Ultra High Speed Rectifiers
RUR-D810 RUR-D815 RUR-D820

Dual 8-A, High-Speed, High Efficiency Epitaxial Silicon Rectifiers

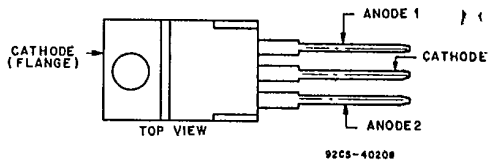
Features:

- *Ultra fast recovery time [<35 ns]*
- *Low forward voltage*
- *Low thermal resistance*
- *Planar design*
- *Wire-bonded construction*

Applications:

- *General Purpose*
- *Power switching circuits to 100 kHz*
- *Full-wave rectification*

TERMINAL DESIGNATION



JEDEC TO-220AB

The RCA RUR-D810, RUR-D815, and RUR-D820* are low forward voltage drop ultra fast-recovery rectifiers (trr <35 ns). They use a glass passivated ion-implanted epitaxial construction.

These devices are intended for use as output rectifiers and fly wheel diodes in a variety of high-frequency pulse-width modulated and switching regulators. Their low stored charge and attendant fast reverse recovery behavior minimize electrical noise generation and in many circuits markedly reduce the turn-on dissipation of the associated power switching transistors.

All are supplied in TO-220AB plastic packages.

*Formerly RCA Dev. No. TA9224A, TA9224B, and TA9224C, respectively.

MAXIMUM RATINGS, *Absolute-Maximum Values, per Junction:*

	RUR-D810	RUR-D815	RUR-D820	
VRM	100	150	200	V
IF (Average)				
T_A = 25°C (No Heat Sink)		3		A
T_A = 25°C (With Heat Sink)[a]		8		A
T_C = 125°C		8		A
IFSM (surge)				
8.3ms, 1/2 cycle, non-repetitive		100		A
Tstg, T_J		-55 to 150		°C
T_L (Lead temperature during soldering)				
At distance > 1/8in. (3.17mm) from case for 10 S max.		260		°C

(a) Wakefield type 295 heat sink with convection cooling

RUR-D810, RUR-D815, RUR-D820

ELECTRICAL CHARACTERISTICS, per junction

CHARACTERISTICS	TEST CONDITIONS			LIMITS						UNITS
				RUR-D810		RUR-D815		RUR-D820		
	T_J °C	Voltage V_R V	Current I_F A	Min.	Max.	Min.	Max.	Min.	Max.	
I_R	25	100		—	5	—	—	—	—	μA
		150		—	—	—	5	—	—	
		200		—	—	—	—	—	5	
	100	100		—	400	—	—	—	—	
		150		—	—	—	400	—	—	
		200		—	—	—	—	—	400	
V_F	25		8	—	0.95	—	0.95	—	1	V
	100		8	—	0.89	—	0.89	—	0.94	
t_{rr}	25		8(a)	—	35	—	35	—	35	ns
$R_{\theta JC}$				—	2.25	—	2.25	—	2.25	°C/W
$R_{\theta JA}$				—	60	—	60	—	60	
C_J	25	10	0	40 Typ.		40 Typ.		40 Typ.		pF

(a) $di_F/dt > 40A/\mu s$, I_{RM} (rec) < 1A, $I_{RR} = 0.25A$

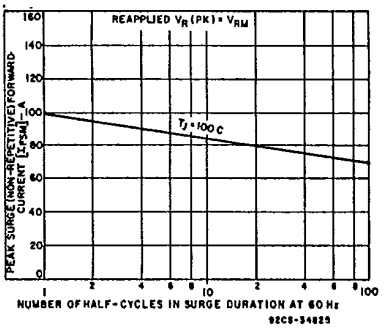


Fig. 1 — Peak surge foward current vs. surge duration.

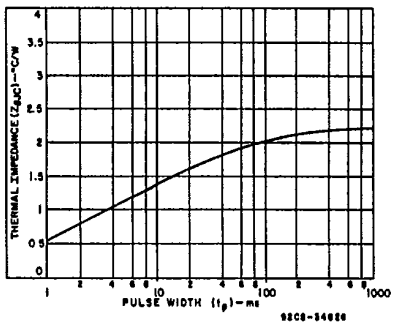


Fig. 2 - Thermal impedance vs. pulse width (per junction).

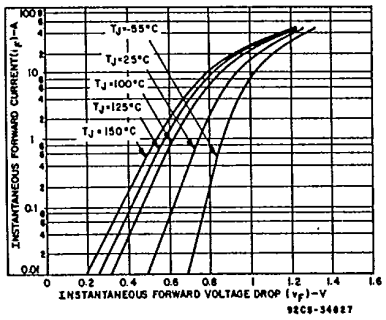


Fig. 3 — Typical forward current vs. forward-voltage drop.

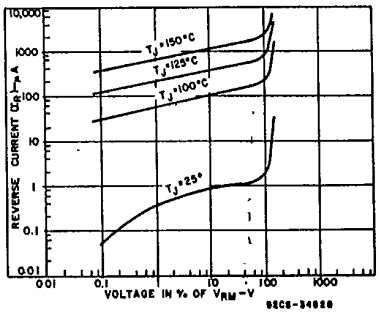


Fig. 4 — Typical reverse current vs. voltage.