

DESCRIPTION

The RH129 precision reference features excellent stability over a wide range of voltage, temperature and operating current conditions. The device achieves low dynamic impedance by incorporating a high gain shunt regulator around the Zener. The excellent noise performance of the device is achieved by using a buried Zener design which eliminates surface noise usually associated with ordinary Zeners.

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

ABSOLUTE MAXIMUM RATINGS

Reverse Breakdown Current	30mA
Forward Current.....	2mA
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 TOTAL DOSE BIAS CIRCUIT PACKAGE INFORMATION

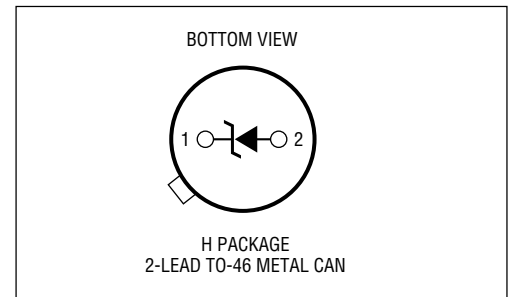
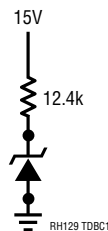
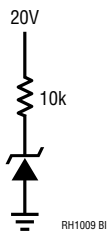


TABLE 1: ELECTRICAL CHARACTERISTICS (Preirradiation)

SYMBOL	PARAMETER	CONDITIONS	NOTES	$T_A = 25^\circ\text{C}$			SUB-GROUP	-55°C T_A 125°C			SUB-GROUP	UNITS
				MIN	TYP	MAX		MIN	TYP	MAX		
V_Z	Reverse Breakdown Voltage	0.6mA I_R 15mA		6.7		7.2	1					V
$\frac{V_Z}{I_R}$	Reverse Breakdown Voltage Change with Current	0.6mA I_R 15mA 1mA I_R 15mA				14			12			mV mV
$\frac{V_Z}{\text{Temp}}$	Temperature Coefficient	$I_R = 1\text{mA}$, RH129A RH129B RH129C							10 20 50	2, 3 2, 3 2, 3		ppm/°C ppm/°C ppm/°C
	Change in TC	1mA I_R 15mA							1			ppm/°C
r_Z	Dynamic Impedance	$I_R = 1\text{mA}$ 1mA I_R 15mA	1			2			0.8			
e_n	RMS Noise	10Hz f 10kHz	2			20	1					μV
$\frac{V_Z}{\text{Time}}$	Long Term Stability	$T_A = 25^\circ\text{C} \pm 0.1^\circ\text{C}$, $I_R = 1\text{mA} \pm 0.3\%$				20						ppm/kHr

TABLE 1A: ELECTRICAL CHARACTERISTICS (Postirradiation) (Note 3)

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	0.6mV I_R 15mA		6.7	7.2	6.7	7.2	6.7	7.2	6.7	7.2	6.7	7.2	V
$\frac{V_Z}{I_Z}$	Reverse Breakdown Voltage Change with Current	0.6mV I_R 15mA			14		14		20		30		50	mV
$\frac{V_Z}{Temp}$	Temperature Coefficient	$I_R = 1mA$, RH129A -55°C T_A 125°C RH129B RH129C			10		10		10		15		20	ppm/°C
					20		20		20		25		30	ppm/°C
					50		50		50		55		60	ppm/°C

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

Note 2: Guaranteed by correlation testing including enhancements for popcorn noise detection.

Note 3: $T_A = 25^\circ\text{C}$ unless otherwise noted.

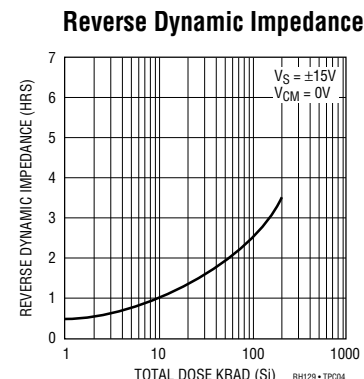
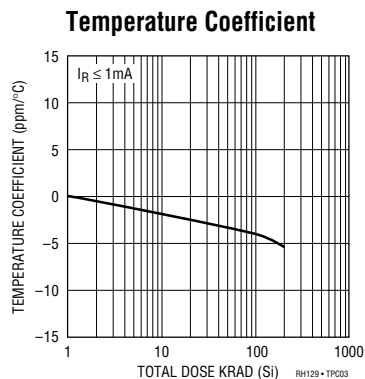
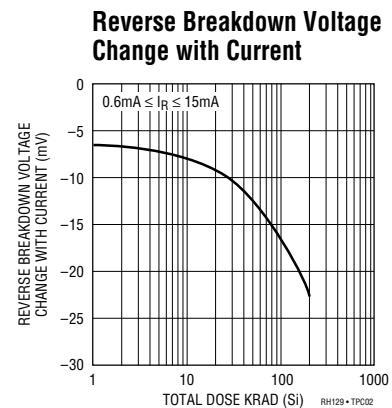
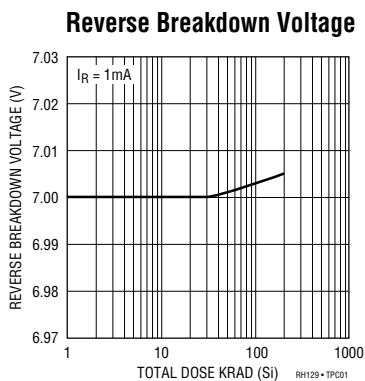
TABLE 2: ELECTRICAL TEST REQUIREMENTS

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 B and D for Class S and Group C and D for Class B 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. 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



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