

Micropower Dual Reference

DESCRIPTION

The RH1034-1.2 is a micropower, precision 1.2V reference combined with a 7V auxiliary reference. The 1.2V reference is a trimmed, thin-film, band-gap, voltage reference operating on only 20 μ A of quiescent current. The RH1034-1.2 offers guaranteed drift, low temperature cycling hysteresis and good long-term stability. The low dynamic impedance makes the RH1034-1.2 easy to use from unregulated supplies. The 7V reference is a subsurface zener device for less demanding applications.

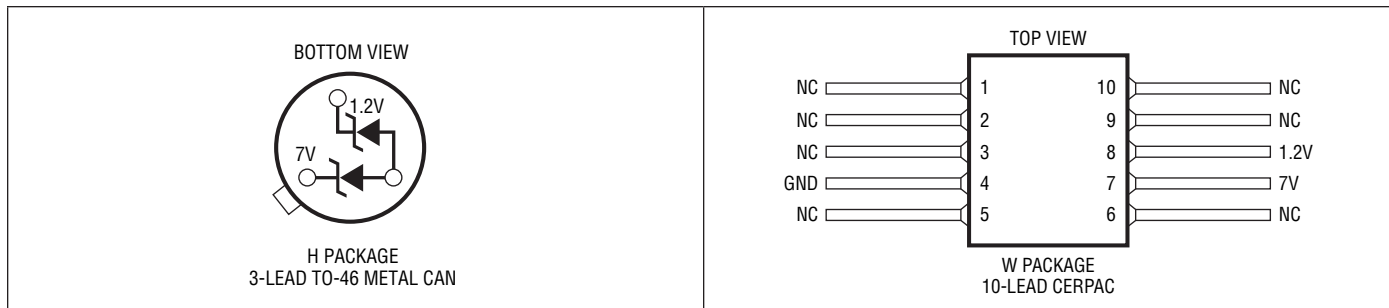
The wafer lots are processed to Analog Devices' in-house Class S flow to yield circuits usable in stringent military applications.

ABSOLUTE MAXIMUM RATINGS

(Note 1)

Operating Current	20mA
Forward Current (Note 2).....	20mA
Operating Temperature Range.....	–55°C to 125°C
Storage Temperature Range.....	–65°C to 150°C
Lead Temperature (Soldering, 10 sec)	300°C

PACKAGE INFORMATION



BURN-IN CIRCUIT

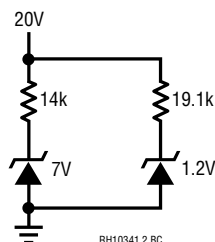


TABLE 1: ELECTRICAL CHARACTERISTICS (Preirradiation)

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		
1.2V Reference												
V _Z	Reverse Breakdown Voltage	I _R = 100μA		1.210		1.240	1	1.195		1.255	2, 3	V
$\frac{\Delta V_Z}{\Delta I_R}$	Reverse Breakdown Voltage Change with Current	20μA ≤ I _R ≤ 2mA				2.0	1			4.0	2, 3	mV
		2mA ≤ I _R ≤ 20mA				8.0	1			15.0	2, 3	mV
	Minimum Operating Current					20	1			30	2, 3	μA
	Temperature Coefficient	I _R = 100μA				60	1			60	2, 3	ppm/°C
r _Z	Reverse Dynamic Impedance	I _R = 100μA	3			1.0	1			2.0	2, 3	Ω
	Low Frequency Noise	I _R = 100μA, 0.1Hz ≤ f ≤ 10Hz				4						μV _{P-P}
	Long-Term Stability	I _R = 100μA				20						ppm/√kHrs
7V Reference												
V _Z	Reverse Breakdown Voltage	I _R = 100μA		6.70		7.30	1	6.60		7.40	2, 3	V
$\frac{\Delta V_Z}{\Delta I_R}$	Reverse Breakdown Voltage Change with Current	100μA ≤ I _R ≤ 1mA				140	1			190	2, 3	mV
		1mA ≤ I _R ≤ 20mA				250	1			350	2, 3	mV
	Temperature Coefficient	I _R = 100μA				60						ppm/°C
	Long-Term Stability	I _R = 100μA				20						ppm/√kHrs

TABLE 2: ELECTRICAL CHARACTERISTICS (Postirradiation) (Note 4) T_A = 25°C.

SYMBOL	PARAMETER	CONDITONS	NOTES	10KRAD(Si) MIN MAX	20KRAD(Si) MIN MAX	50KRAD(Si) MIN MAX	100KRAD(Si) MIN MAX	200KRAD(Si) MIN MAX	UNITS
1.2V Reference									
V _Z	Reverse Breakdown Voltage	I _R = 100μA		1.202 1.305	1.202 1.315	1.202 1.325	1.202 1.340	1.202 1.370	V
$\frac{\Delta V_Z}{\Delta I_R}$	Reverse Breakdown Voltage Change with Current	20μA ≤ I _R ≤ 2mA		7.0	7.5	8.5	10.0	12.5	mV
		2mA ≤ I _R ≤ 20mA		15.0	16.5	18.5	22.5	30.5	mV
r _Z	Reverse Dynamic Impedance	I _R = 100μA	3	3.5	3.75	4.25	5.0	6.25	Ω
7V Reference									
V _Z	Reverse Breakdown Voltage	I _R = 100μA		6.686 7.314	6.686 7.314	6.686 7.314	6.686 7.324	6.686 7.334	V
$\frac{\Delta V_Z}{\Delta I_R}$	Reverse Breakdown Voltage Change with Current	100μA ≤ I _R ≤ 1mA		175	175	175	175	175	mV
		1mA ≤ I _R ≤ 20mA		300	300	300	300	300	mV

Note 1: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to any Absolute Maximum Rating condition for extended periods may affect device reliability and lifetime.

Note 2: Forward biasing either diode will affect the operation of the other diode.

Note 3: This parameter guaranteed by “reverse breakdown voltage change with current” test.

Note 4: Device is characterized at 10Krad, 20Krad, 50Krad, 100Krad and 200Krad; and is production tested at 100Krad only.

TABLE 3: POST BURN-IN ENDPOINTS AND DELTA LIMITS REQUIREMENTS $T_A = 25^\circ\text{C}$

SYMBOL	PARAMETER	CONDITIONS	ENDPOINTS LIMITS		DELTA LIMITS		UNITS
			MIN	MAX	MIN	MAX	
V_Z	Reverse Breakdown Voltage	$I_R = 100\mu\text{A}$	1.210	1.240	-0.003	0.003	V

TABLE 4: 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, 2, 3
Group D End-Point Electrical Parameters	1, 2, 3
Group E End-Point Electrical Parameters	1

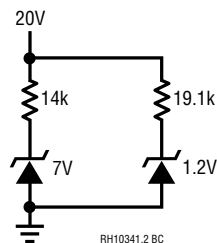
*PDA applies to subgroup 1. See PDA Test Notes.

PDA Test Notes

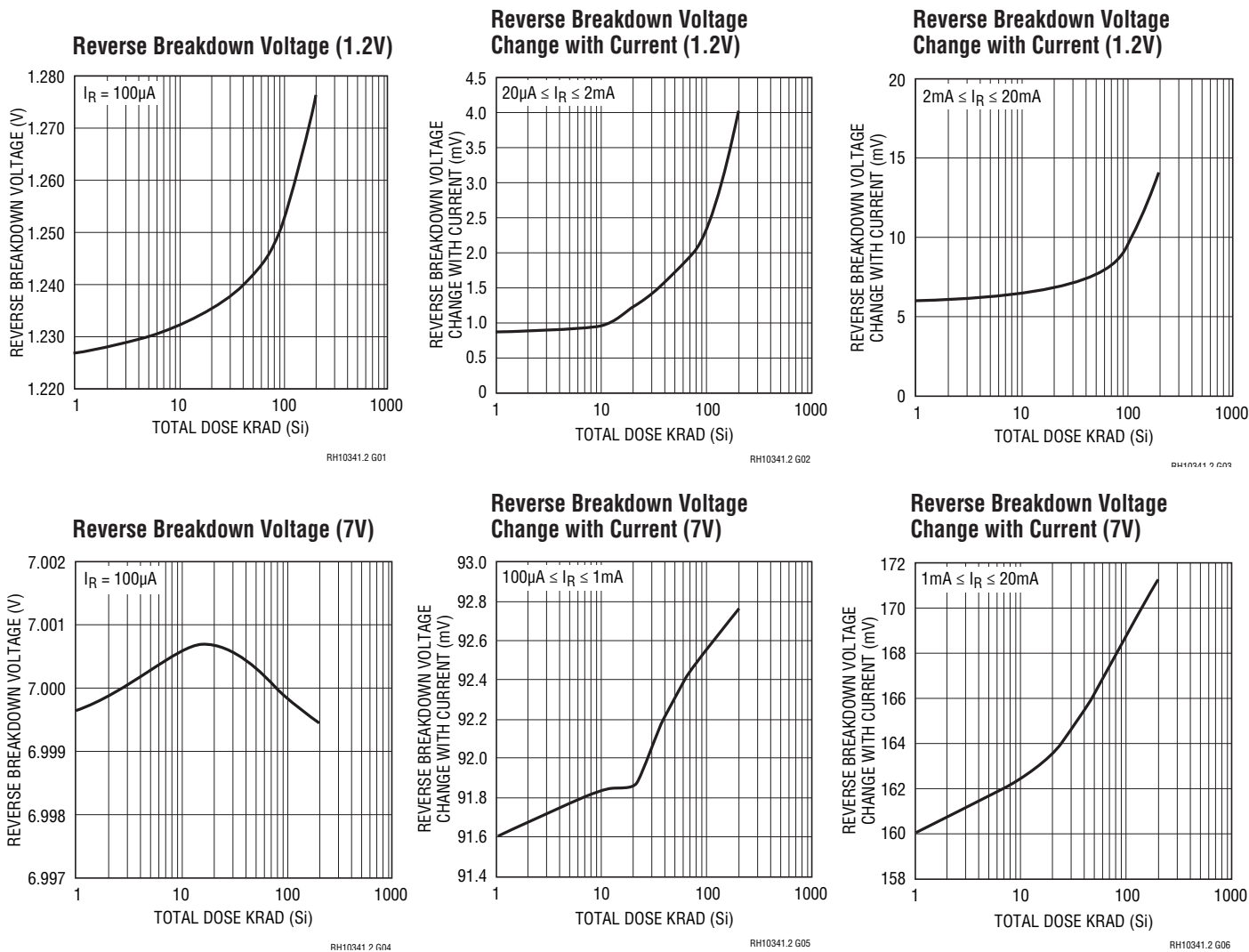
The PDA is specified as 5% based on failures from group A, subgroup 1, tests after cooldown as the final electrical test in accordance with method 5004 of MIL-STD-883. The verified failures of group A, subgroup 1, after burn-in divided by the total number of devices submitted for burn-in in that lot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

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

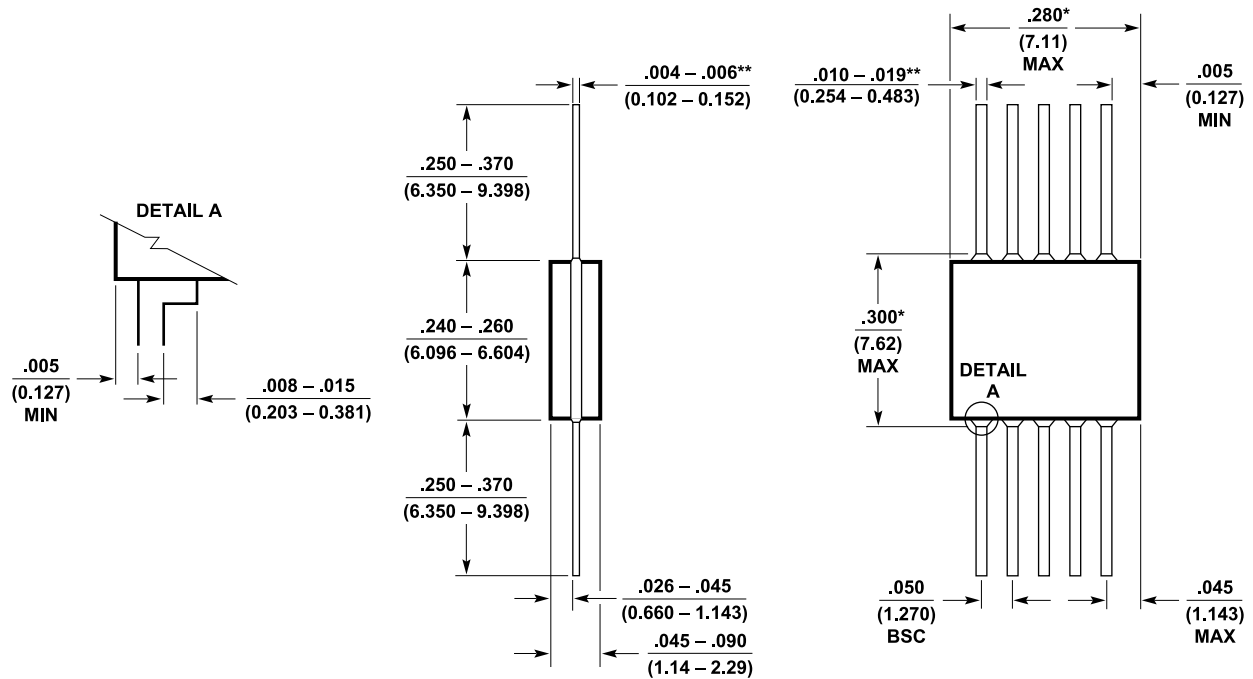
TOTAL DOSE BIAS CIRCUIT



TYPICAL PERFORMANCE CHARACTERISTICS



PACKAGE OUTLINE DRAWINGS



NOTES:

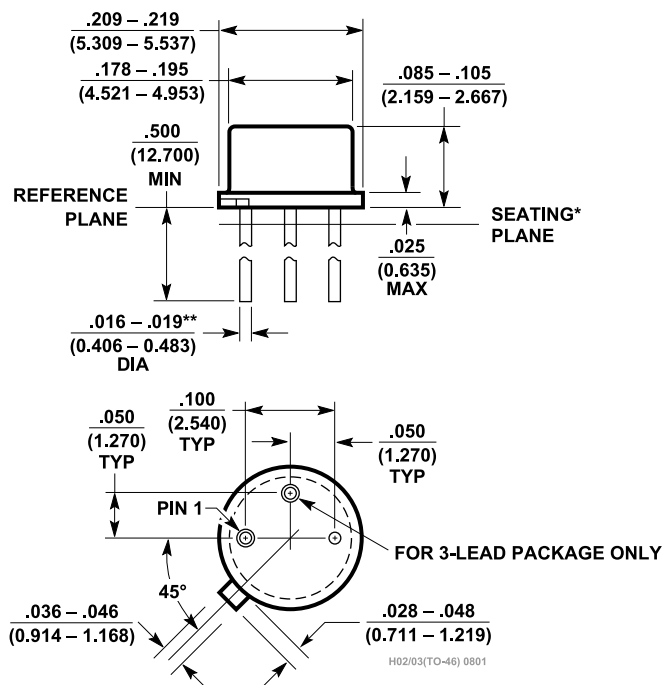
*THIS DIMENSION ALLOWS FOR OFF-CENTER LID, MENISCUS AND GLASS OVERRUN

**INCREASE DIMENSIONS BY 0.003 INCHES (0.076 mm) WHEN LEAD FINISH A IS APPLIED (SOLDER DIPPED)

W10 (GLASS) 0603

W Package
10-Lead Flatpak Glass Sealed (Hermetic)
(Reference LTC DWG # 05-08-1130)

PACKAGE OUTLINE DRAWINGS



*LEAD DIAMETER IS UNCONTROLLED BETWEEN THE REFERENCE PLANE AND .050" BELOW THE REFERENCE PLANE

**FOR SOLDER DIP LEAD FINISH, LEAD DIAMETER IS $.016 - .024$ (0.406 - 0.610)

H Package
2-Lead and 3-Lead TO-46 Metal Can
(Reference LTC DWG # 05-08-1340)

REVISION HISTORY

REV	DATE	DESCRIPTION	PAGE NUMBER
D	7/24	Removed Linear Technology references, updated Table 4	1–5
E	7/25	Updated Table 2: Electrical Characteristics Added Package Outline Drawings Reorganized Layout	2 5–6 Global