RURD810 RURD815 RURD820

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

August 1991

T-23-07

Features

- Ultrafast Recovery Time (t_{rr} < 35ns)
- Low Forward Voltage
- Low Thermal Resistance
- Planar Design
- Wire-Bonded Construction

Applications

- General Purpose
- Power Switching Circuits to 100kHz
- Full-Wave Rectification

Description

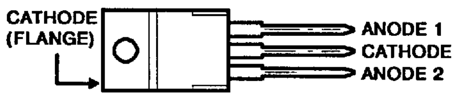
The RURD810, RURD815, RURD820 are low forward voltage drop ultrafast rectifiers (t_{rr} < 35ns). They use a glass passivated ion-implanted, epitaxial construction.

These devices are intended for use as output rectifiers and flywheel diodies 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.

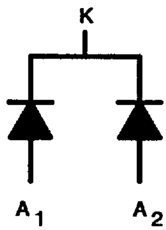
All are supplied in TO-220AB plastic packages.

Package

TO-220AB
TOP VIEW



Symbol



Absolute Maximum Ratings (T_C = +25°C)

		RURD810	RURD815	RURD820
Peak Repetitive Reverse Voltage	V_{RRM}	100V	150V	200V
Average Rectified Forward Current				
T_A = 25°C (No Heat Sink)	$I_{F(AV)}$	3A	3A	3A
T_A = 25°C (With Heat Sink)*	$I_{F(AV)}$	8A	8A	8A
T_A = 125°C	$I_{F(AV)}$	8A	8A	8A
Nonrepetitive Peak Surge Current (8.3ms, ½ cycle)	I_{FSM}	100A	100A	100A
Operating and Storage Temperature	T_{STG}, T_J	-55°C to +175°C	-55°C to +175°C	-55°C to +175°C
Maximum Lead Temperature During Solder (At distance > ⅛" (3.17mm) from case or 10s max)	T_L	260°C	260°C	260°C

*Wakefield type 295 heat sink with convection cooling.

HARRIS SEMICOND SECTOR 56E D ■ 4302271 0042399 967 ■HAS

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Electrical Characteristics (T_C = +25°C) Unless Otherwise Specified.

SYMBOL	TEST CONDITION	LIMITS									UNITS
		RURD810			RURD815			RURD820			
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
V_F	I_F = 8A, T_C = +150°C	-	-	0.83	-	-	0.83	-	-	0.85	V
	I_F = 8A, T_C = +25°C	-	-	0.975	-	-	0.975	-	-	1	V
IR @ T_C = +150°C	V_R = 100V	-	-	250	-	-	-	-	-	-	µA
	V_R = 150V	-	-	-	-	-	250	-	-	-	µA
	V_R = 200V	-	-	-	-	-	-	-	-	250	µA
IR @ T_C = +25°C	V_R = 100V	-	-	5	-	-	-	-	-	-	µA
	V_R = 150V	-	-	-	-	-	5	-	-	-	µA
	V_R = 200V	-	-	-	-	-	-	-	-	5	µA
t_{rr}	I_F = 8A*	-	-	35	-	-	35	-	-	35	ns
$R_{\Theta jc}$		-	-	2.25	-	-	2.25	-	-	2.25	°C/W
$R_{\Theta ja}$		-	-	60	-	-	60	-	-	60	°C/W
C_J	V_R = 10V, I_F = 0A	-	40	-	-	40	-	-	40	-	pF

*dI_F/dt = 40A/µs, I_{RM} (rec) < 1A, I_{RR} = 0.25A.

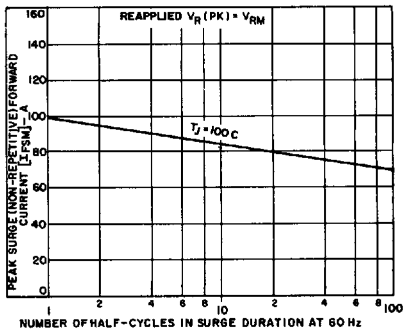

FIGURE 1. PEAK SURGE FORWARD CURRENT vs SURGE DURATION

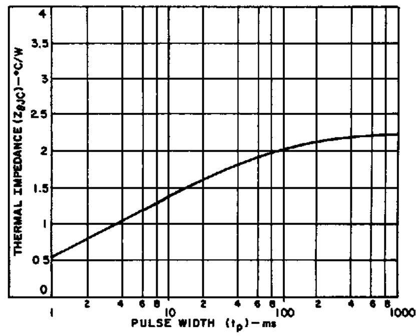

FIGURE 2. THERMAL IMPEDANCE vs PULSE WIDTH (PER JUNCTION)

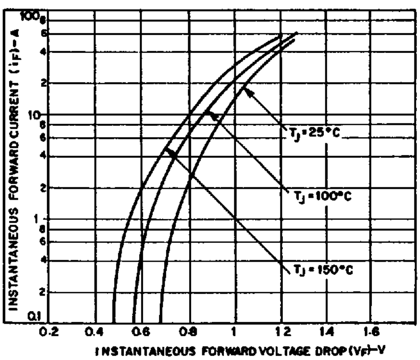

FIGURE 3. TYPICAL FORWARD CURRENT vs FORWARD VOLTAGE DROP

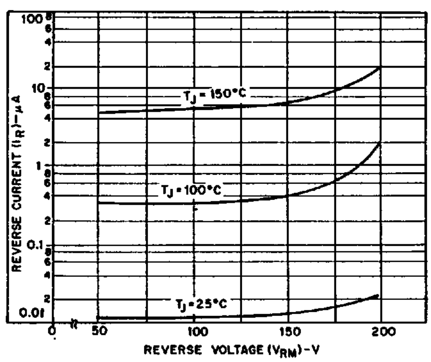

FIGURE 4. TYPICAL REVERSE CURRENT vs VOLTAGE