HARRIS SEMICONDUCTOR

RURP810CC, RURP815CC, RURP820CC

April 1995

8A, 100V - 200V Ultrafast Dual Diodes

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

RURP810CC, RURP815CC, RURP820CC are low forward voltage drop ultrafast rectifiers (t_{RR} < 35ns). They use an ion-implanted planar epitaxial construction.

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

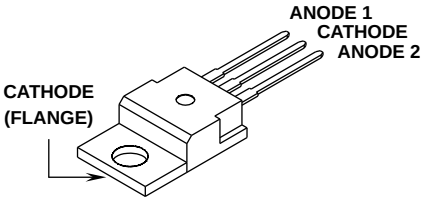
PACKAGING AVAILABILITY

PART NUMBER	PACKAGE	BRAND
RURP810CC	TO-220AB	RURP810CC
RURP815CC	TO-220AB	RURP815CC
RURP820CC	TO-220AB	RURP820CC

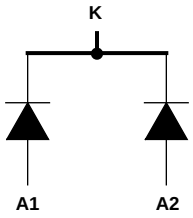
NOTE: When ordering, use the entire part number.

Package

JEDEC TO-220AB



Symbol



Absolute Maximum Ratings $T_C = +25^oC$

		RURP810CC	RURP815CC	RURP820CC
Peak Repetitive Reverse Voltage	V_{RRM}	100V	150V	200V
Average Rectified Forward Current (Per Leg)				
$T_A = +25^oC$ (No Heat Sink)	$I_{F(AV)}$	3A	3A	3A
$T_A = +25^oC$ (With Heat Sink)†	$I_{F(AV)}$	8A	8A	8A
$T_C = +125^oC$	$I_{F(AV)}$	8A	8A	8A
Nonrepetitive Peak Surge Current (8.3ms, $^1/_2$ cycle)	I_{FSM}	100A	100A	100A
Operating and Storage Temperature	T_{STG}, T_J	-55^oC to $+175^oC$	-55^oC to $+175^oC$	-55^oC to $+175^oC$
Maximum Lead Temperature During Solder (At distance > $^1/_8$" (3.17mm) from case or 10s max)	T_L	260^oC	260^oC	260^oC

† Wakefield type 295 heat sink with convection cooling.

File Number **1356.4**

Electrical Specifications $T_C = +25^oC$, Unless Otherwise Specified.

SYMBOL	TEST CONDITION	RURP810CC			RURP815CC			RURP820CC			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
V_F	$I_F = 8A, T_C = +150^oC$	-	-	0.895	-	-	0.895	-	-	0.895	V
	$I_F = 8A, T_C = +25^oC$	-	-	0.975	-	-	0.975	-	-	0.975	V
I_R at $T_C = +150^oC$	$V_R = 100V$	-	-	500	-	-	-	-	-	-	µA
	$V_R = 150V$	-	-	-	-	-	500	-	-	-	µA
	$V_R = 200V$	-	-	-	-	-	-	-	-	500	µA
I_R at $T_C = +25^oC$	$V_R = 100V$	-	-	100	-	-	-	-	-	-	µA
	$V_R = 150V$	-	-	-	-	-	100	-	-	-	µA
	$V_R = 200V$	-	-	-	-	-	-	-	-	100	µA
t_{RR}	$I_F = 8A$†	-	-	35	-	-	35	-	-	35	ns
$R_{\theta JC}$		-	-	2.25	-	-	2.25	-	-	2.25	$^oC/W$
$R_{\theta JA}$		-	-	60	-	-	60	-	-	60	$^oC/W$
C_J	$V_R = 10V, I_F = 0A$	-	40	-	-	40	-	-	40	-	pF

†$dI_F/dt = 50A/\mu s$, I_{RM} (rec) < 1A, $I_{RR} = 0.25A$.

Typical Performance Curves

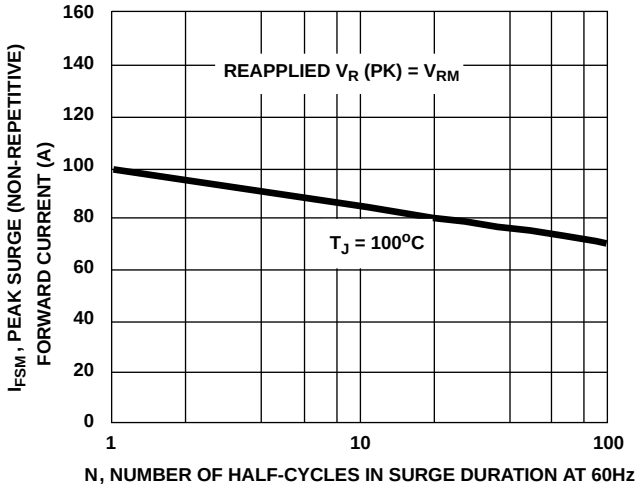


FIGURE 1. PEAK SURGE FORWARD CURRENT vs SURGE DURATION

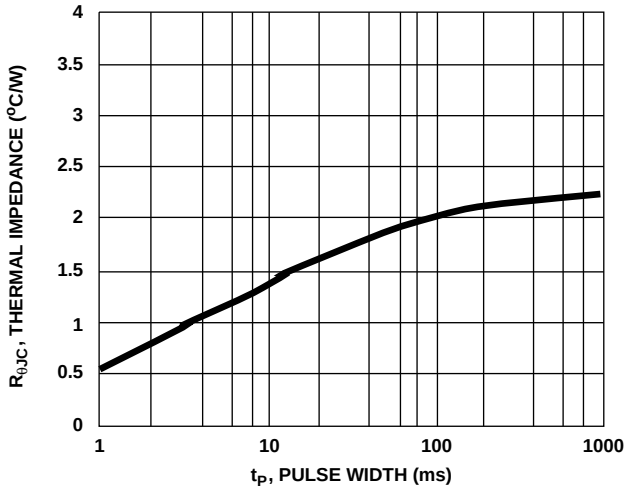


FIGURE 2. THERMAL IMPEDANCE vs PULSE WIDTH (PER JUNCTION)

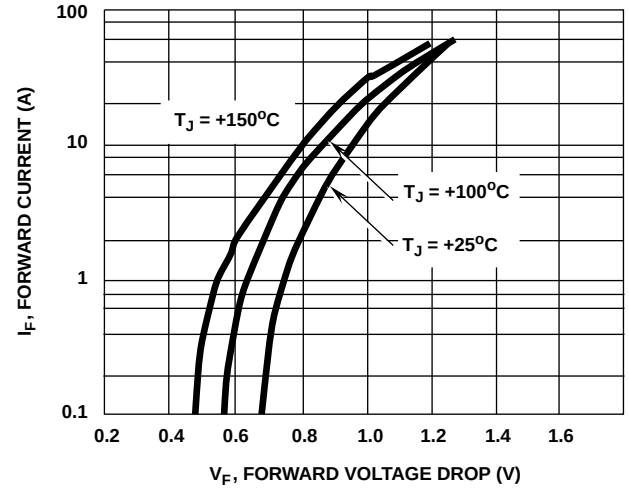


FIGURE 3. TYPICAL FORWARD CURRENT vs FORWARD VOLTAGE DROP

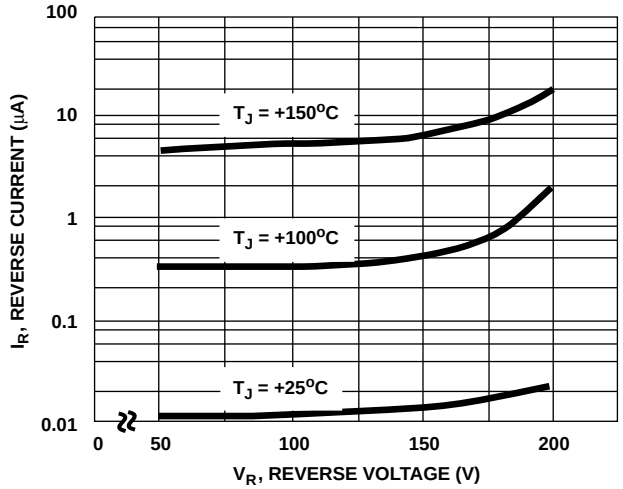


FIGURE 4. TYPICAL REVERSE CURRENT vs VOLTAGE