6.9V Precision Reference

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.

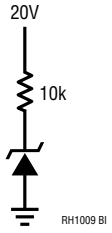
The wafer lots are processed to LTC's in-house Class S flow to yield circuits usable in stringent military applications.

ABSOLUTE MAXIMUM RATINGS

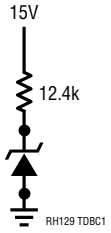
Reverse Breakdown Current 30mA
Forward Current..... 2mA
Operating Temperature Range ..... –55°C to 125°C
Storage Temperature Range ..... –65°C to 150°C
Lead Temperature (Soldering, 10 sec)..... 300°C

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BURN-IN CIRCUIT



TOTAL DOSE BIAS CIRCUIT



PACKAGE INFORMATION

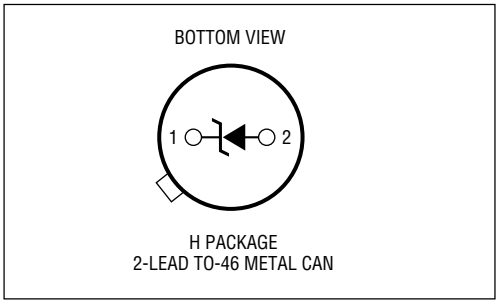


TABLE 1: ELECTRICAL CHARACTERISTICS (Preirradiation)

SYMBOL	PARAMETER	CONDITIONS	NOTES	T_A = 25°C MIN	TYP	MAX	SUB-GROUP	–55°C T_A 125°C MIN	TYP	MAX	SUB-GROUP	UNITS
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
$\frac{V_Z}{Temp}$	Temperature Coefficient	I_R = 1mA, 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 = 1mA 1mA I_R 15mA	 1			2			 0.8			
en	RMS Noise	10Hz f 10kHz	2			20	1					µV
$\frac{V_Z}{Time}$	Long Term Stability	T_A = 25°C ± 0.1°C, I_R = 1mA ± 0.3%			20							ppm/kHr

Information furnished by Linear Technology Corporation is believed to be accurate and reliable. However, no responsibility is assumed for its use. Linear Technology Corporation makes no representation that the interconnection of its circuits as described herein will not infringe on existing patent rights.

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

SYMBOL	PARAMETER	CONDITIONS	NOTES	10KRAD(Si) MIN	10KRAD(Si) MAX	20KRAD(Si) MIN	20KRAD(Si) MAX	50KRAD(Si) MIN	50KRAD(Si) MAX	100KRAD(Si) MIN	100KRAD(Si) MAX	200KRAD(Si) MIN	200KRAD(Si) MAX	UNITS
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 −55°C T_A 125°C	I_R = 1mA, RH129A			10		10		10		15		20	ppm/°C
		RH129B			20		20		20		25		30	ppm/°C
		RH129C			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°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

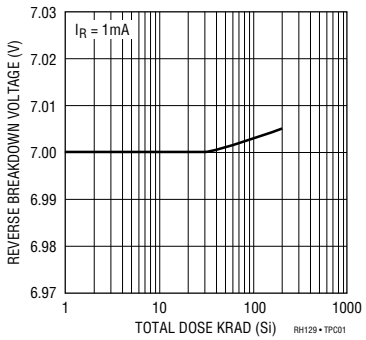
* PDA Applies to subgroup 1. See PDA Test Notes.

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.

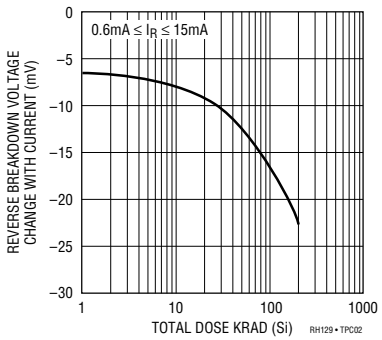
Linear Technology Corporation reserves the right to test to tighter limits than those given.

TYPICAL PERFORMANCE CHARACTERISTICS

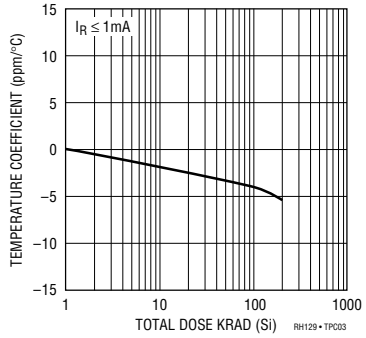
Reverse Breakdown Voltage



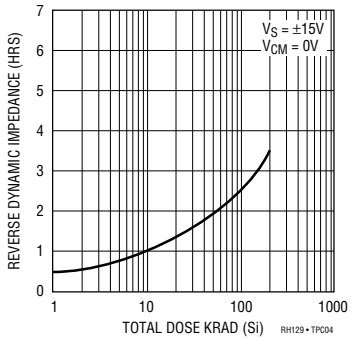
Reverse Breakdown Voltage Change with Current



Temperature Coefficient



Reverse Dynamic Impedance



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