DESCRIPTION

The RH®119 dual comparator features low input offset voltage and offset current, high voltage gain, guaranteed common mode rejection and input protection diodes.

The RH119 is capable of operation over a supply range from 5V to ±15V and can drive 25mA loads from each open collector output. A separate GND pin allows the RH119 to isolate system grounds.
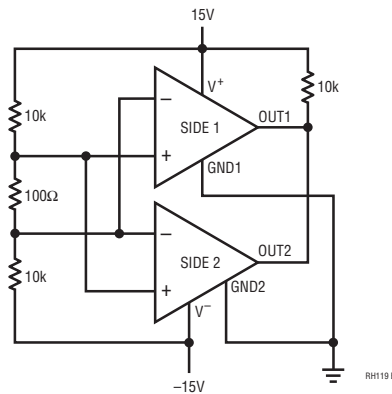
The wafer lots are processed to Analog Devices' in-house Class S flow to yield circuits usable in stringent military applications.

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ABSOLUTE MAXIMUM RATINGS

Supply Voltage..36V
Output to Negative Supply Voltage 36V
Ground to Negative Supply Voltage 25V
Ground to Positive Supply Voltage 18V
Diffierential Input Voltage .... ±5V
Differential Input Current ....±5mA
Input Voltage (See Note 1)
Output Short-Circuit Duration .... 10 sec
Operating Temperature Range ....−55°C to 125°C
Storage Temperature Range ....−65°C to 150°C
Lead Temperature (Soldering, 10 sec)..................300°C

BURN-IN CIRCUIT

PACKAGE/ORDER INFORMATION

Note: Obsolete Packages-For Reference Only

H PACKAGE
10-LEAD TO-5 METAL CAN

J PACKAGE
14-LEAD CERDIP

W PACKAGE
10-LEAD CERPAC
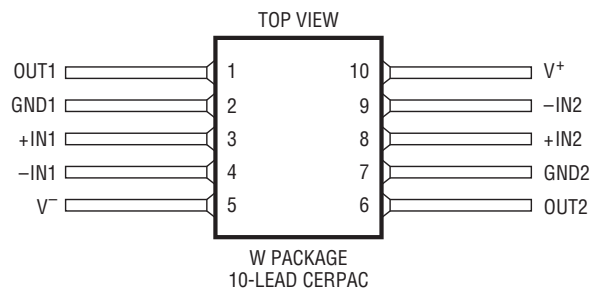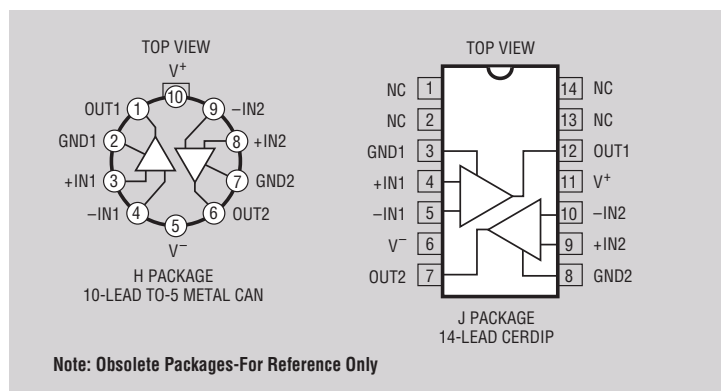
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For more information www.analog.com

TABLE 1: ELECTRICAL CHARACTERISTICS (Preirradiation) (Note 2)
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	$-55°C \leq T_A \leq 125°C$			SUB-GROUP	UNITS
				MIN	TYP	MAX		MIN	TYP	MAX		
V_{OS}	Input Offset Voltage	$V_S = ±15V$, $V_{CM} = 0V$				4	1					mV
			3							7	2, 3	mV
CMRR	Common Mode Rejection Ratio				90		1					dB
I_{OS}	Input Offset Current		3			75	1			100	2, 3	nA
I_B	Input Bias Current					500	1			1000	2, 3	nA
A_V	Voltage Gain			10			4					V/mV
t_R	Response Time		4		80	200	4			200	5, 6	ns
V_{SAT}	Saturation Voltage	$V_{IN} \leq -5mV$, $I_O = 25mA$				1.5	1					V
		$V^+ \geq 4.5V$, $V^- = 0V$ $V_{IN} \leq 6mV$, $I_{SINK} \leq 3.2mA$ $T_A \geq 0°C$ $T_A \leq 0°C$				0.4	1			0.4 0.6	2 3	V V
	Output Leakage Current	$V_{IN} \geq 5mV$, V_{OUT} to $V^- = 35V$				2	1			10	2, 3	µA
	Input Voltage Range	$V_S = ±15V$ $V^+ = 5V$, $V^- = 0V$		−12 1		12 3	1 1			12 3	2, 3 2, 3	V V
	Differential Input Voltage					±5	1			±5	2, 3	V
I_S	Supply Current	$V^+ = 5V$, $V^- = 0V$			4.3							mA
	Positive Supply Current	$V_S = ±15V$				11.5	1					mA
	Negative Supply Current	$V_S = ±15V$				4.5	1					mA

TABLE 1A: ELECTRICAL CHARACTERISTICS (Postirradiation) (Note 5)
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_{OS}	Offset Voltage				4		4		4		4		8	mV
I_{OS}	Input Offset Current		3		75		100		150		300		500	nA
I_B	Input Bias Current		3		500		750		1000		1500		2000	nA
A_{VOL}	Large-Signal Voltage Gain			10		10		10		10		5		V/mV
V_{SAT}	Saturation Voltage	$V_{IN} \leq -5mV$, $I_O = 25mA$			1.5		1.5		1.5		1.5		1.5	V
		$V^+ \geq 4.5V$, $V^- = 0V$ $V_{IN} \leq -6mV$, $I_{SINK} \leq 3.2mA$			0.4		0.4		0.4		0.4		0.4	V
CMRR	Common Mode Rejection Ratio			90		90		90		90		90		dB
I_S	Positive Supply Current	$V_S = ±15V$			11.5		11.5		11.5		11.5		11.5	mA
	Negative Supply Current	$V_S = ±15V$			4.5		4.5		4.5		4.5		4.5	mA
	Output Leakage Current	$V_{IN} \geq 5mV$, V_{OUT} to $V^- = 35V$			2		2		2		2		2	µA

ELECTRICAL CHARACTERISTICS (Continued)

Note 1: For supply voltages less than ±15V, the maximum input voltage is equal to the supply voltage.

Note 2: Unless otherwise noted, supply voltage equals ±15V, V_{CM} = 0V and T_A = 25°C. The GND pin is grounded. Note that the maximum voltage allowed between the GND pin and V⁺ is 18V. Do not tie the GND pin to V⁻ when the power supply voltage exceeds ±9V. The offset voltage, offset current and bias current specifications apply for all supply voltages between ±15V and 5V unless otherwise specified.

Note 3: The offset voltages and currents given are the maximum values required to drive the output within 1V of either supply with a 1mA load—thus, these parameters define an error band and take into account the worst-case effects of voltage gain and input impedance.

Note 4: Response time specified for a 100mV input step with 5mV overdrive.

Note 5: V_S = ±15V, V_{CM} = 0V, T_A = 25°C unless otherwise noted.

TABLE 2: ELECTRICAL TEST REQUIREMENTS

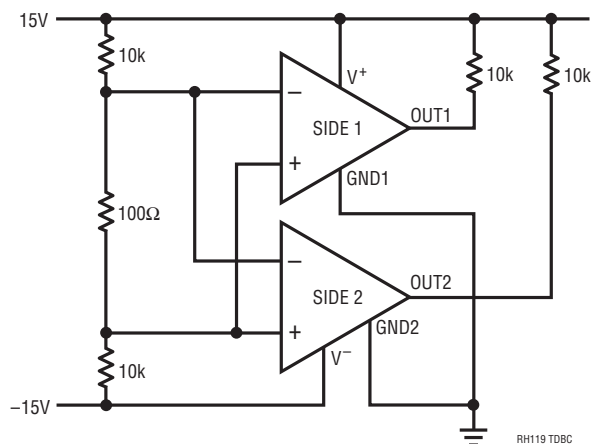| MIL-STD-883 TEST REQUIREMENTS	SUBGROUP
Final Electrical Test Requirements (Method 5004)	1*, 2, 3, 4, 5, 6
Group A Test Requirements (Method 5005)	1, 2, 3, 4, 5, 6
Group B End Point Electrical Parameters (Method 5005)	1, 2, 3

*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 (including Delta parameters) 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.
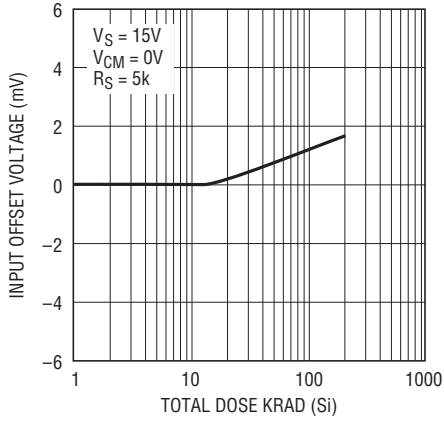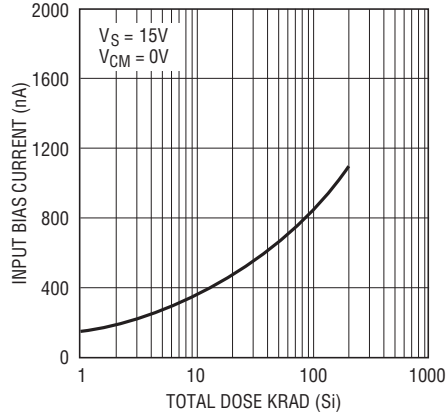
TOTAL DOSE BIAS CIRCUIT

RH119 TDBC

REVISION HISTORY

REV	DATE	DESCRIPTION	PAGE NUMBER
D	04/19	Obsoleting J package and updating to ADI format	1-4
E	07/23	Updated art title in the Electrical Characteristics section	2

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TYPICAL PERFORMANCE CHARACTERISTICS

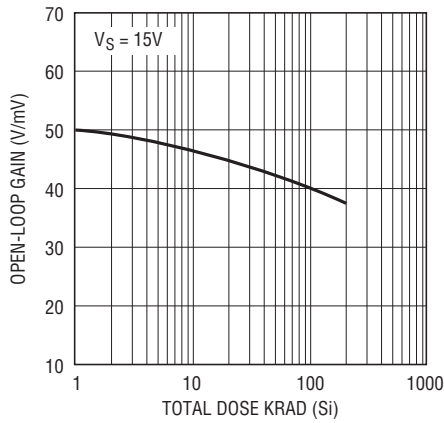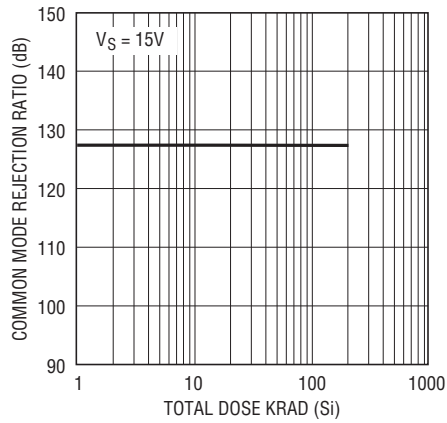**Input Offset Voltage**

Input Bias Current

Input Offset Current

Open-Loop Gain

Common Mode Rejection Ratio

Input Offset Voltage

ANALOG DEVICES