

RUR-D810, RUR-D815, RUR-D820

File Number 1356

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

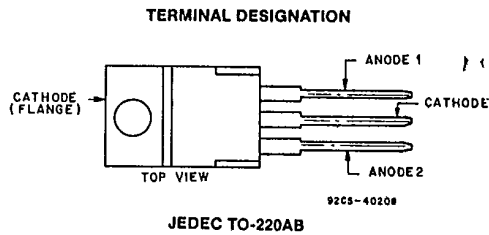
**Dual 8-A, High-Speed, High Efficiency
Epitaxial Silicon Rectifiers**

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



The RCA RUR-D810, RUR-D815, and RUR-D820* are low forward voltage drop ultra fast-recovery rectifiers ($t_{rr} < 35$ 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)				
$T_A = 25^\circ\text{C}$ (No Heat Sink)		3		A
$T_A = 25^\circ\text{C}$ (With Heat Sink)*		8		A
$T_C = 125^\circ\text{C}$		8		A
IFSM (surge)				
8.3ms, 1/2 cycle, non-repetitive		100		A
Tstg, T_J		-55 to 150		$^\circ\text{C}$
T_L (Lead temperature during soldering)				
At distance > 1/8in. (3.17mm) from case for 10 S max.		260		$^\circ\text{C}$

(a) Wakefield type 295 heat sink with convection cooling

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ELECTRICAL CHARACTERISTICS, per junction

CHARACTERISTICS	TEST CONDITIONS			LIMITS						UNITS
	T _J °C	Voltage V _R V	Current I _F A	RUR-D810		RUR-D815		RUR-D820		
				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 _{θJC}				—	2.25	—	2.25	—	2.25	°C/W
R _{θJA}				—	60	—	60	—	60	
C _J	25	10	0	40 Typ.		40 Typ.		40 Typ.		pF

(a) di_e/dt > 40A/μs, I_{RM} (rec) < 1A, I_{RR} = 0.25A

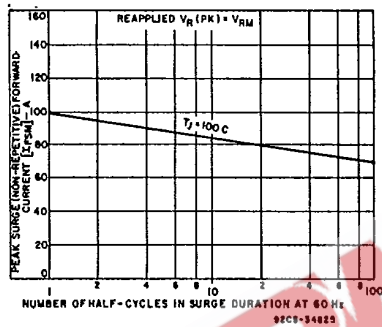


Fig. 1 — Peak surge forward current vs. surge duration.

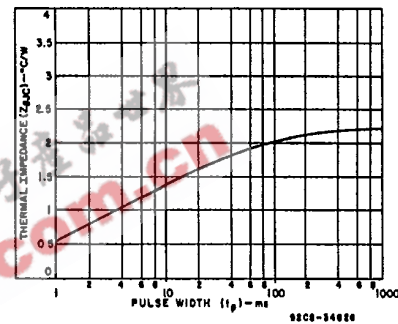


Fig. 2 — Thermal impedance vs. pulse width (per junction).

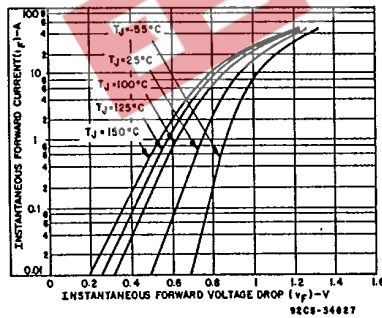


Fig. 3 — Typical forward current vs. forward-voltage drop.

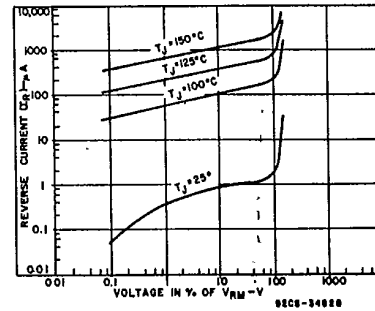


Fig. 4 — Typical reverse current vs. voltage.