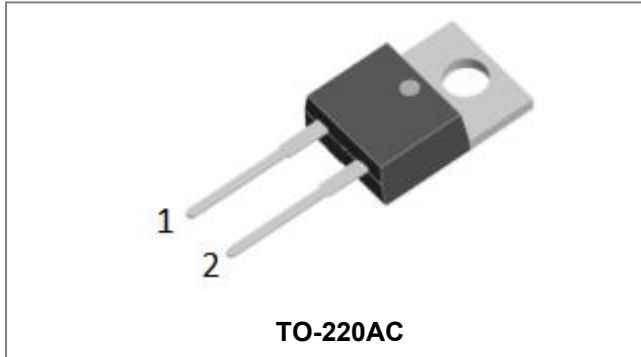


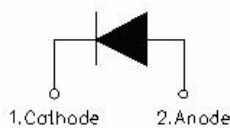
## SDUR3060 ULTRAFAST RECTIFIER



### 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
- 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 @ $T_c=70^\circ\text{C}$ , rectangular wave form	30	A
Peak One Cycle Non-Repetitive Surge Current	$I_{FSM}$	8.3ms, Half Sine pulse	300	A

### Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	$V_{F1}$	@ 30A, Pulse, $T_J = 25^\circ\text{C}$	1.70	1.80	V
Reverse Current*	$I_{R1}$	@ $V_R = \text{rated } V_R, T_J = 25^\circ\text{C}$	2	250	$\mu\text{A}$
	$I_{R2}$	@ $V_R = \text{rated } V_R, T_J = 125^\circ\text{C}$	0.9	2	mA
Reverse Recovery Time	$t_{rr}$	$I_F=500\text{mA}, I_R=1\text{A}, \text{ and } I_{rm}=250\text{mA}$	48	50	ns
Reverse Recovery Time	$t_{rr}$	$I_F = 30\text{A}, di_F/dt = -200\text{A}/\mu\text{s}$ $V_R = 400\text{V}, T_J = 25^\circ\text{C}$	70	-	ns
Reverse Recovery Charge	$Q_{rr}$		210	-	nC
Reverse Recovery Current	$I_{RRM}$		6	-	A
Reverse Recovery Time	$t_{rr}$	$I_F = 30\text{A}, di_F/dt = -200\text{A}/\mu\text{s}$ $V_R = 400\text{V}, T_J = 125^\circ\text{C}$	120	-	ns
Reverse Recovery Charge	$Q_{rr}$		620	-	nC
Reverse Recovery Current	$I_{RRM}$		8	-	A

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

- China - Germany - Korea - Singapore - United States •
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**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	1.15	°C/W
Approximate Weight	wt	-	1.6	g
Case Style	TO-220AC			

**Ratings and Characteristics Curves**

Figure 1  
Typical Forward Characteristics

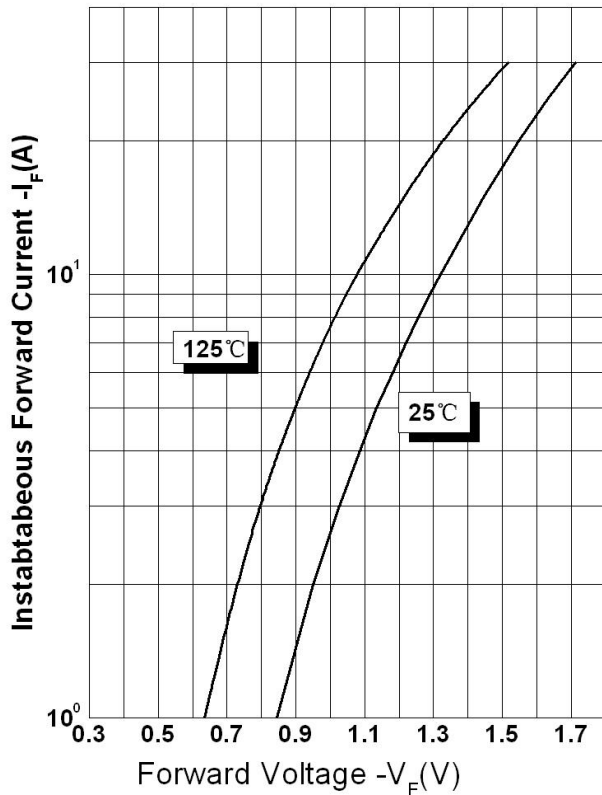


Figure 2  
Typical Reverse Characteristics

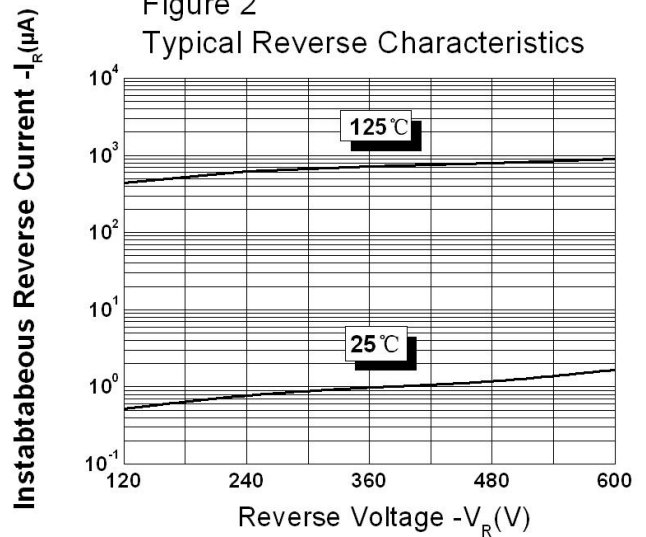
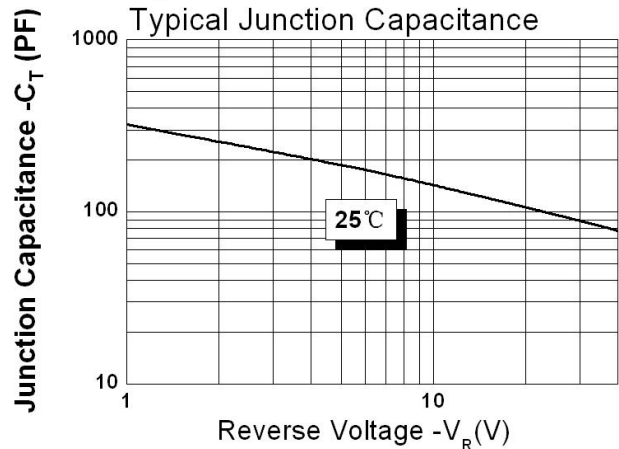


Figure 3  
Typical Junction Capacitance



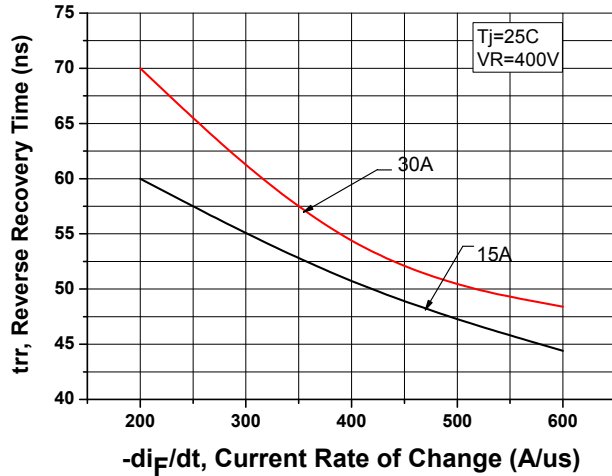


Figure 4. Reverse Recovery Time vs. Current Rate of Change

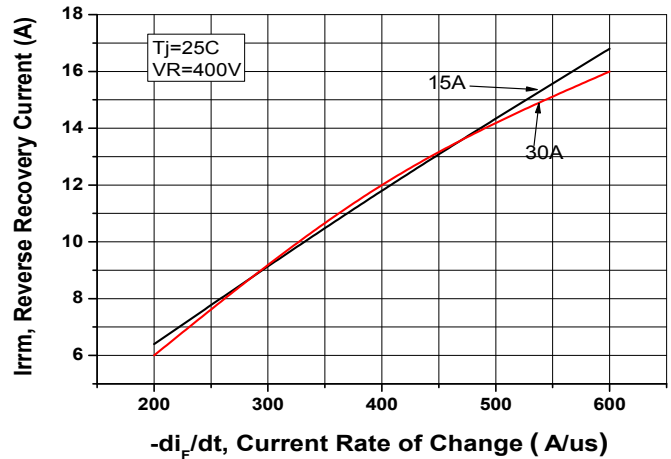


Figure 5. Reverse Recovery Current vs. Current Rate of Change

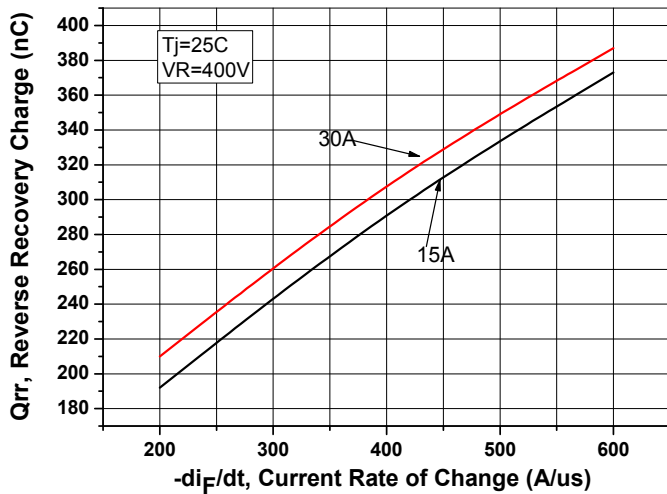


Figure 6. Reverse Recovery Charge vs. Current Rate of Change

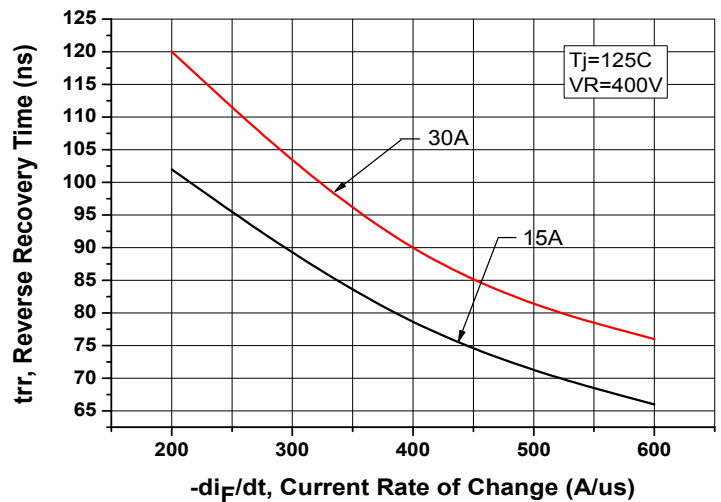


Figure 7. Reverse Recovery Time vs. Current Rate of Change

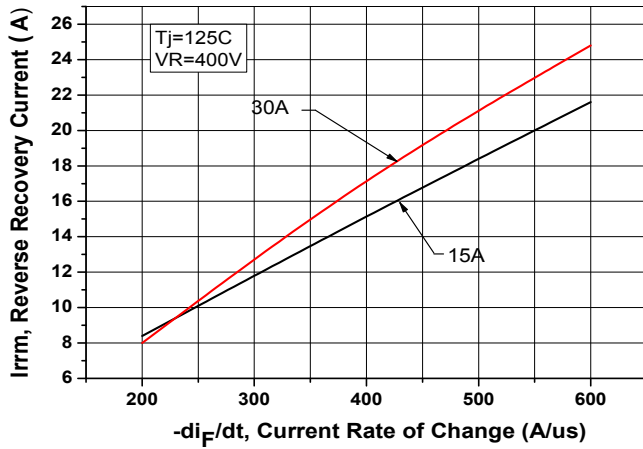


Figure 8. Reverse Recovery Current vs. Current Rate of Change

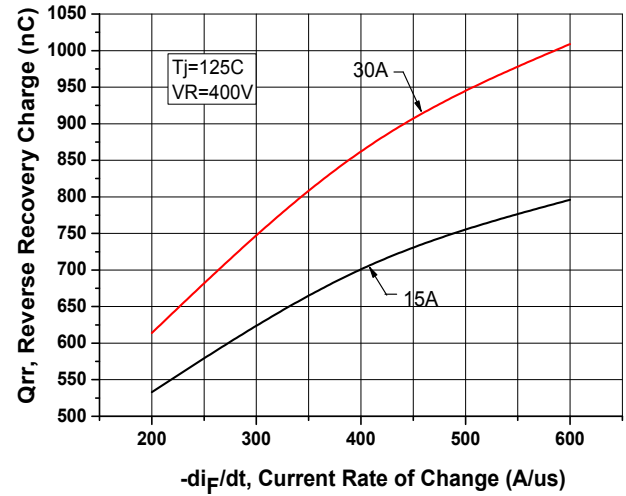


Figure 9. Reverse Recovery Charge vs. Current Rate of Change

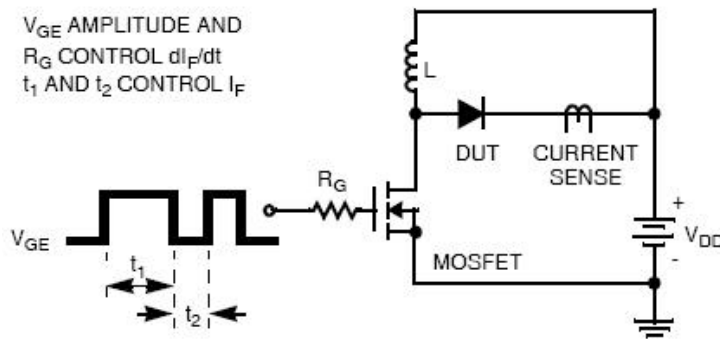


Figure 10. Diode Test Circuit

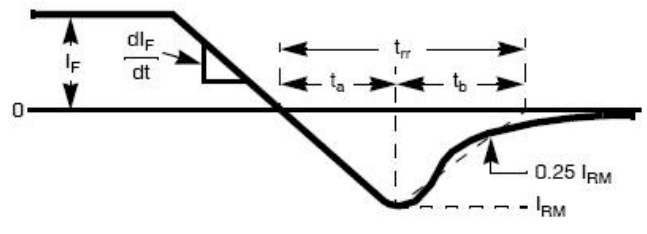
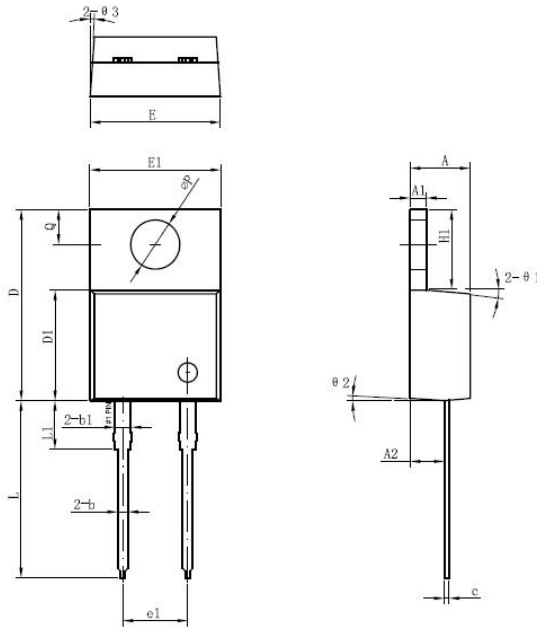


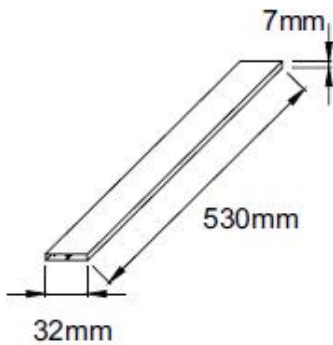
Figure 11. Diode Reverse Recovery Waveform

**Mechanical Dimensions 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
Ø1		5°	
Ø2		4°	
Ø3		4°	

**Tube Specification**



**Marking Diagram**



Where XXXXX is YYWWL

SDUR = Device Type  
30 = Forward Current (30A)  
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	Pin plating	Shipping
SDUR3060	TO-220AC (Pb-Free)	Pure Sn	50 pcs/ tube

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

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