

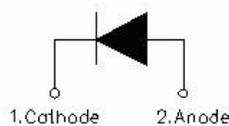
## SDURK30Q60 ULTRAFAST RECTIFIER



### 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@T<sub>A</sub>=25°C unless otherwise specified

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	-	600	V
Average Rectified Forward Current in DC	I <sub>F(AV)</sub>	T <sub>c</sub> =83°C	30	A
Peak One Cycle Non-Repetitive Surge Current	I <sub>FSM</sub>	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 +175	°C
Storage Temperature	T <sub>stg</sub>	-	-55 to +175	°C
Typical Thermal Resistance Junction to Case	R <sub>θJC</sub>	DC operation	2.08	°C/W
Approximate Weight	wt	-	1.6	g
Case Style	ITO-220AC-2L			

**Ratings and Characteristics Curves**

Figure 1  
Typical Forward Characteristics

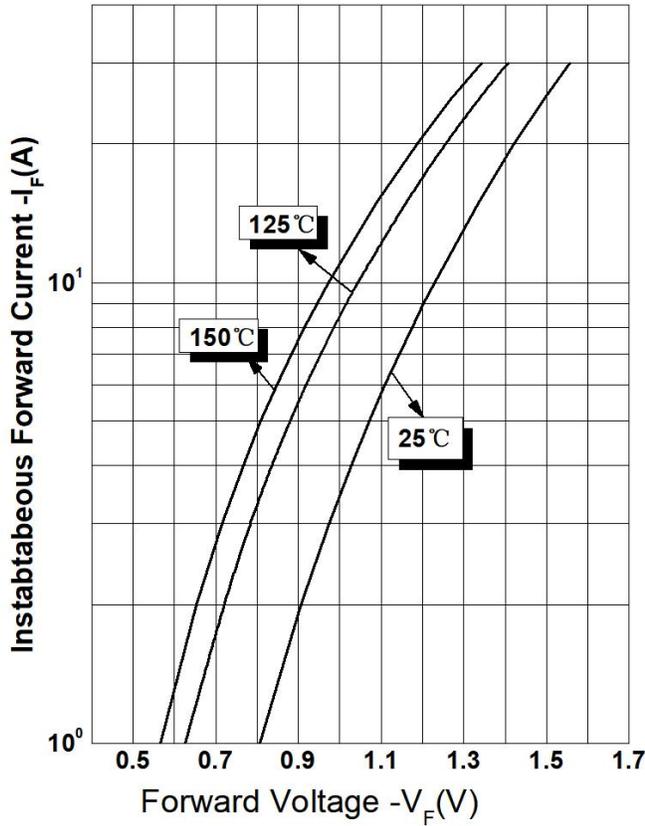


Figure 2  
Typical Reverse Characteristics

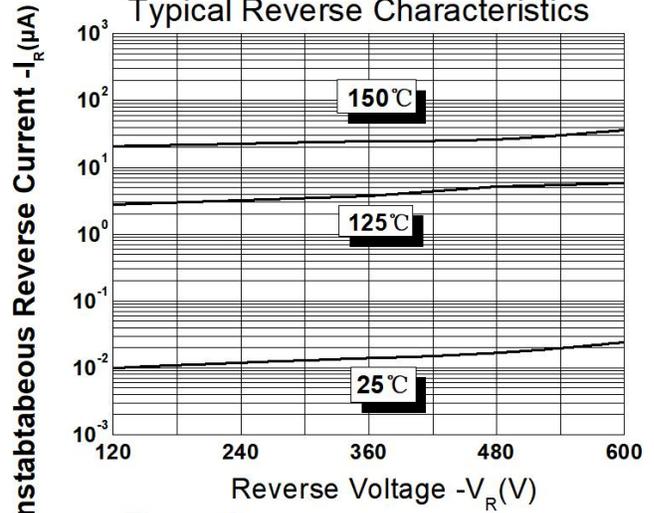
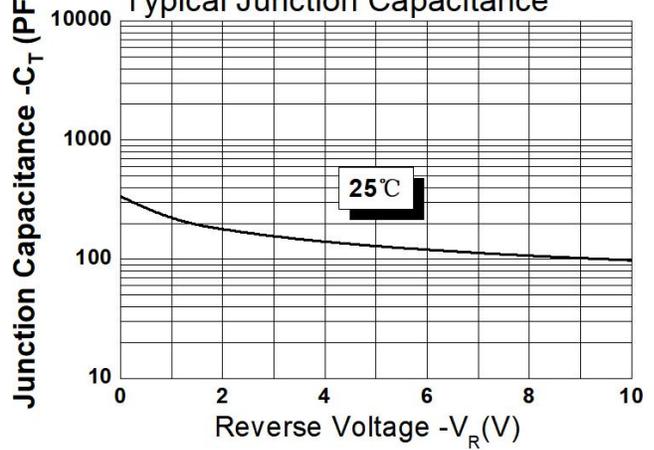
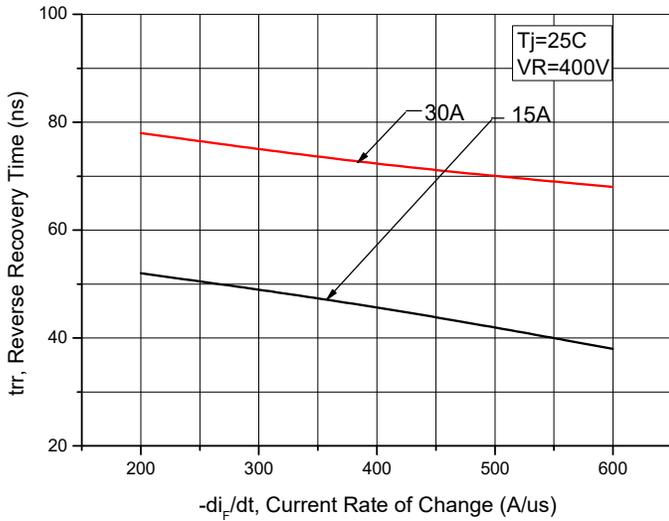
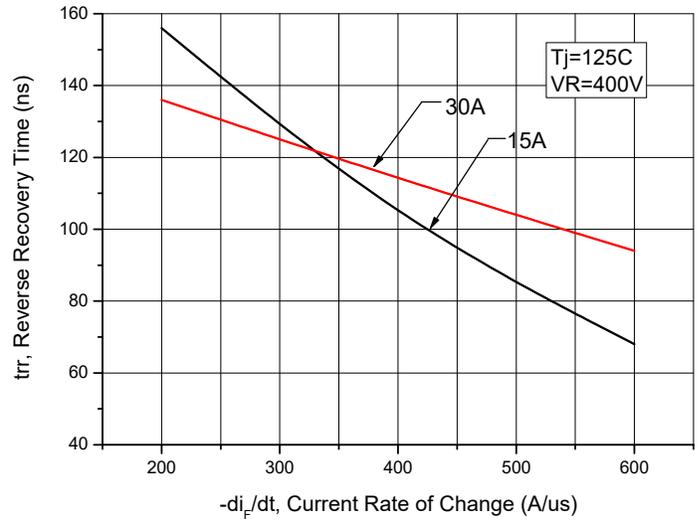


Figure 3  
Typical Junction Capacitance

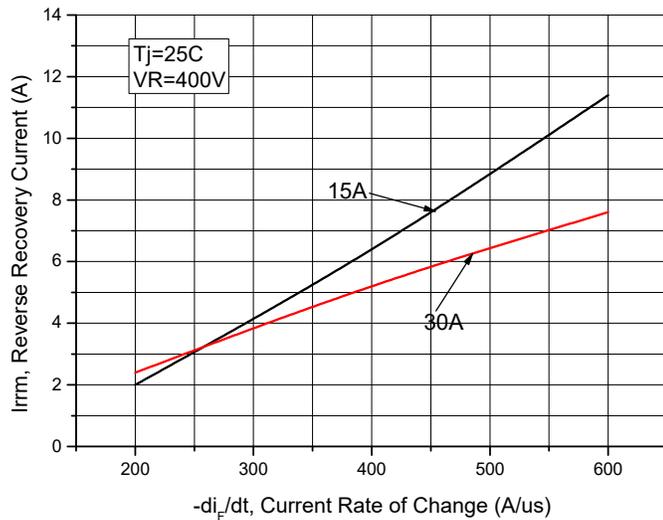




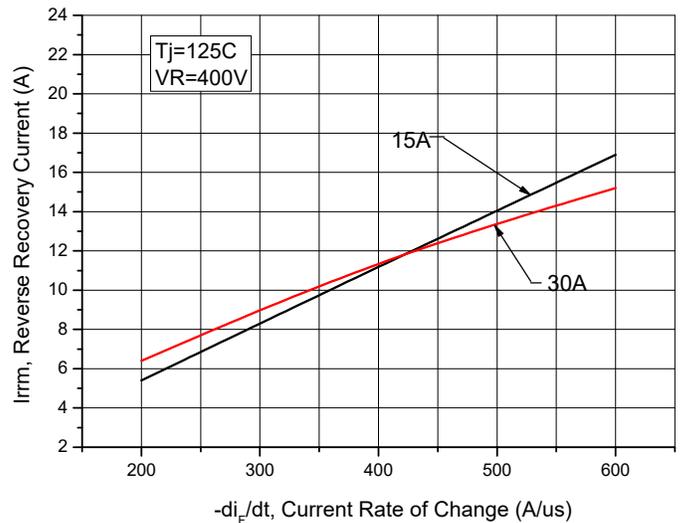
**Figure 4. Reverse Recovery Time vs. Current Rate of Change**



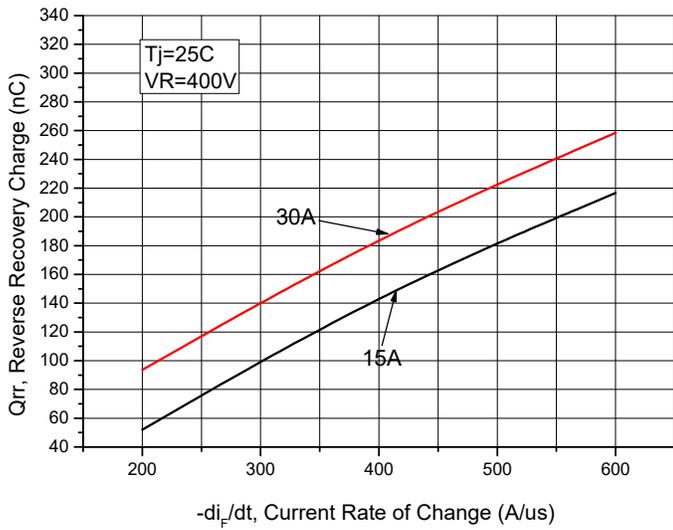
**Figure 5. Reverse Recovery Time vs. Current Rate of Change**



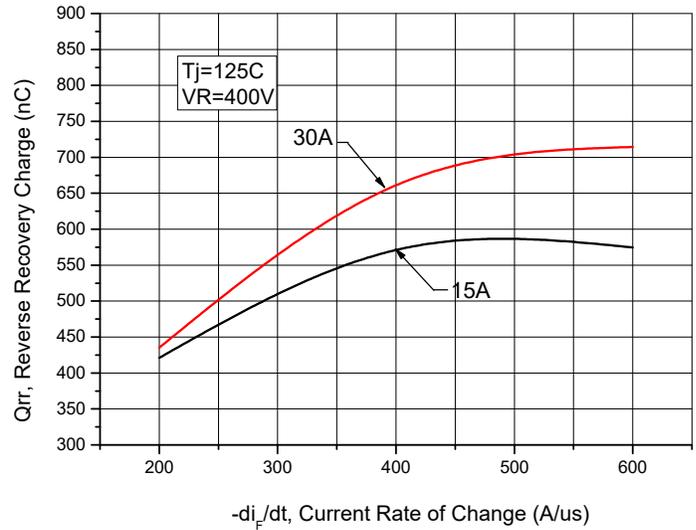
**Figure 6. Reverse Recovery Current vs. Current Rate of Change**



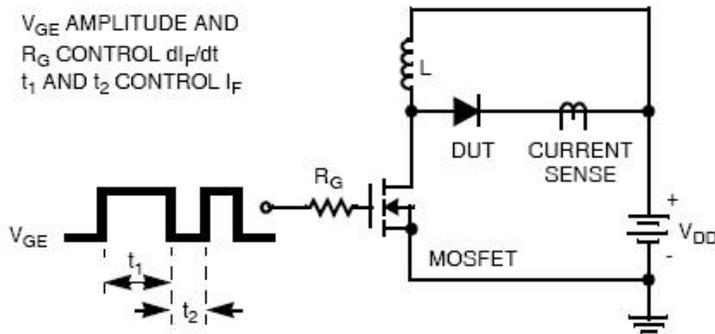
**Figure 7. Reverse Recovery Current vs. Current Rate of Change**



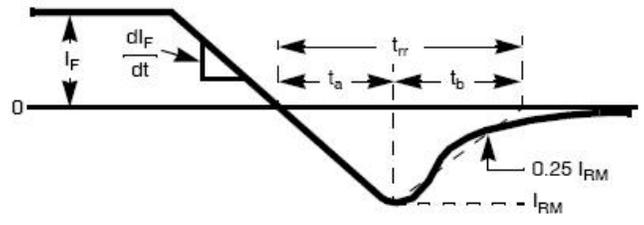
**Figure 8. Reverse Recovery Charge vs. Current Rate of Change**



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



**Figure 10. Diode Test Circuit**



**Figure 11. Diode Reverse Recovery Waveform**

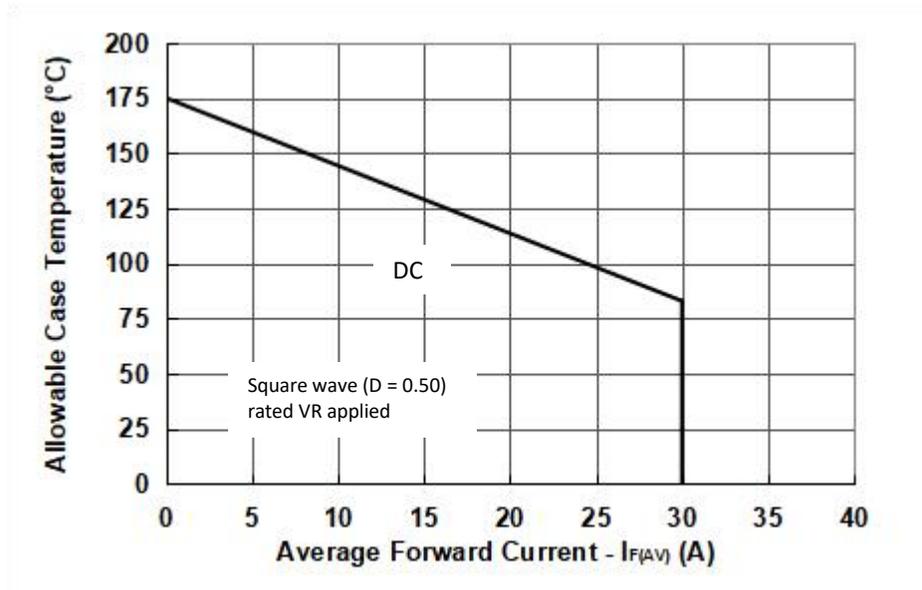


Figure 12 Maximum Allowable Case Temperature vs. Average Forward Current

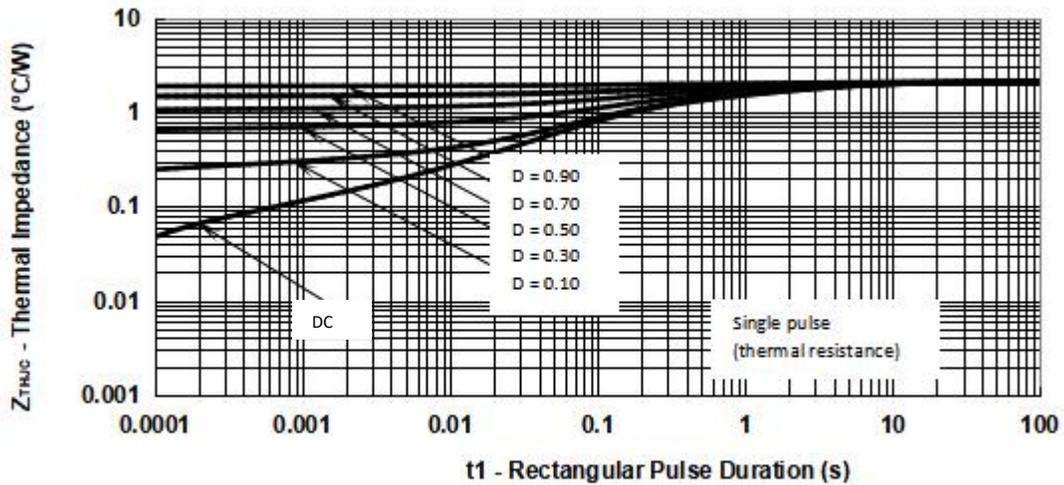
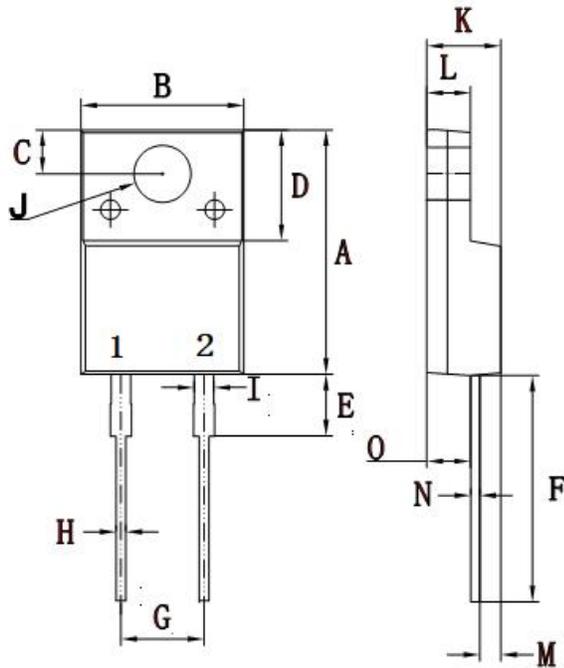


Figure 13 Typical Thermal Impedance ZthJC Characteristics

**Mechanical Dimensions ITO-220AC-2L**

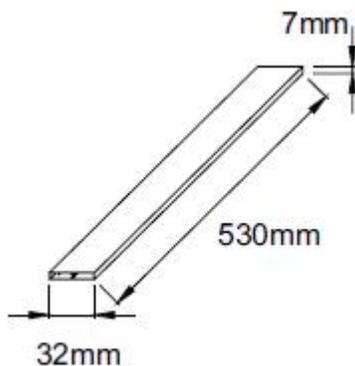


SYMBOL	Millimeters		
	MIN.	TYP.	MAX.
A	14.50	15.30	16.00
B	9.50	10.00	10.50
C	2.50	3.00	3.5
D	6.30	6.80	7.30
E	3.10	3.70	4.30
F	13.00	13.5	14.00
G	4.90	5.10	5.30
H	0.30	0.60	0.90
I	0.90	1.2	1.50
J	3.20	3.50	3.80
K	4.24	4.54	4.84
L	2.30	2.61	2.92
M	1.09	1.29	1.49
N	0.42	0.53	0.63
O	2.55	2.75	2.95

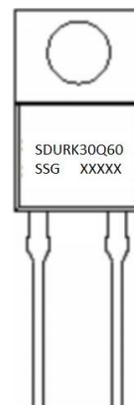
**Ordering Information:**

Device	Package	Shipping
SDURK30Q60	ITO-220AC-2L (Pb-Free)	50 pcs/ tube

**Tube Specification**



**Marking Diagram**



Where XXXXX is YYWWL

- SDUR = Device Type
- K = 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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