

SCA1N5807 \* SCA1N5809 \* SCA1N5811

## RECTIFIERS

High Power / Ultra Fast Recovery  
Radiation Hardness Assured

### DESCRIPTION

This “high reliability ultra fast recovery” rectifier diode family is superior in leakage current and suitable for numerous applications in space and military area. Constructed in glass packages using an internal category-I metallurgical bond tested per MIL-PRF-19500, these rectifiers offer the working peak reverse voltage from 50 to 150V with 6.0A maximum current rating and ultra fast switching characteristics. These devices are also available in SMT packages and bare dies to meet the most stringent applications .

### FEATURES

- Superior construction with tungsten slugs
- Category-I metallurgical bonds
- Hermetical sealed glass package
- Low forward voltage drop
- Highly stable reverse breakdown characteristics
- Fast switching with no snap-off
- High forward surge capability
- Also provided in various surface mount type packages and bare die
- Radiation hard version is available

### APPLICATIONS

- Space, military and other high-reliability applications
- Ultra fast switching power supplies requiring low forward voltage drop

### PACKAGING

- Axial lead
- SMT (US)
- SMT (Other)
- Bare die for HYBRID manufacturers

Electrical Characteristics	Operation Conditions	min	typ	max	unit	symbol
Reverse current	Rated $V_{RWM}$ , $T_A=+25^{\circ}C$	-	TBD	5	$\mu A$	IR1
	Rated $V_{RWM}$ , $T_A=+125^{\circ}C$	-	TBD	525	$\mu A$	IR2
Forward voltage drop	$I_F=3A$ , $T_A=+25^{\circ}C$	-	TBD	0.865	V	VF3
	$I_F=4A$ , $T_A=+25^{\circ}C$	-	TBD	0.875	V	VF4
	$I_F=6A$ , $T_A=+25^{\circ}C$	-	TBD	0.925	V	VF5
	$I_F=4A$ , $T_A=+125^{\circ}C$	-	TBD	0.800	V	VF7
	$I_F=4A$ , $T_A=-65^{\circ}C$	-	TBD	1.075	V	VF9
Breakdown voltage						
SCA1N5807	$I_{BR}=100\mu A$ , $T_A=+25^{\circ}C$	60	TBD	-	V	VBR1
SCA1N5809	$I_{BR}=100\mu A$ , $T_A=+25^{\circ}C$	110	TBD	-	V	
SCA1N5811	$I_{BR}=100\mu A$ , $T_A=+25^{\circ}C$	160	TBD	-	V	
SCA1N5807	$I_{BR}=100\mu A$ , $T_A=-65^{\circ}C$	50	TBD	-	V	VBR2
SCA1N5809	$I_{BR}=100\mu A$ , $T_A=-65^{\circ}C$	100	TBD	-	V	
SCA1N5811	$I_{BR}=100\mu A$ , $T_A=-65^{\circ}C$	150	TBD	-	V	
Junction capacitance	$V_{BR}=10V$ , $f=1MHz$	-	TBD	60	pF	Cj
<b>Switching Characteristics</b>						
Reverse recovery time	$I_F=I_{RM}=1A$ , $I_{REC}=0.1A$		TBD	30	nsec	Trr
Forward recovery voltage	$T_r=8ns$ , $I_F=500mA$		TBD	2.2	V	V(peak)
Forward recovery time	$T_r=8ns$ , $I_F=500mA$		TBD	15	nsec	Tfr

MAX RATINGS	Working peak reverse voltage	Average forward current	Average forward current	Forward current surge peak	Reverse recovery time	Thermal resistance: junction to lead	Thermal resistance: junction to end-cap	Thermal resistance (θ)
	V <sub>RWM</sub>	I <sub>o(L)</sub>	I <sub>o1</sub>	I <sub>FSM</sub>	t <sub>rr</sub>	R <sub>θJL</sub>	R <sub>θJEC</sub>	R <sub>θJX</sub>
		T <sub>L</sub> =+75°C L = 0.375 in. (1) (2).	T <sub>A</sub> =+55°C (3) (4).	T <sub>A</sub> = +25°C operating at I <sub>o1</sub> tp = 8.3ms		at L=0.375 in.	(5).	(3).
	V	A	A	A(pk)	ns	°C/W	°C/W	°C/W
SCA1N5807	50.0	6.0	3.0	125.0	30.0	22.0	3.5	52.0
SCA1N5809	100.0	6.0	3.0	125.0	30.0	22.0	3.5	52.0
SCA1N5811	150.0	6.0	3.0	125.0	30.0	22.0	3.5	52.0

- (1). T<sub>EC</sub> = T<sub>L</sub> at L = 0 or T<sub>end tab</sub> for **US** devices
- (2). Derate at 60mA/°C for T<sub>L</sub> above +75°C for 6.0A ratings.
- (3). For the 3.0A ratings at 55°C, these I<sub>o</sub> ratings are for thermally (PC boards or other) mounting methods where the thermal resistance from mounting point to ambient is still sufficiently controlled where T<sub>J(MAX)</sub> does not exceed 175°C
- (4). Derate at 25mA/°C for T<sub>A</sub> above +55°C for 3.0A ratings.
- (5). US device only

**PACKAGING SPECIFICATIONS**

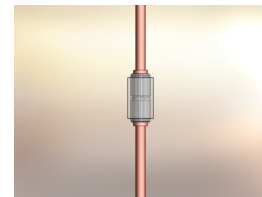
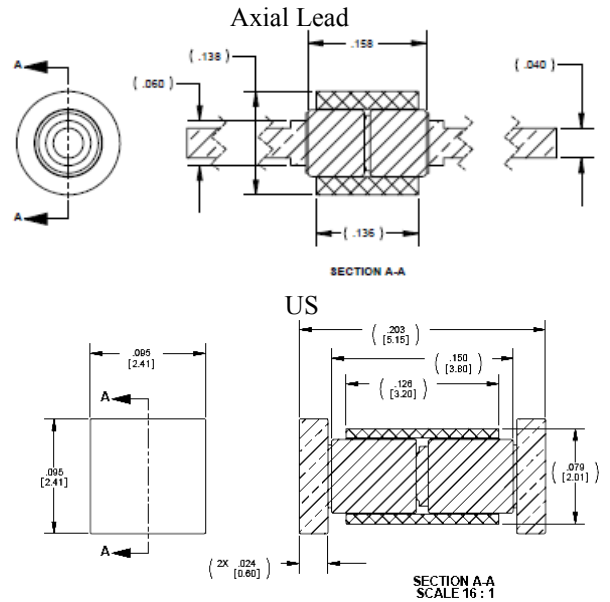
PKG TYPE	Axial Lead			
	Min	Typ	Max	
BD	0.115	TBD	0.142	inches
BL	0.130	TBD	0.250	inches
LD	0.036	TBD	0.042	inches
LL	0.900	TBD	1.300	inches

PKG TYPE	US			
	Min	Typ	Max	
BD	0.137	TBD	0.148	inches
BL	0.200	TBD	0.225	inches
ECT	0.019	TBD	0.028	inches
S	0.003	TBD		inches

PKG TYPE	MELF (TBD)			
	Min	Typ	Max	
TBD	TBD	TBD	TBD	inches
TBD	TBD	TBD	TBD	inches
TBD	TBD	TBD	TBD	inches
TBD	TBD	TBD	TBD	inches

PKG TYPE	Die Square				
	Min	Typ	Max		Note
A	0.068	TBD	0.072	inches	
B	0.057	TBD	0.061	inches	
C	0.008	TBD	0.012	inches	
Top Metal	38.000	TBD	-	kA	Anode - Al
Back Metal	3.500	TBD	-	kA	Cathode - Au

**1N5811 Packaging**



Disclaimer: The information and specs on this data sheet is for preliminary use and actual specs may be changed at any time without notice and final specs will be determined at time of order.