

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 Analog Devices' 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

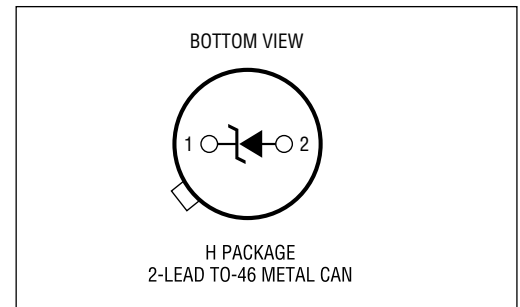
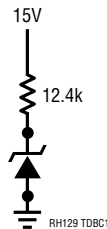
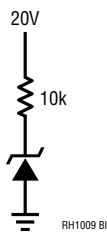


TABLE 1: ELECTRICAL CHARACTERISTICS (Preirradiation)

Device is characterized at the TID levels below. Device is production tested at 100kRad(si).

SYMBOL	PARAMETER	CONDITIONS	NOTES	T _A = 25°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
$\frac{V_Z}{Temp}$	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			
e _n	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

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

Device is characterized at the TID levels below. Device is production tested at 100kRad(Si).

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 -55°C T_A 125°C	$I_R = 1mA$, RH129A 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

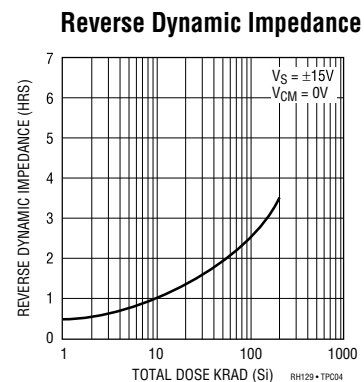
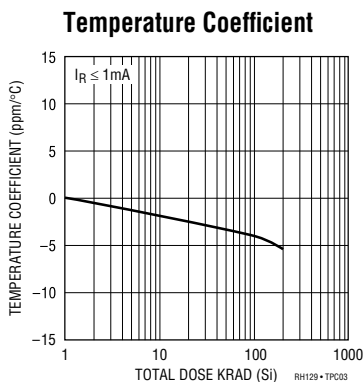
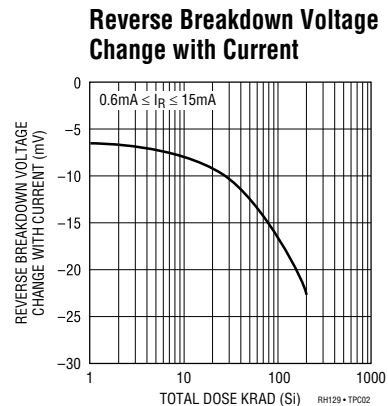
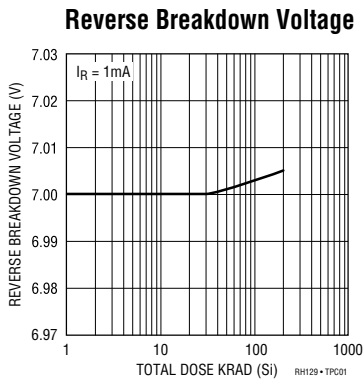
MIL-PRF-38535 TEST REQUIREMENTS	SUBGROUP
Final Electrical Test Requirements	1*, 2, 3
Group A Test Requirements	1, 2, 3
Group C End Point Electrical Parameters	1
Group D End Point Electrical Parameters	1
Group E End Point Electrical Parameters	1

*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.

Analog Devices reserves the right to test to tighter limits than those given.

TYPICAL PERFORMANCE CHARACTERISTICS



REVISION HISTORY (Revision history begins at Rev B)

REV	DATE	DESCRIPTION	PAGE NUMBER
B	07/23	Updated art title in the Electrical Characteristics section and updated the document to ADI format	1-3
C	06/24	Changed Electrical Test Requirements, Table 2	2