

RS501 THRU RS507

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RS501 THRU RS507

5.0A Single-Phase Silicon Bridge Rectifiers- 50-1000V

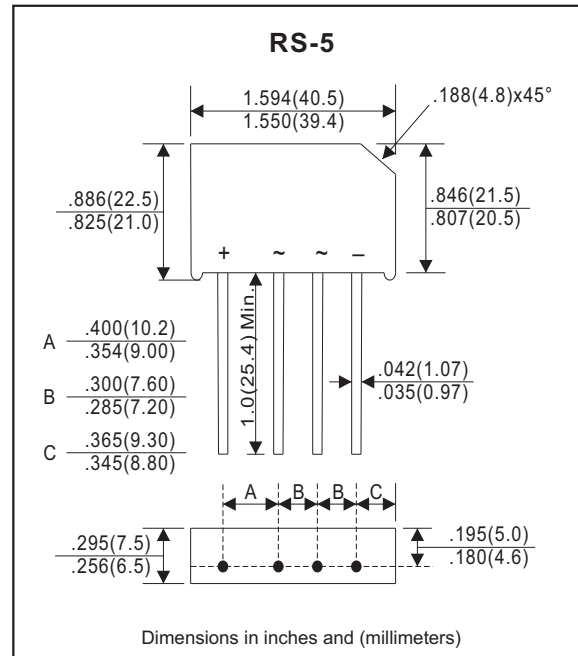
Features

- Surge overload ratings to 250 amperes peak
- Ideal for printed circuit board
- Reliable low cost construction technique
- High case dielectric strength
- Low forward drop voltage & leakage current
- Lead-free parts for green partner, meet RoHS requirements
- UL recognized file # E321971.
- Suffix "-H" indicates Halogen free parts, ex. RS501-H.

Mechanical data

- Case: Molded plastic RS-5 case
- Epoxy: UL94-V0 rated flame retardant
- Terminals: Solderable per MIL-STD-750 Method 2026
- Polarity: As marked
- Mounting Position: Any
- Weight: Approximated 0.37 ounces, 9.8 grams

Package outline



Maximum ratings and Electrical Characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Average forward rectified current	$T_A=45^{\circ}\text{C}$ on chassis=200 cm ² , See Fig.1	I_O			5.0	A
Non-repetitive peak forward surge current	8.3ms single half sine-wave superimposed on rate load $T_J=25^{\circ}\text{C}$ $T_J=150^{\circ}\text{C}$	I_{FSM}			250 200	A
Repetitive peak forward surge current		A_{PK}			30	A
Reverse current	$V_R = V_{RRM}$ $T_J = 25^{\circ}\text{C}$	I_R			5.0	uA
	$V_R = V_{RRM}$ $T_J = 100^{\circ}\text{C}$				500	
I^2t Rating for fusing	$t < 8.3$ ms $T_J=25^{\circ}\text{C}$	I^2t			312	A ² s
	$t < 8.3$ ms $T_J=150^{\circ}\text{C}$				200	
Storage temperature		T_{STG}	-65		+175	$^{\circ}\text{C}$

SYMBOLS	V_{RRM}^{*1} (V)	V_{RMS}^{*2} (V)	V_R^{*3} (V)	V_F^{*4} (V)	Operating temperature T_J , ($^{\circ}\text{C}$)
RS501	50	35	50	1.0	-55 to +125
RS502	100	70	100		
RS503	200	140	200		
RS504	400	280	400		
RS505	600	420	600		
RS506	800	560	800		
RS507	1000	700	1000		

*1 Repetitive peak reverse voltage

*2 RMS voltage

*3 Continuous reverse voltage

*4 Maximum forward voltage @ $I_F=5.0\text{A}$

Rating and characteristic curves (RS501 THRU RS507)

Fig. 1 - Forward Current Derating Curve

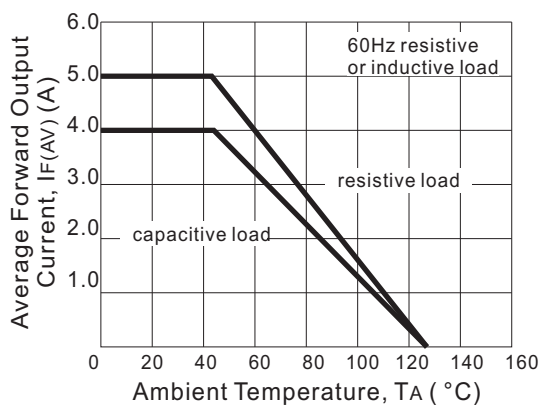


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

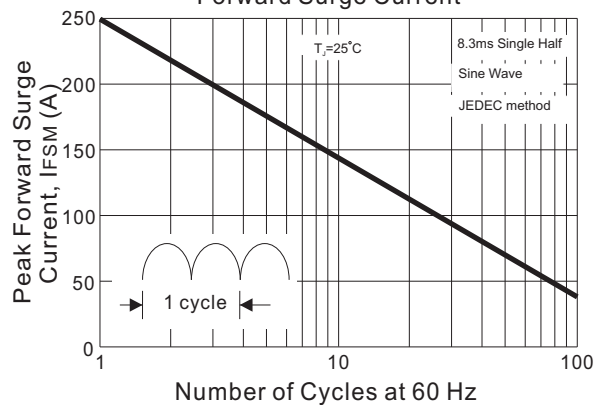


Fig. 3 - Typical Instantaneous Forward Characteristics (Per Leg)

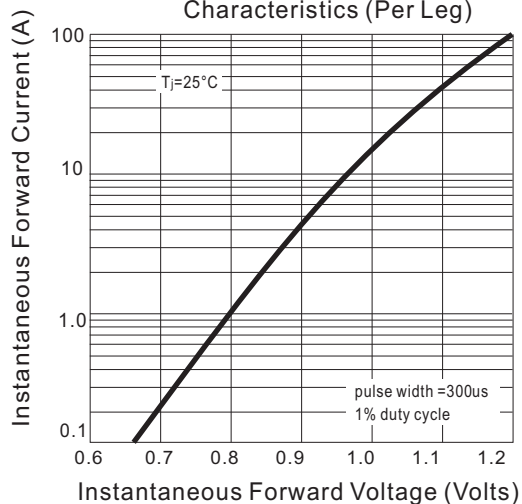


Fig. 4 - Typical Reverse Characteristics Per Leg

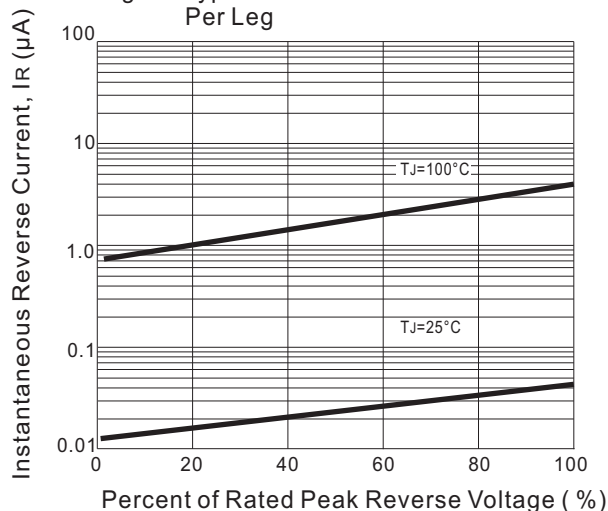
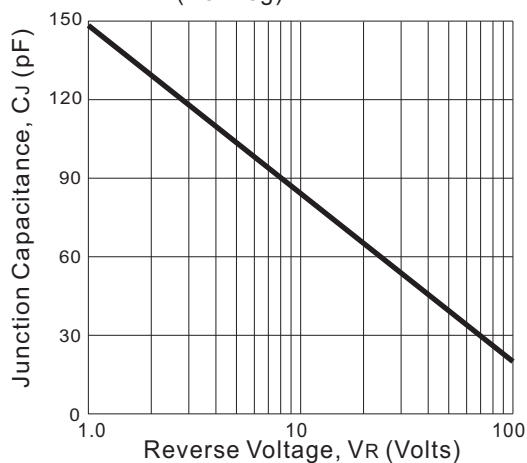
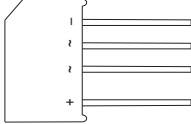
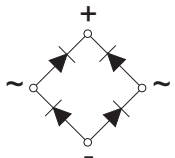


Fig. 5 - Typical Junction Capacitance (Per Leg)



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Pinning information

Simplified outline	Symbol
	

Marking

Type number	Marking code
RS501	RS501
RS502	RS502
RS503	RS503
RS504	RS504
RS505	RS505
RS506	RS506
RS507	RS507

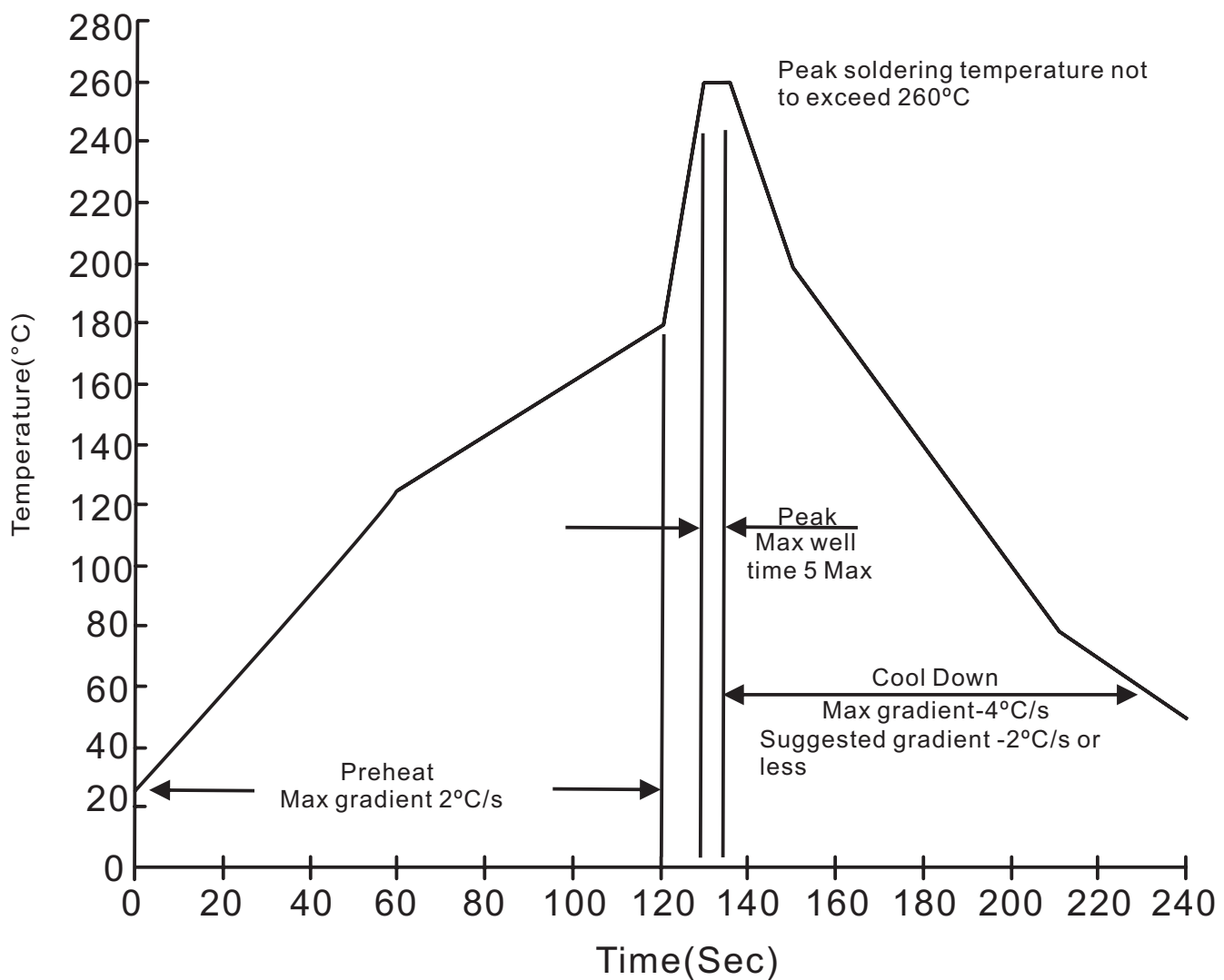
Bulk packing

PACKAGE	BOX (pcs)	INNER BOX (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
RS-5	200	230*230*54	490*240*310	2,000	23.0

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Suggested thermal profiles for soldering processes

1. Lead free temperature profile wave-soldering



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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^{\circ}\text{C}$ for 10 ± 2 sec. immerse body into solder $1/16" \pm 1/32"$	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R = 80\%$ rate at $T_J = 125^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at $T_A = 25^{\circ}\text{C}$ for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	$T_A = 25^{\circ}\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	$15P_{SIG}$ at $T_A = 121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Thermal Shock	0°C for 5 min. rise to 100°C for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1056
9. Forward Surge	8.3ms single half sine-wave superimposed on rated load, one surge.	MIL-STD-750D METHOD-4066-2
10. Humidity	at $T_A = 85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
11. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031