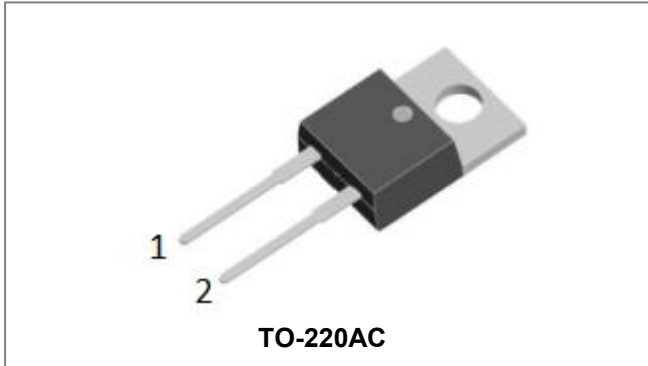


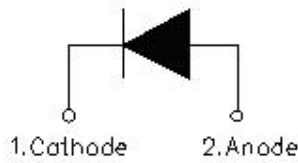
## SDUR30Q65 ULTRAFAST RECTIFIER



### 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 (limiting values, $T_c = 25^\circ\text{C}$ unless otherwise specified)

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	-	650	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:**

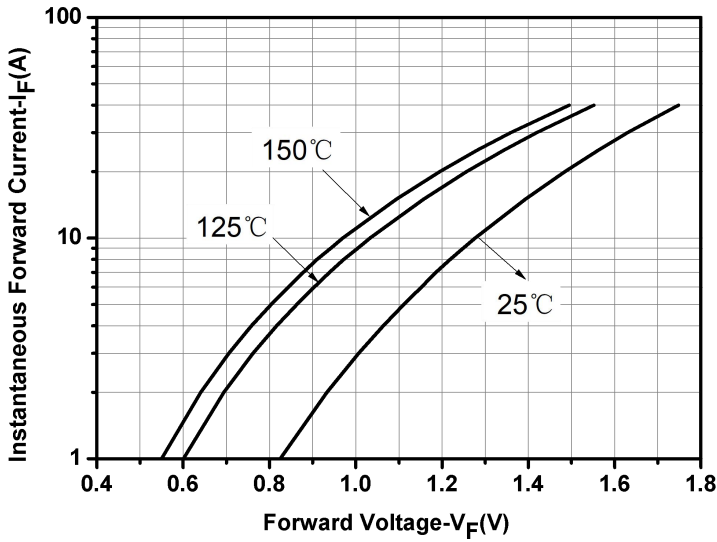
Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V <sub>F1</sub>	@ 30A, Pulse, T <sub>J</sub> = 25°C	1.63	1.80	V
	V <sub>F2</sub>	@ 30A, Pulse, T <sub>J</sub> = 125°C	1.4	1.60	V
Reverse Current*	I <sub>R1</sub>	@V <sub>R</sub> = rated V <sub>R</sub> , T <sub>J</sub> = 25°C	0.02	15	uA
	I <sub>R2</sub>	@V <sub>R</sub> = rated V <sub>R</sub> , T <sub>J</sub> = 125°C	16	250	uA
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 500mA, I <sub>R</sub> = 1A, and I <sub>rm</sub> = 250mA, T <sub>J</sub> = 25°C	33	40	ns
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>		27	-	nC
Reverse Recovery Current	I <sub>RRM</sub>		1.8	-	A
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 30A, diF/dt = 200A/μs, V <sub>R</sub> = 600V, T <sub>J</sub> = 25°C	68	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		136	-	nC
Reverse Recovery Current	I <sub>RRM</sub>		4	-	A
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 30A, diF/dt = 200A/μs, V <sub>R</sub> = 600V, T <sub>J</sub> = 125°C	180	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		792	-	nC
Reverse Recovery Current	I <sub>RRM</sub>		9	-	A

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

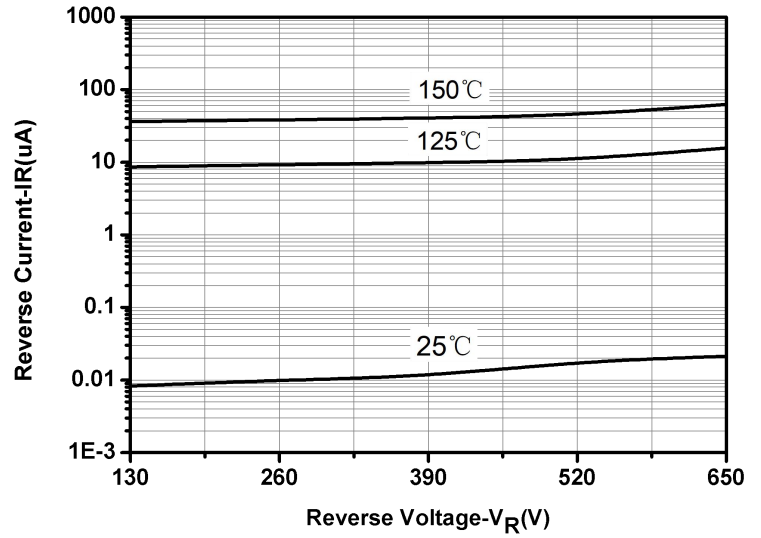
**Thermal-Mechanical Specifications:**

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	0.9	°C/W
Approximate Weight	wt	-	1.6	g
Case Style	TO-220AC			

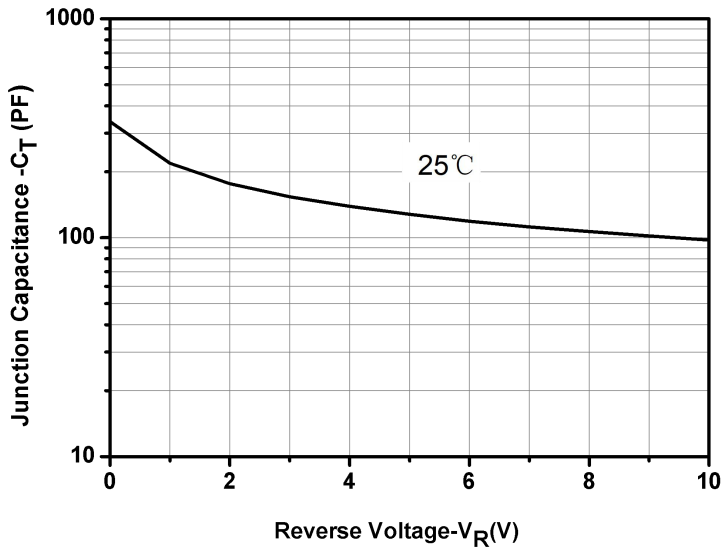
**Ratings and Characteristics Curves**



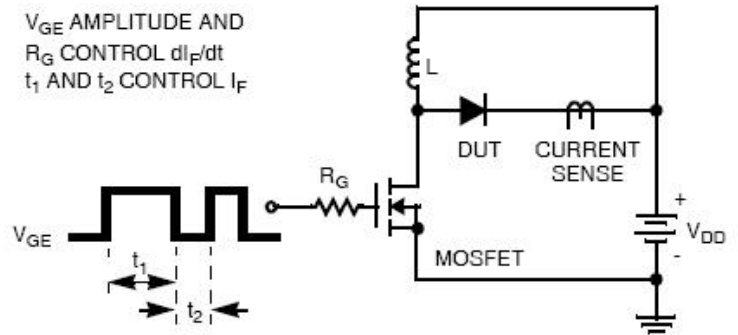
**Fig.1-Typical Forward Voltage Characteristics**



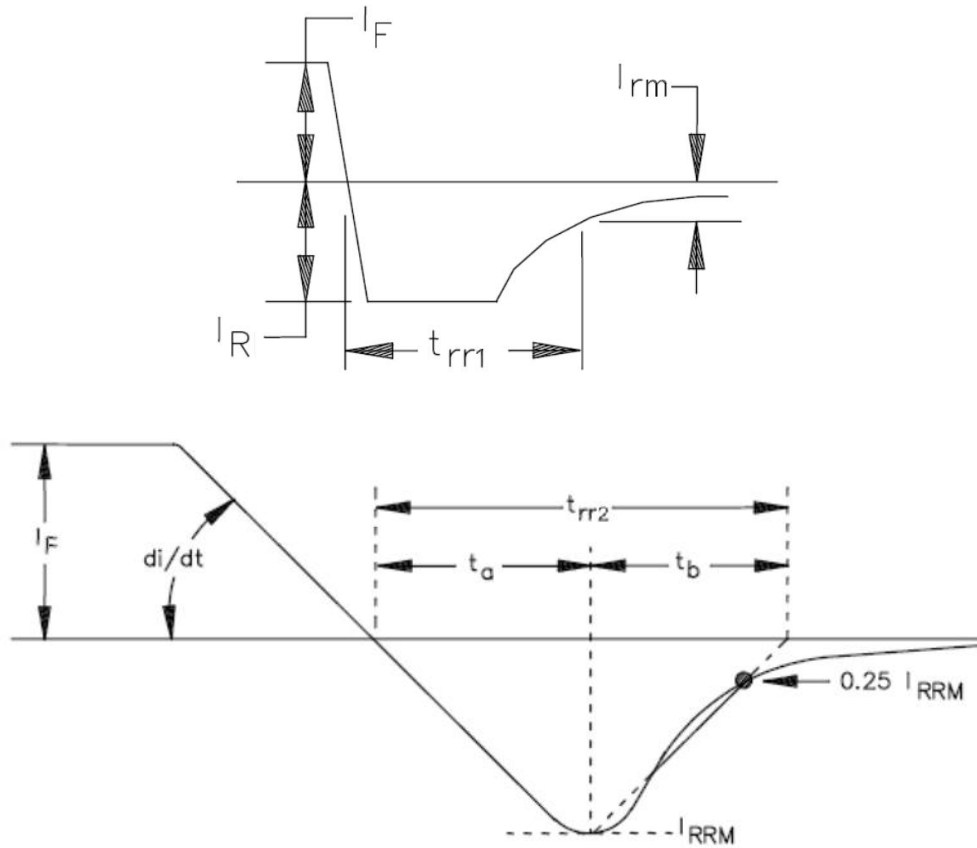
**Fig.2-Typical Reverse Characteristics**



**Fig.3-Capacitance vs. Reverse Voltage**



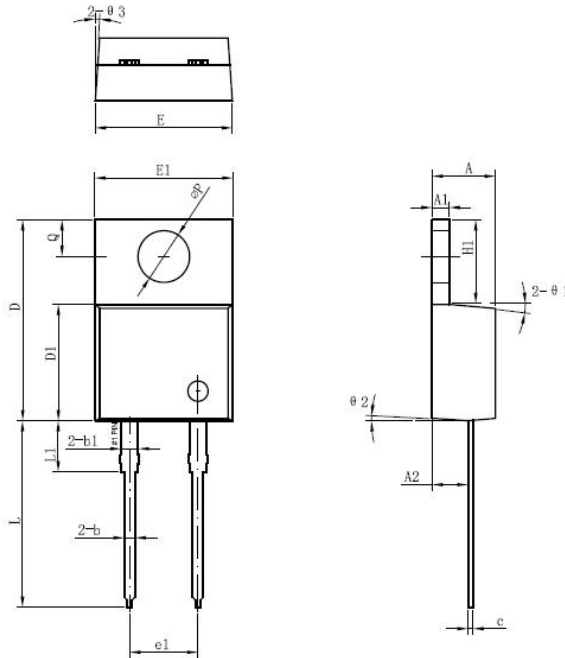
**Fig.4-Diode Test Circuit**



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

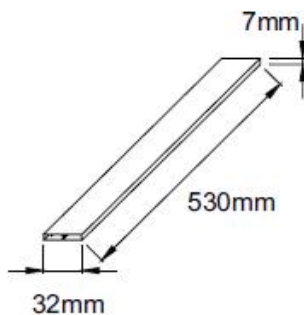
**Fig.5-Reverse Recovery Waveform**

**Mechanical Dimensions TO-220AC**



Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	3.56	-	4.83
A1	0.51	-	1.4
A2	2.03	-	2.92
b	0.38	-	1.02
b1	1.14	-	1.78
c	0.31	-	0.61
D	14.22	-	16.51
D1	8.38	-	9.42
E1	9.65	10.16	10.67
e1	-	5.08	-
H1	5.84	-	6.86
L	12.7	-	14.73
L1	-	-	6.35
ΦP	-	3.56	-
Q	2.54	-	3.43

**Tube Specification**



**Marking Diagram**



Where XXXXX is YYWWL

SDUR = Device Type  
30 = Forward Current (30A)  
Q = Q  
65 = Reverse Voltage (650V)  
SSG = SSG  
YY = Year  
WW = Week  
L = Lot Number

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

**Ordering Information:**

Device	Package	Shipping
SDUR30Q65	TO-220AC(Pb-Free)	50pcs / tube

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