


## DESCRIPTION

The RH1009 is a general purpose 2.5V shunt regulator diode designed to operate over a wide current range while maintaining good stability with time and temperature. The adjust terminal allows either temperature coefficient to be minimized or the reference voltage to be adjusted without changing the temperature coefficient. Because it operates as a shunt regulator it can be used equally well as a positive or negative reference.

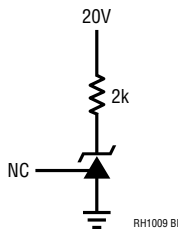
The wafer lots are processed to Linear Technology's in-house Class S flow to yield circuits usable in stringent military applications.

## ABSOLUTE MAXIMUM RATINGS

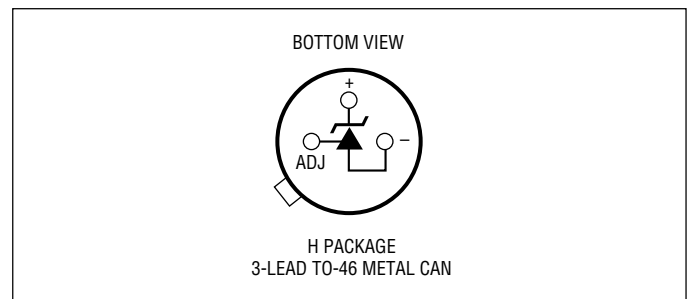
Reverse Breakdown Current .....	20mA
Forward Current.....	10mA
Operating Temperature Range .....	-55°C to 125°C
Storage Temperature Range .....	-65°C to 150°C
Lead Temperature (Soldering, 10 sec).....	300°C

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## BURN-IN CIRCUIT



## PACKAGE/ORDER INFORMATION



## TABLE 1: ELECTRICAL CHARACTERISTICS (Preirradiation)

SYMBOL	PARAMETER	CONDITIONS	NOTES	$T_J = 25^\circ\text{C}$			SUB-GROUP	$-55^\circ\text{C} \leq T_J \leq 150^\circ\text{C}$			SUB-GROUP	UNITS
				MIN	TYP	MAX		MIN	TYP	MAX		
$V_Z$	Reverse Breakdown Voltage	$I_R = 1\text{mA}$		2.495	2.505		1					V
$\frac{\Delta V_Z}{\Delta I_R}$	Reverse Breakdown Voltage Change with Current	$400\mu\text{A} \leq I_R \leq 10\text{mA}$			6		1		10		2,3	mV
$r_Z$	Reverse Dynamic Impedance	$I_R = 1\text{mA}$	1		0.6				1			$\Omega$
$\Delta V_Z$	Temperature Stability		1						15			mV
$\frac{\Delta V_Z}{\Delta \text{Time}}$	Long Term Stability	$T_A = 25^\circ\text{C} \pm 0.1^\circ\text{C}$ $I_R = 1\text{mA}$			20							ppm/kHr

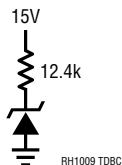
**TABLE 1A: ELECTRICAL CHARACTERISTICS** (Postirradiation) (Note 2)

SYMBOL	PARAMETER	CONDITIONS	NOTES	10KRAD(Si)		20KRAD(Si)		50KRAD(Si)		100KRAD(Si)		200KRAD(Si)		UNITS
				MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
$V_Z$	Reverse Breakdown Voltage	$I_R = 1\text{mA}$		2.495	2.505	2.495	2.505	2.495	2.505	2.495	2.505	2.495	2.505	V
$\frac{\Delta V_Z}{\Delta I_Z}$	Reverse Breakdown Voltage Change with Current	$400\mu\text{A} \leq I_R \leq 10\text{mA}$			6		6		8		10		12	mV
$r_Z$	Reverse Dynamic Impedance	$I_R = 1\text{mA}$	1		0.6		0.6		0.8		1.0		1.4	$\Omega$

**Note 1:** Guaranteed by design, characterization or correlation to other tested parameters.

**Note 2:**  $T_A = 25^\circ\text{C}$  unless otherwise noted.

**TOTAL DOSE BIAS CIRCUIT**



**TABLE 2: ELECTRICAL TEST REQUIREMENTS**

MIL-STD-883 TEST REQUIREMENTS	SUBGROUP
Final Electrical Test Requirements (Method 5004)	1*,2,3
Group A Test Requirements (Method 5005)	1,2,3
Group C and D End Point Electrical Parameters (Method 5005)	1

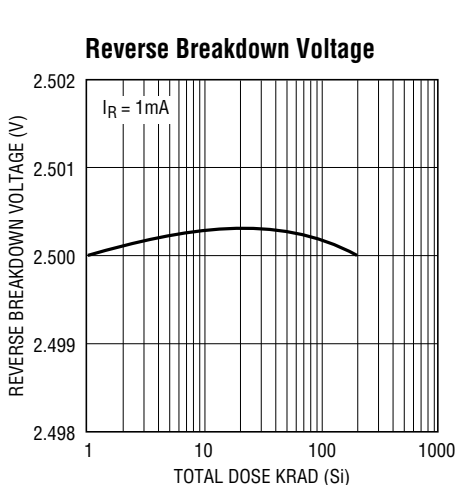
\* PDA Applies to subgroup 1. See PDA Test Notes.

**PDA Test Notes**

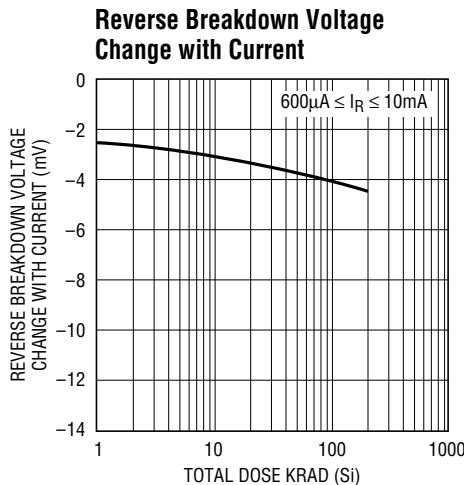
The PDA is specified as 5% based on failures from group A, subgroup 1, tests after cooldown as the final electrical test in accordance with method 5004 of MIL-STD-883 Class B. The verified failures of group A, subgroup 1, after burn-in divided by the total number of devices submitted for burn-in in that lot shall be used to determine the percent for the lot.

Linear Technology Corporation reserves the right to test to tighter limits than those given.

**TYPICAL PERFORMANCE CHARACTERISTICS**



RH1009 G01



RH1009 G02