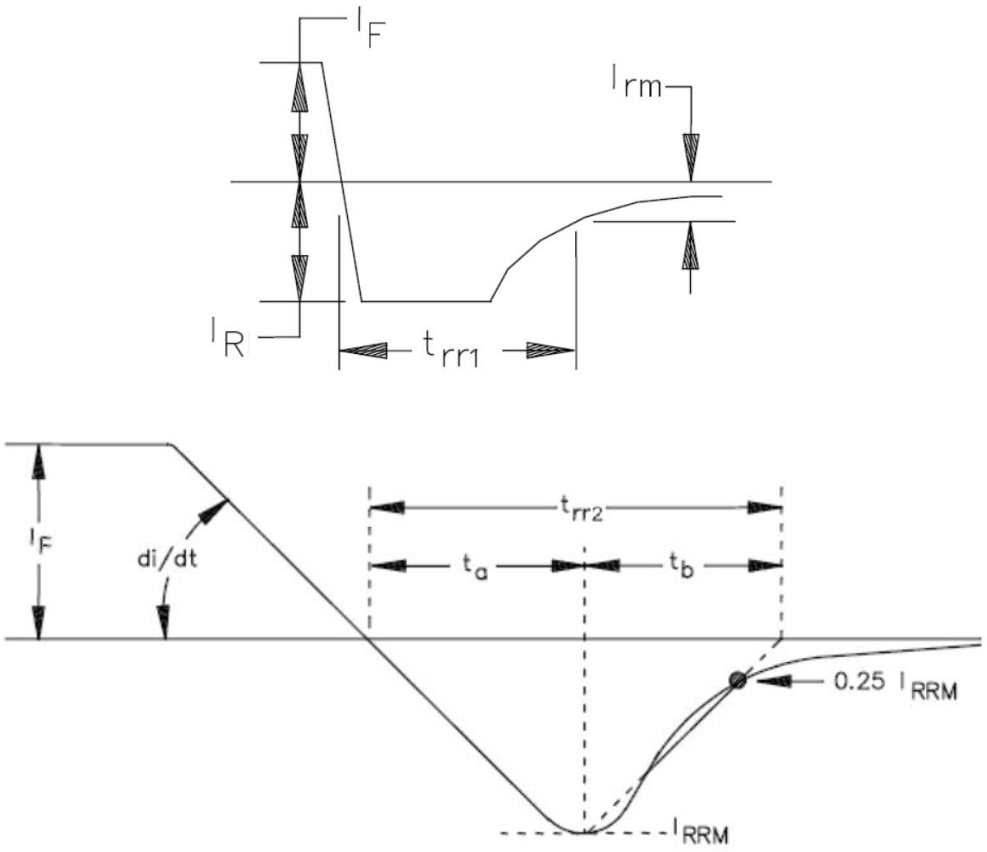



Fig.4-Diode Test Circuit




Note: 1. $t_{rr1}$ MIL-STD-750 Test Method 4031, condition "B".
2. $t_{rr2}$ MIL-STD-750 Test Method 4031, condition “D" .

**Fig.5-Reverse Recovery Waveform**

# SDUR60M60W

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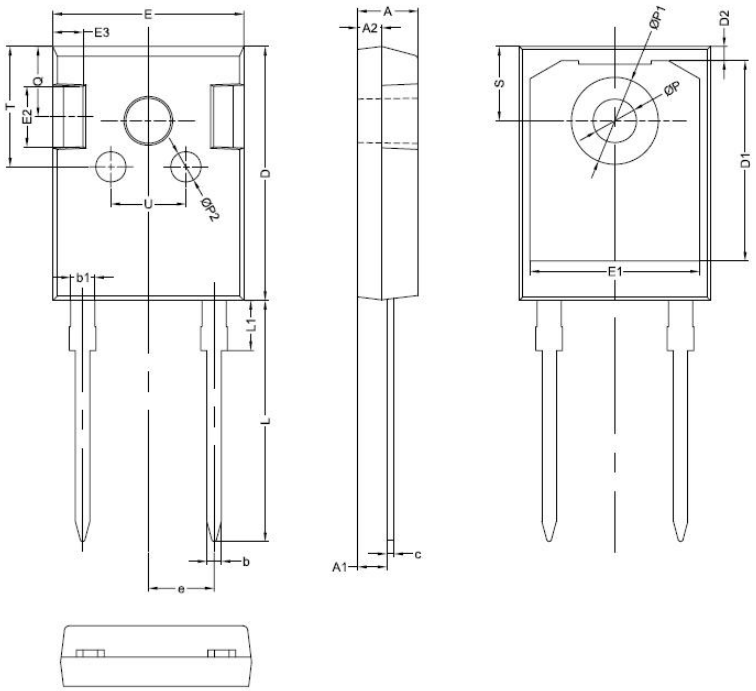
RoHS

## Mechanical Dimensions TO-247AC

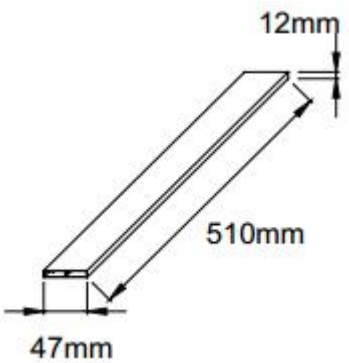



| SYMBOL | Millimeters | | |
|---|---|---|---|
| | MIN. | TYP. | MAX. |
| A | 4.80 | 5.00 | 5.20 |
| A1 | 2.20 | 2.41 | 2.61 |
| A2 | 1.90 | 2.00 | 2.10 |
| b | 1.10 | 1.20 | 1.35 |
| b1 | 1.80 | 2.00 | 2.20 |
| c | 0.50 | 0.60 | 0.75 |
| D | 20.30 | 21.00 | 21.20 |
| D1 | | 16.58 | |
| D2 | | 1.17 | |
| E | 15.60 | 15.80 | 16.00 |
| E1 | | 14.02 | |
| E2 | | 5.00 | |
| E3 | | 2.50 | |
| e | | 5.44 | |
| L | 19.42 | 19.92 | 20.42 |
| L1 | | 4.13 | |
| P | 3.50 | 3.60 | 3.70 |
| P1 | 7.1 | 7.19 | 7.40 |
| P2 | | 2.50 | |
| Q | | 5.80 | |
| S | 6.05 | 6.15 | 6.25 |
| T | | 10.00 | |
| U | | 6.20 | |

## Ordering Information

| Device | Package | Plating | Shipping |
|---|---|---|---|
| SDUR60M60W | TO-247AC(Pb-Free) | Pure Sn | 25pcs / tube |

## Tube Specification




## Marking Diagram


Where XXXXX is YYWWL

SDUR = Device Type
60 = Forward Current (60A)
M = M
60 = Reverse Voltage (600V)
W = Configuration
SSG = SSG
YY = Year
WW = Week
L = Lot Number

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

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