

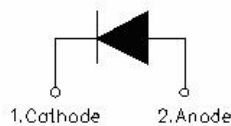
## SDURF30Q60 ULTRAFAST RECTIFIER



### 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 @ $T_c=70^\circ\text{C}$ , rectangular wave form	30	A
Peak One Cycle Non-Repetitive Surge Current	$I_{FSM}$	8.3ms, Half Sine pulse	200	A

**Electrical Characteristics:**

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V <sub>F1</sub>	@ 30A, Pulse, T <sub>J</sub> = 25°C	1.56	1.80	V
	V <sub>F2</sub>	@ 30A, Pulse, T <sub>J</sub> = 125°C	1.40	1.60	V
	V <sub>F3</sub>	@ 30A, Pulse, T <sub>J</sub> = 150°C	1.34	-	V
Reverse Current*	I <sub>R1</sub>	@V <sub>R</sub> = rated V <sub>R</sub> , T <sub>J</sub> = 25°C	0.02	10	uA
	I <sub>R2</sub>	@V <sub>R</sub> = rated V <sub>R</sub> , T <sub>J</sub> = 125°C	0.006	1	mA
	I <sub>R2</sub>	@V <sub>R</sub> = rated V <sub>R</sub> , T <sub>J</sub> = 150°C	0.025	-	mA
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =500mA, I <sub>R</sub> =1A, and I <sub>m</sub> =250mA, T <sub>J</sub> =25°C	32	40	ns
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 30A, diF/dt = -200A/μs V <sub>R</sub> = 400V, T <sub>J</sub> = 25°C	78	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		94	-	nC
Reverse Recovery Current	I <sub>RRM</sub>		2.4	-	A
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 30A, diF/dt = -200A/μs V <sub>R</sub> = 400V, T <sub>J</sub> = 125°C	136	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		435	-	nC
Reverse Recovery Current	I <sub>RRM</sub>		6.4	-	A
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 1A, diF/dt = -100A/μs V <sub>R</sub> = 30V, T <sub>J</sub> = 25°C	30	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		26	-	nC
Reverse Recovery Current	I <sub>RRM</sub>		2	-	A
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 1A, diF/dt = -100A/μs V <sub>R</sub> = 30V, T <sub>J</sub> = 125°C	65	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		121	-	nC
Reverse Recovery Current	I <sub>RRM</sub>		4	-	A

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

**Thermal-Mechanical Specifications:**

Characteristics	Symbol	Condition	Specification	Units
Junction Temperature	T <sub>J</sub>	-	-55 to +150	°C
Storage Temperature	T <sub>stg</sub>	-	-55 to +150	°C
Typical Thermal Resistance Junction to Case	R <sub>θJC</sub>	DC operation	4.2	°C/W
Approximate Weight	wt	-	1.6	g
Case Style	ITO-220AC			

**Ratings and Characteristics Curves**

Figure 1  
Typical Forward Characteristics

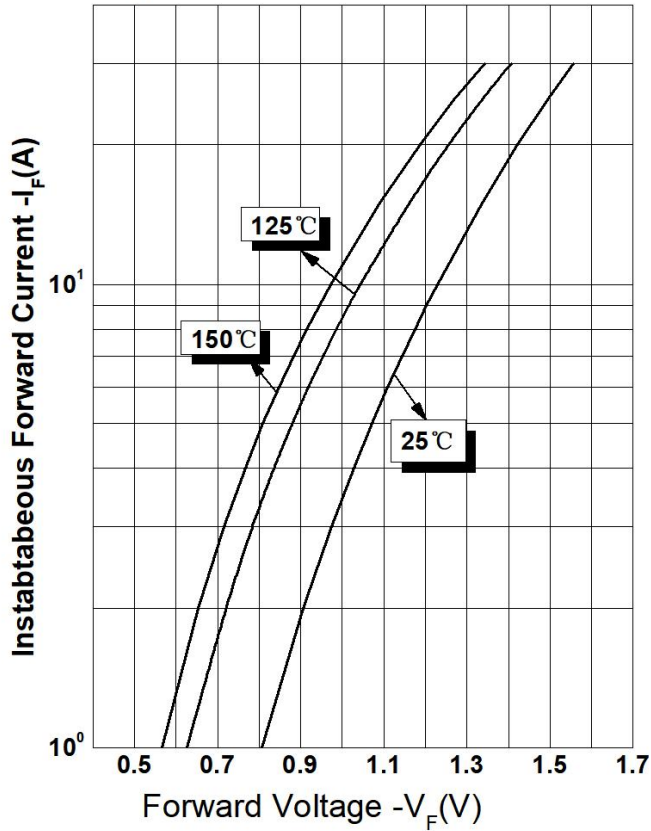


Figure 2  
Typical Reverse Characteristics

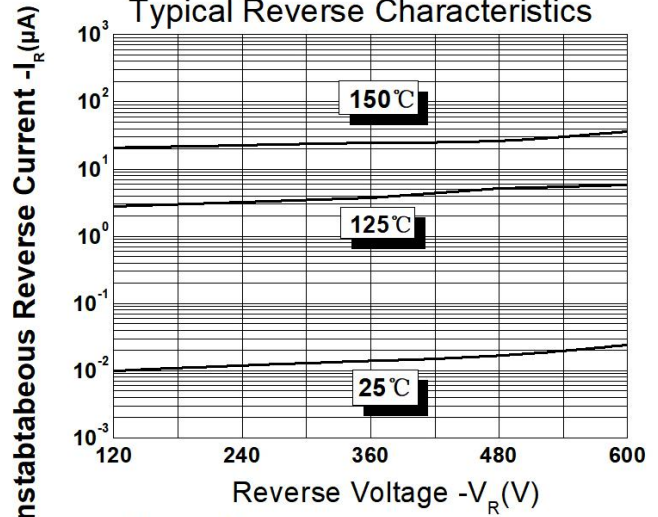
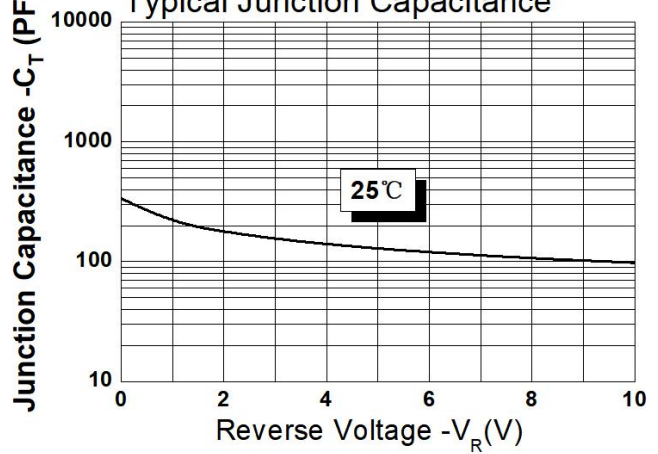
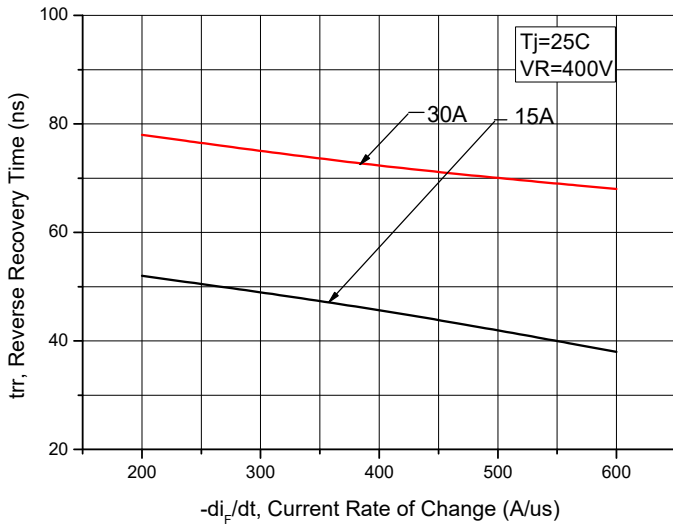
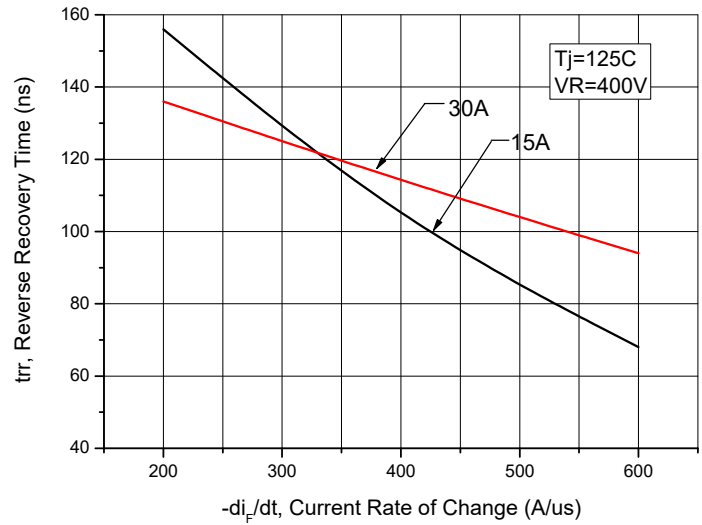


Figure 3  
Typical Junction Capacitance

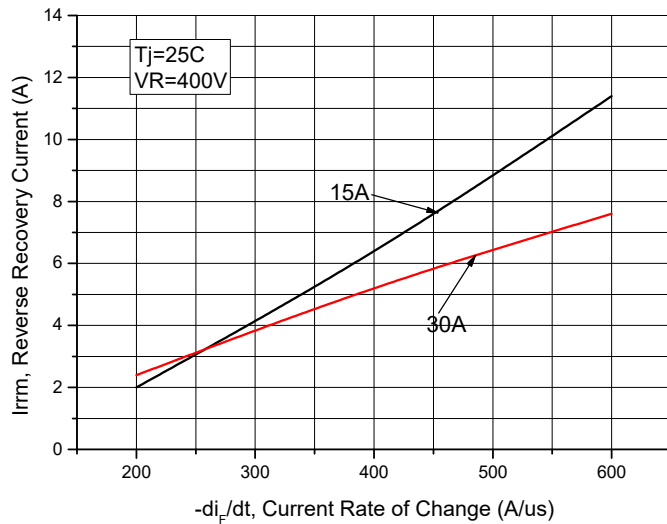




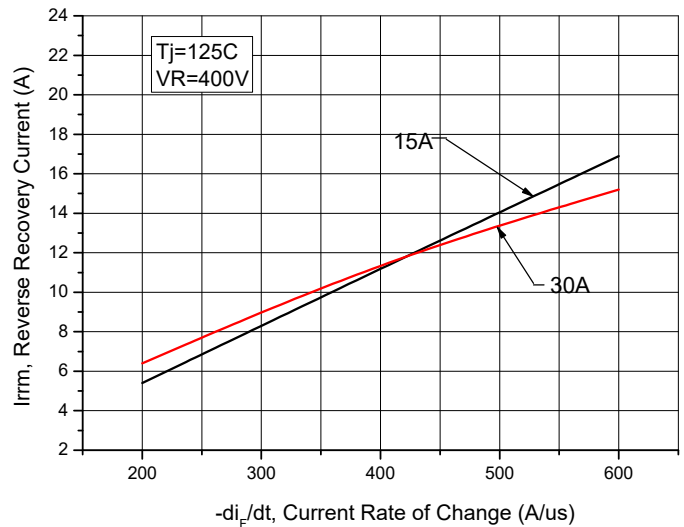
**Figure 4. Reverse Recovery Time vs. Current Rate of Change**



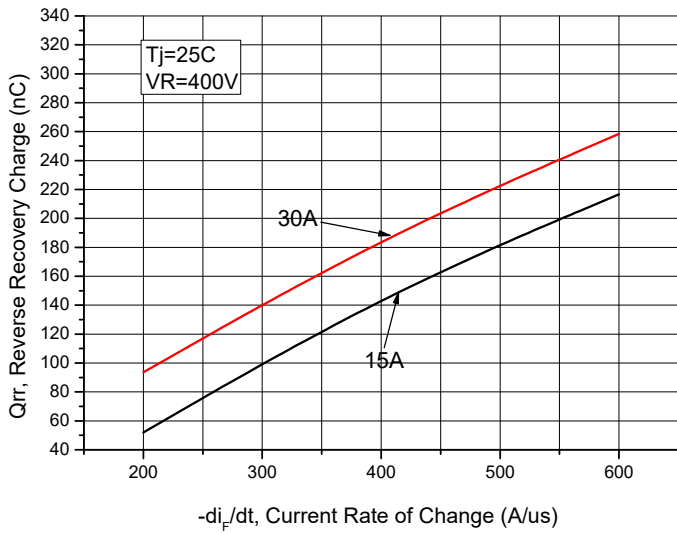
**Figure 5. Reverse Recovery Time vs. Current Rate of Change**



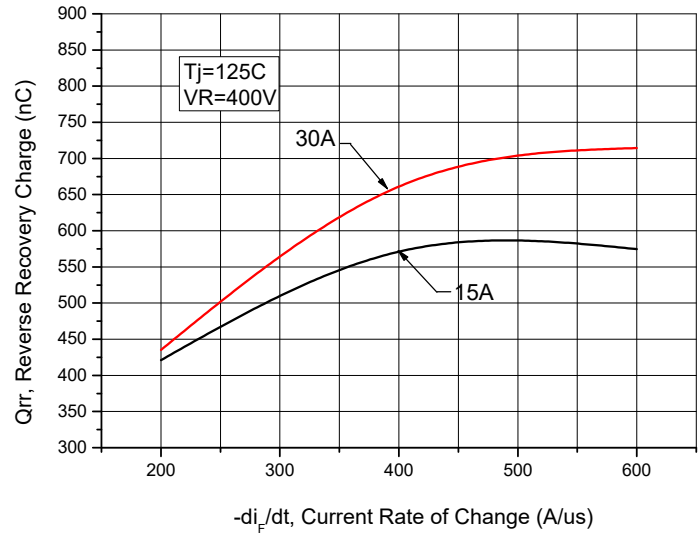
**Figure 6. Reverse Recovery Current vs. Current Rate of Change**



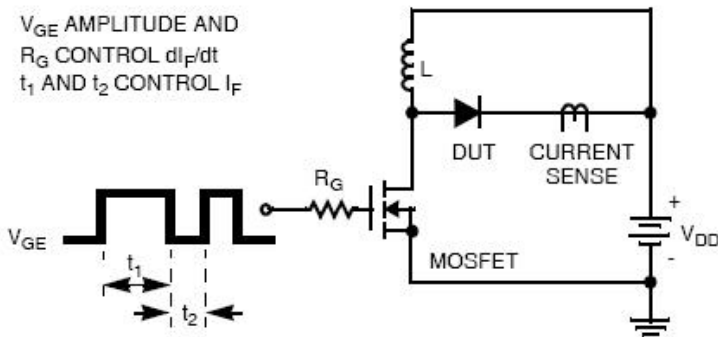
**Figure 7. Reverse Recovery Current vs. Current Rate of Change**



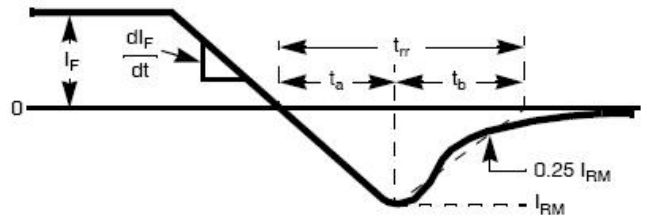
**Figure 8. Reverse Recovery Charge vs. Current Rate of Change**



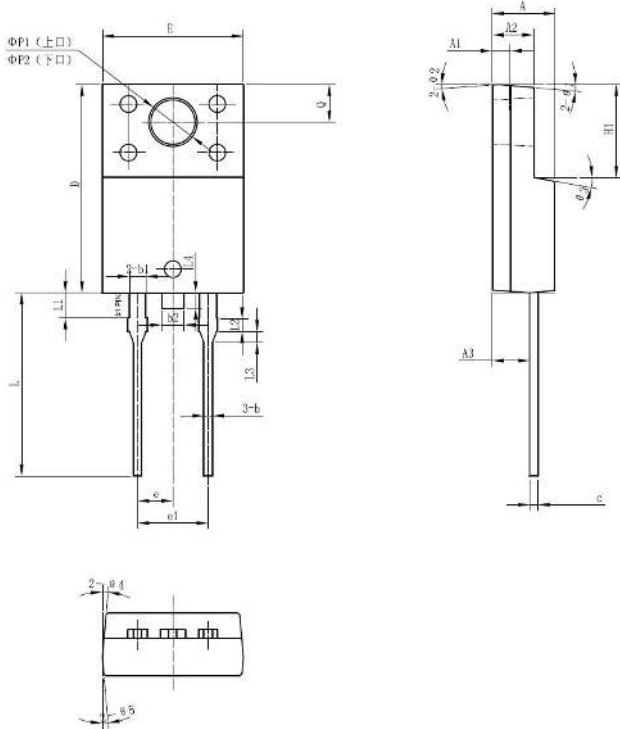
**Figure 9. Reverse Recovery Charge vs. Current Rate of Change**



**Figure 10. Diode Test Circuit**



**Figure 11. Diode Reverse Recovery Waveform**

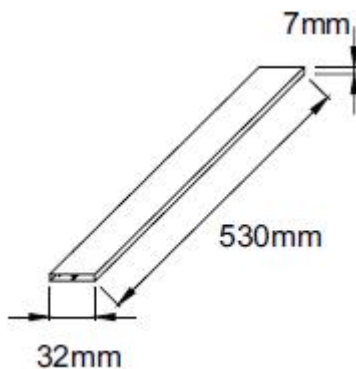
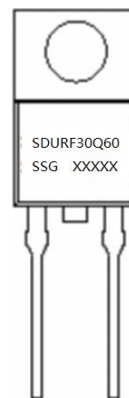
**Mechanical Dimensions ITO-220AC**


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	0.50	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°	

**Ordering Information:**

Device	Package	Shipping
SDURF30Q60	ITO-220AC (Pb-Free)	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.

**Tube Specification**

**Marking Diagram**


Where XXXXX is YYWWL

SDUR = Device Type  
 F = Package type  
 30 = Forward Current (30A)  
 Q = Q  
 60 = Reverse Voltage (600V)  
 SSG = SSG  
 YY = Year  
 WW = Week  
 L = Lot Number

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



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