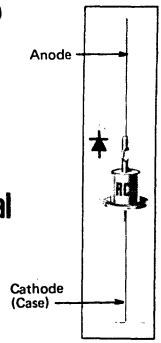
RCA
Solid State
Division

Rectifiers

1N2858A 1N2859A 1N2860A 1N2861A 1N2862A 1N2863A 1N2864A

DIFFUSED-JUNCTION SILICON RECTIFIERS

Flanged-Case Axial-Lead Types For General-Purpose Applications In Industrial And Commercial Electronic Equipment



H-967
JEDEC DO-1

RCA-1N2858A, 1N2859A, 1N2860A, 1N2861A, 1N2862A, 1N2863A, and 1N2864A are hermetically sealed silicon rectifiers of the diffused-junction type, designed for use in a variety of applications in industrial and commercial electronic equipment.

RCA-1N2858A through 1N2864A supersede and are unilaterally interchangeable with RCA-1N2858 through 1N2864, respectively. The new rectifiers incorporate all of the superior performance and reliability features which have gained industry acceptance for their RCA prototypes, and, in addition, offer substantially higher dc output-current capabilities, lower reverse (leakage) currents, and a wider operating-temperature range.

All seven of these new rectifier types have maximum dc-forward-current ratings of 1 ampere for resistive or inductive loads and 0.75 ampere for capacitive loads at free-air temperatures up to 75°C (natural convection cooling). They are also capable of providing dc output currents of up to 2 amperes with capacitive loads when attached to simple heat sinks.

RCA-1N2858A through 1N2864A differ only in peak-reverse-voltage ratings (see Maximum Ratings chart). They are rated for operation at free-air temperatures from -65° to +135°C, and utilize the JEDEC DO-1 flange-type, axial-lead rectifier package which provides flexibility of installation in both hand-wired and printed-circuit equipment designs.

These new rectifiers, like their RCA prototypes, are conservatively rated, and incorporate the following design features and special tests which contribute to their outstanding performance and reliability: (1) junctions of extremely high uniformity produced by a special, precisely controlled diffusion process, (2) rugged internal mount structure, (3) hermetically sealed cases, (4) prolonged treatment at high temperatures to stabilize characteristics, (5) pressure tests of seals for protection against moisture and contamination, (6) tests for forward and reverse characteristics at 25°C, and (7) high-temperature dynamic tests under full-load conditions.

Features:

- high dc-output-current capability:
  - 1 ampere - resistive or inductive load; 3/4 ampere - capacitive load } to 75°C with natural convection cooling
  - up to 2 amperes - capacitive load } to 105°C with simple heat sinks
- low dynamic reverse current:
  - 0.1 ma max. at 50°C
  - 0.3 ma max. at 75°C
- low dc forward voltage drop:
  - 1.2 volts max. at 25°C with 1 ampere dc forward current
- wide operating-temperature range:
  - -65° to +135°C
- hermetically sealed JEDEC DO-1 package
- unilaterally interchangeable with Types 1N2858 through 1N2864
- specially processed and tested for high reliability and stability of characteristics

RECTIFIER SERVICE

Absolute-Maximum Ratings, *for a Supply Frequency of 60 cps:*

	1N2858A	1N2859A	1N2860A	1N2861A	1N2862A	1N2863A	1N2864A	
PEAK REVERSE VOLTAGE	50	100	200	300	400	500	600	max. volts
RMS SUPPLY VOLTAGE:								
For resistive or inductive loads	35	70	140	210	280	350	420	max. volts
For capacitive loads	17	35	70	105	140	175	210	max. volts
DC REVERSE (BLOCKING) VOLTAGE	50	100	200	300	400	500	600	max. volts
FORWARD CURRENT:								
For resistive or inductive loads:								
AVERAGE (DC): At T_{FA} up to 75°C	1	1	1	1	1	1	1	max. amp
AVERAGE (DC): At T_{FA} above 75°C	See *Fig.1*							
For capacitive loads:								
AVERAGE (DC): At T_{FA} up to 75°C	0.75	0.75	0.75	0.75	0.75	0.75	0.75	max. amp
AVERAGE (DC): At T_{FA} above 75°C	See *Fig.1*							
PEAK RECURRENT: At T_{FA} up to 75°C	5	5	5	5	5	5	5	max. amp
PEAK RECURRENT: At T_{FA} above 75°C	See *Fig.1*							
SURGE, for "turn-on" transient of 2 milliseconds duration:								
At T_{FA} up to 75°C	35	35	35	35	35	35	35	max. amp
At T_{FA} above 75°C	See *Fig.1*							
SURGE, repetitive, at T_{FA} = 25°C:								
For one cycle of supply voltage	40	40	40	40	40	40	40	max. amp
For more than one cycle of supply voltage	See *Fig.2*							
TEMPERATURE RANGE (FREE-AIR)								
Operating	-65 to +135							°C
Storage	-65 to +150							°C

Characteristics:

	1N2858A	1N2859A	1N2860A	1N2861A	1N2862A	1N2863A	1N2864A	
Maximum Forward Voltage Drop (DC) at I_F = 1 Ampere, T_{FA} = 25°C	1.2	1.2	1.2	1.2	1.2	1.2	1.2	volts
Maximum Dynamic Reverse Current (Averaged over 1 Complete Cycle of Supply Voltage): at Maximum Rated PRV:								
T_{FA} = 50°C	0.1	0.1	0.1	0.1	0.1	0.1	0.1	ma
T_{FA} = 75°C	0.3	0.3	0.3	0.3	0.3	0.3	0.3	ma

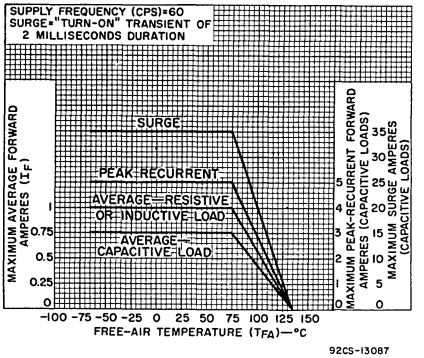


Fig. 1 - Rating Chart for RCA-1N2858A through 1N2864A.

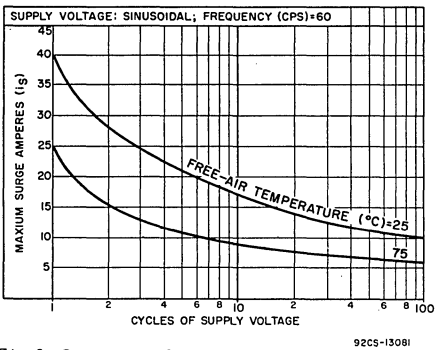


Fig. 2 - Repetitive Surge Current Rating Chart for RCA-1N2858A through 1N2864A.

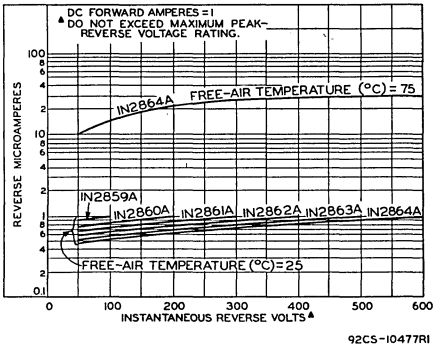


Fig. 3 - Typical Dynamic Reverse Characteristics for RCA-1N2858A through 1N2864A.

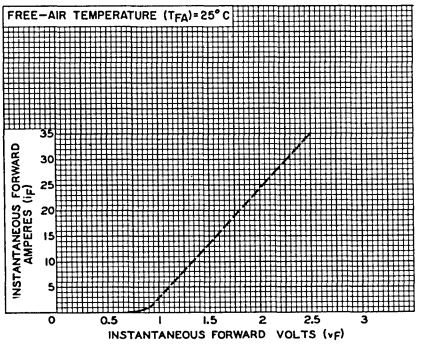


Fig. 4 - Typical Forward Voltage and Current Characteristic for RCA-1N2858A through 1N2864A.

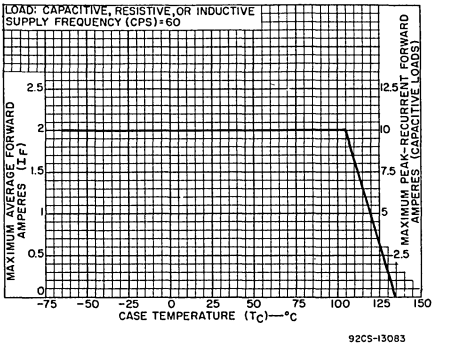
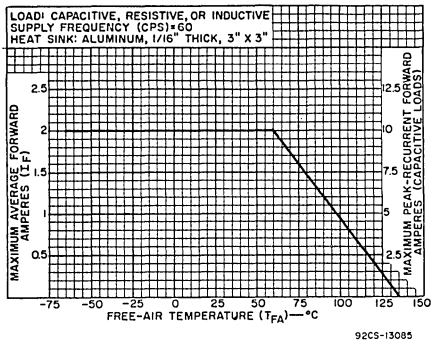
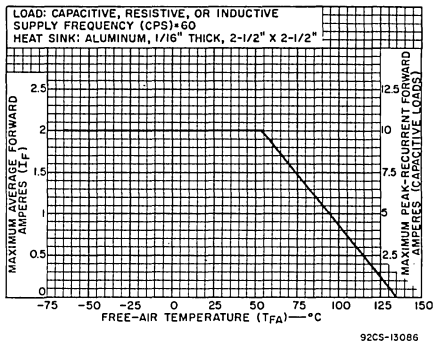


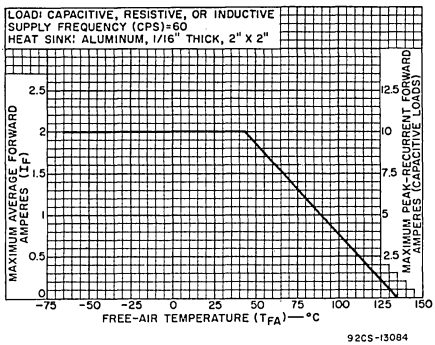
Fig. 5 - Forward-Current Capabilities of RCA-1N2858A through 1N2864A for Operation with Heat Sink at Case Temperatures from -65°C to +135°C.



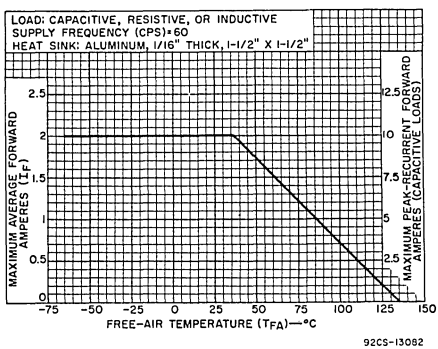
a) 3" x 3" Heat Sink.



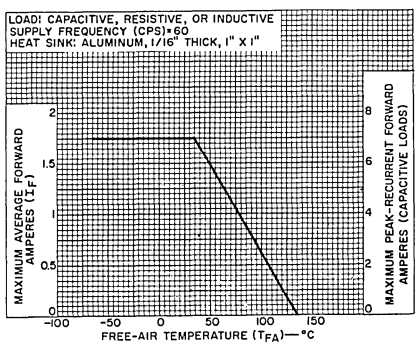
b) 2-1/2" x 2-1/2" Heat Sink.



c) 2" x 2" Heat Sink.



d) 1-1/2" x 1-1/2" Heat Sink.



e) 1" x 1" Heat Sink.

Figs.6a, 6b, 6c, 6d, and 6e - Forward-Current Capabilities of RCA-1N2858A through 1N2864A for Operation with Heat Sinks.