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XL236-2.5 SOP8
XL336-2.5 SOP8
XT336-2.5 TO-92

General Description

The XL236-2.5 / XL336-2.5 and XT336-2.5 integrated circuits are precision 2.5V shunt regulator diodes. These monolithic IC voltage references operate as a low-temperature-coefficient 2.5V zener with 0.2Ω dynamic impedance. A third terminal on the XL236-2.5 allows the reference voltage and temperature coefficient to be trimmed easily.

The XL236-2.5 series is useful as a precision 2.5V low voltage reference for digital voltmeters, power supplies or op amp circuitry. The 2.5V make it convenient to obtain a stable reference from 5V logic supplies. Further, since the XL236-2.5 operates as a shunt regulator, it can be used as either a positive or negative voltage reference.

The XL236-2.5 is rated for operation over −55˚C to +125˚C while the XL336-2.5 is rated over a −25˚C to +85˚C temperature range.

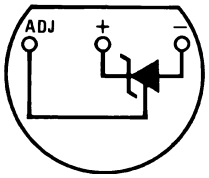
The XT336-2.5 is rated for operation over a 0˚C to +70˚C temperature range. See the connection diagrams for available packages.

Features

- Low temperature coefficient
- Wide operating current of 400 µA to 10 mA
- 0.2Ω dynamic impedance
- ±1% initial tolerance available
- Guaranteed temperature stability
- Easily trimmed for minimum temperature drift
- Fast turn-on

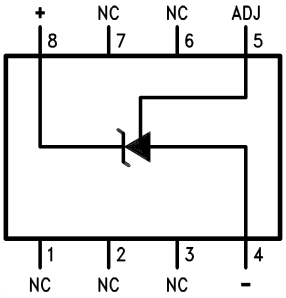
Connection Diagrams

TO-92
Plastic Package



Bottom View
Order Number XT336-2.5 TO-92
See NS Package Number Z03A

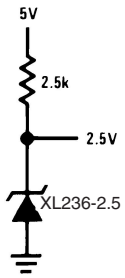
SO Package



Top View
Order Number XL236-2.5
or **XL336-2.5 SOP8**
See NS Package Number M08A

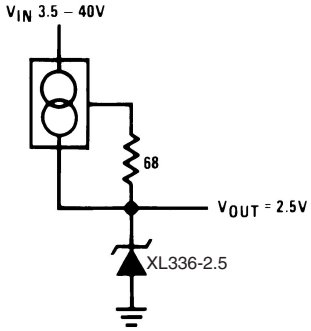
Typical Applications

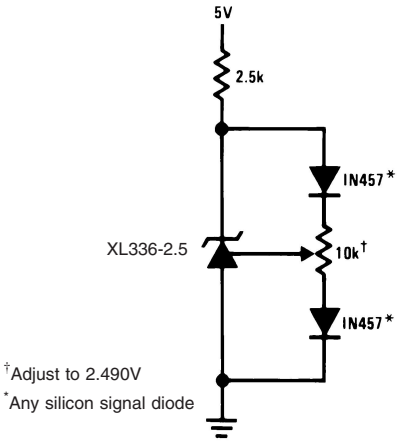
2.5V Reference



2.5V Reference with Minimum Temperature Coefficient

Wide Input Range Reference





†Adjust to 2.490V
*Any silicon signal diode

Absolute Maximum Ratings (Note 1)

Reverse Current	15 mA
Forward Current	10 mA
Storage Temperature	−60˚C to +150˚C
Operating Temperature Range (Note 2)	
XL236	−55˚C to +150˚C
XL336	−25˚C to +85˚C
XT336	0˚C to +70˚C
Soldering Information	
TO-92 Package (10 sec.)	260˚C
TO-46 Package (10 sec.)	300˚C
SO Package	
Vapor Phase (60 sec.)	215˚C
Infrared (15 sec.)	220˚C

See AN-450 “Surface Mounting Methods and Their Effect on Product Reliability” (Appendix D) for other methods of soldering surface mount devices.

Electrical Characteristics (Note 3)

Parameter	Conditions	XL236-2.5/XL336-2.5			XT336-2.5			Units
		Min	Typ	Max	Min	Typ	Max	
Reverse Breakdown Voltage	T_A=25˚C, I_R=1 mA							
	XL236-2.5	2.440	2.490	2.540	2.390	2.490	2.590	V
	XL336-2.5 XT336-2.5	2.465	2.490	2.515	2.440	2.490	2.540	V
Reverse Breakdown Change With Current	T_A=25˚C, 400 µA≤I_R≤10 mA		2.6	6		2.6	10	mV
Reverse Dynamic Impedance	T_A=25˚C, I_R=1 mA, f = 100 Hz		0.2	0.6		0.2	1	Ω
Temperature Stability (Note 4)	V_R Adjusted to 2.490VI_R=1 mA, *Figure 2*0˚C≤T_A≤70˚C							
	(XL336)−25˚C≤T_A≤+85˚C					1.8	6	mV
	XL336,XT336		3.5	9				mV
	−25˚C ≤ T_A ≤ +85˚C (XL336M)							
	−55˚C≤T_A≤+125˚C XL236		7.5	18				mV
			12	18				mV
Reverse Breakdown Change With Current	400 µA≤I_R≤10 mA		3	10		3	12	mV
Reverse Dynamic Impedance	I_R=1 mA		0.4	1		0.4	1.4	Ω
Long Term Stability	T_A=25˚C ±0.1˚C, I_R=1 mA, t = 1000 hrs		20			20		ppm

Note 1: Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Electrical specifications do not apply when operating the device beyond its specified operating conditions.

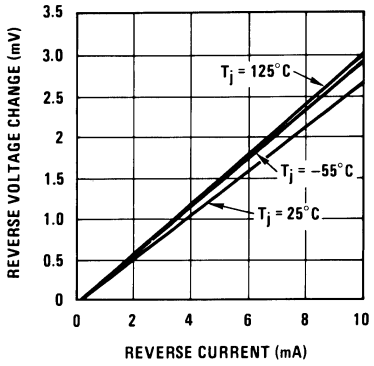
Note 2: For elevated temperature operation, T_j max is:

XL236	150˚C
XL336	125˚C
XT336	100˚C

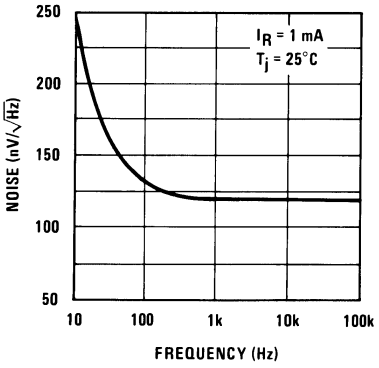
Thermal Resistance	TO-92	TO-46	SO-8
θ_{ja} (Junction to Ambient)	180˚C/W (0.4" leads) 170˚C/W (0.125" lead)	440˚C/W	165˚C/W
θ_{ja} (Junction to Case)	n/a	80˚C/W	n/a

Typical Performance Characteristics

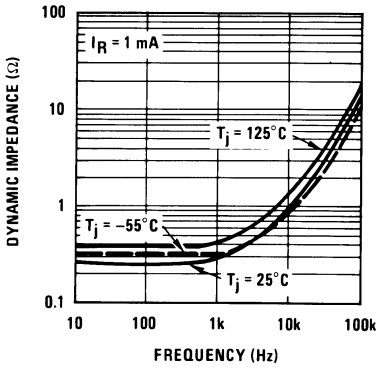
Reverse Voltage Change



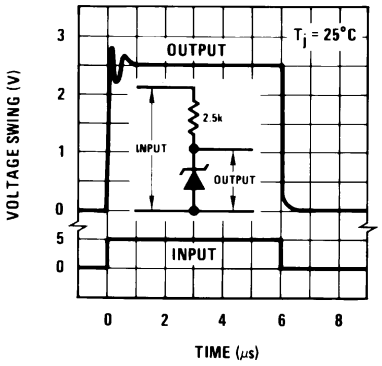
Zener Noise Voltage



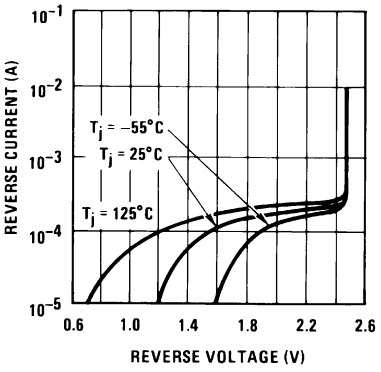
Dynamic Impedance



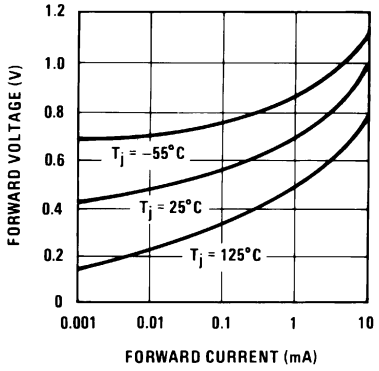
Response Time



Reverse Characteristics

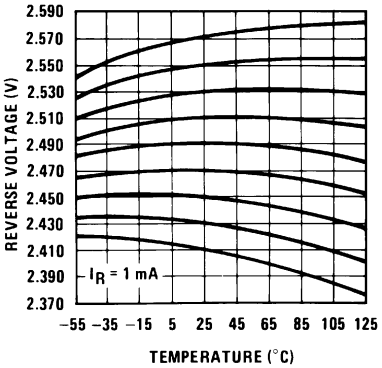


Forward Characteristics



Typical Performance Characteristics (Continued)

Temperature Drift



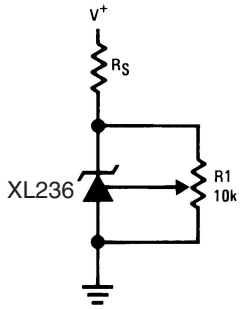


FIGURE 1. XL236 With Pot for Adjustment of Breakdown Voltage (Trim Range = ±120 mV typical)

Application Hints

The XL236 series voltage references are much easier to use than ordinary zener diodes. Their low impedance and wide operating current range simplify biasing in almost any circuit. Further, either the breakdown voltage or the temperature coefficient can be adjusted to optimize circuit performance.

Figure 1 shows an XL236 with a 10k potentiometer for adjusting the reverse breakdown voltage. With the addition of R1 the breakdown voltage can be adjusted without affecting the temperature coefficient of the device. The adjustment range is usually sufficient to adjust for both the initial device tolerance and inaccuracies in buffer circuitry.

If minimum temperature coefficient is desired, two diodes can be added in series with the adjustment potentiometer as shown in *Figure 2*. When the device is adjusted to 2.490V the temperature coefficient is minimized. Almost any silicon signal diode can be used for this purpose such as a 1N914, 1N4148 or a 1N457. For proper temperature compensation the diodes should be in the same thermal environment as the XL236. It is usually sufficient to mount the diodes near the XL236 on the printed circuit board. The absolute resistance of R1 is not critical and any value from 2k to 20k will work.

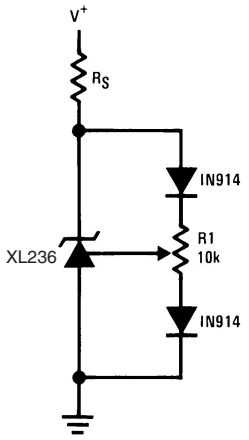
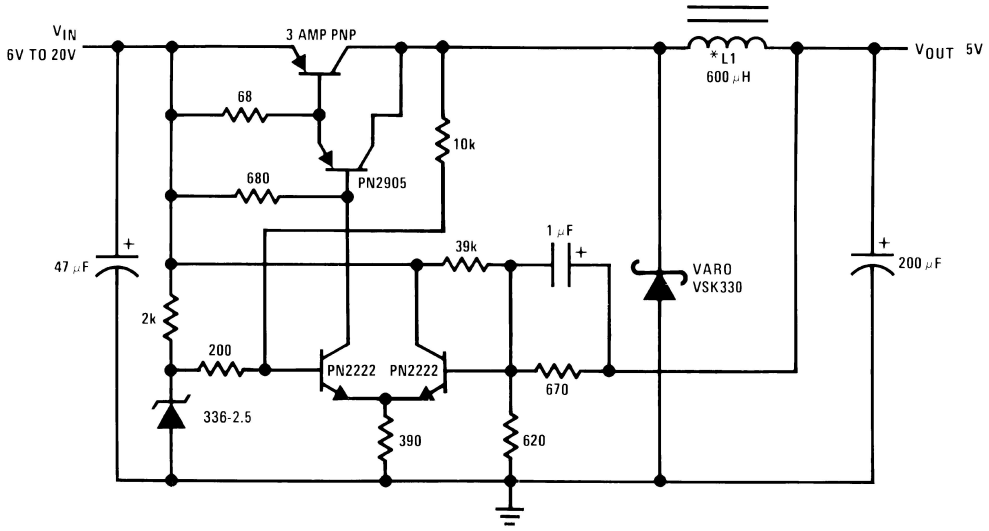


FIGURE 2. Temperature Coefficient Adjustment (Trim Range = ±70 mV typical)

Application Hints (Continued)

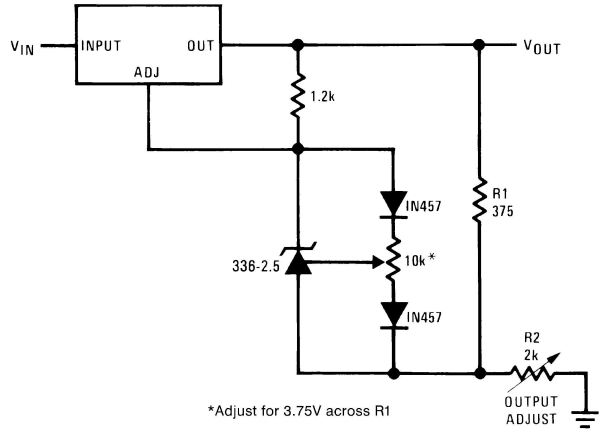
Low Cost 2 Amp Switching Regulator†



*L1 60 turns #16 wire on Arnold Core A-254168-2

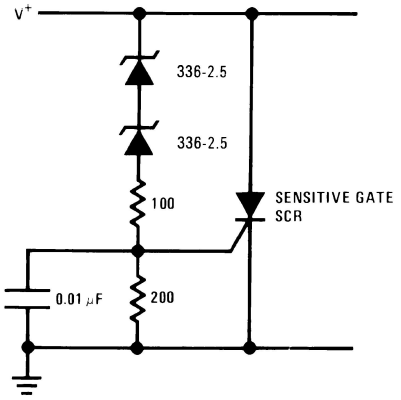
†Efficiency ≈ 80%

Precision Power Regulator with Low Temperature Coefficient

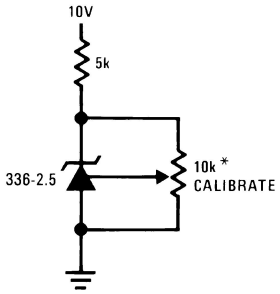


*Adjust for 3.75V across R1

5V Crowbar



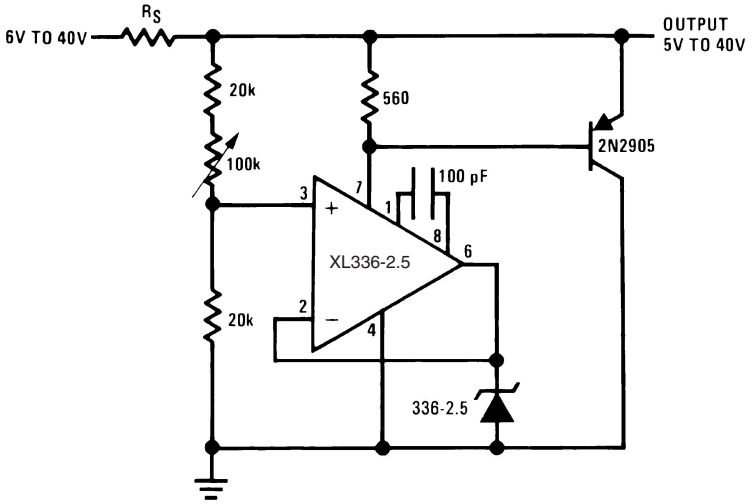
Trimmed 2.5V Reference with Temperature Coefficient Independent of Breakdown Voltage



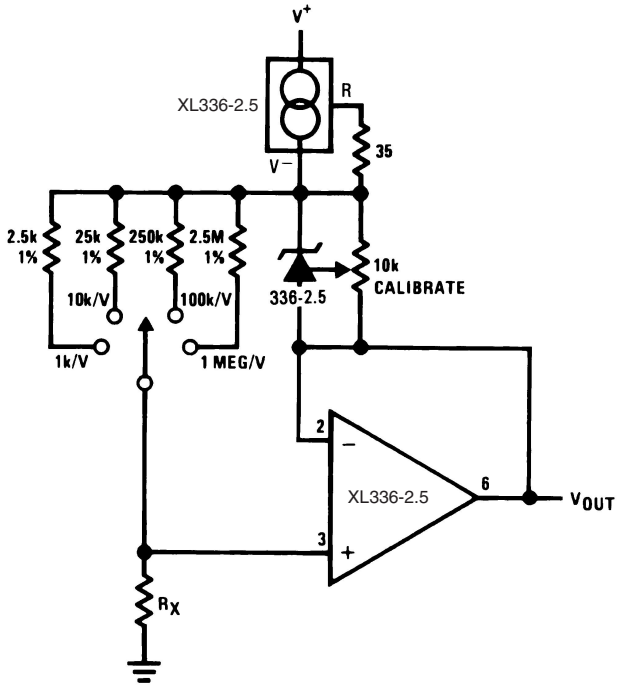
*Does not affect temperature coefficient

Application Hints (Continued)

Adjustable Shunt Regulator

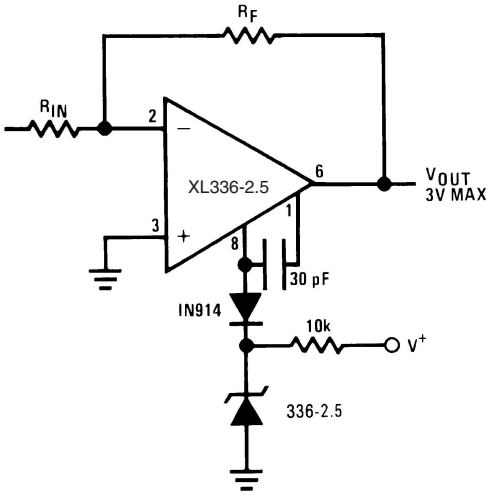


Linear Ohmmeter

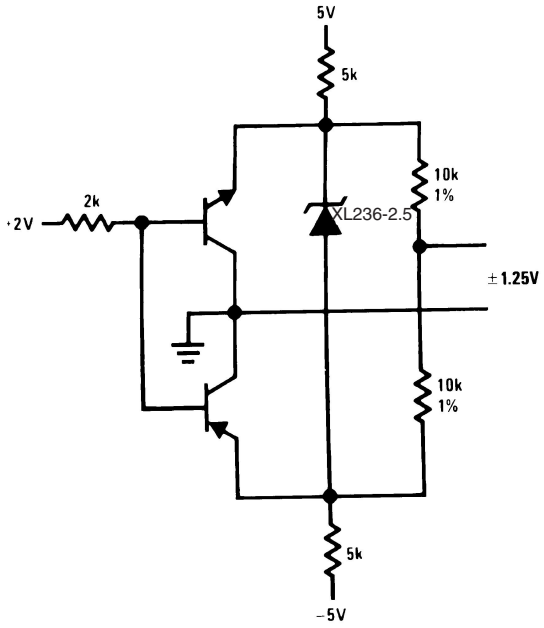


Application Hints (Continued)

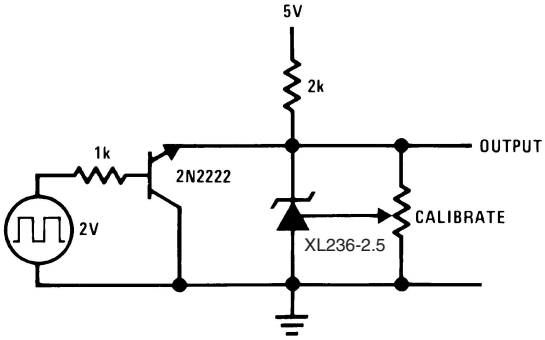
Op Amp with Output Clamped



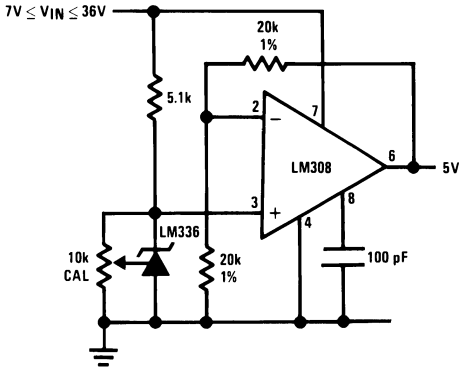
Bipolar Output Reference



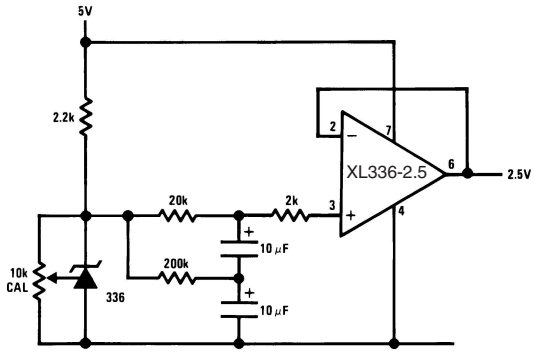
2.5V Square Wave Calibrator



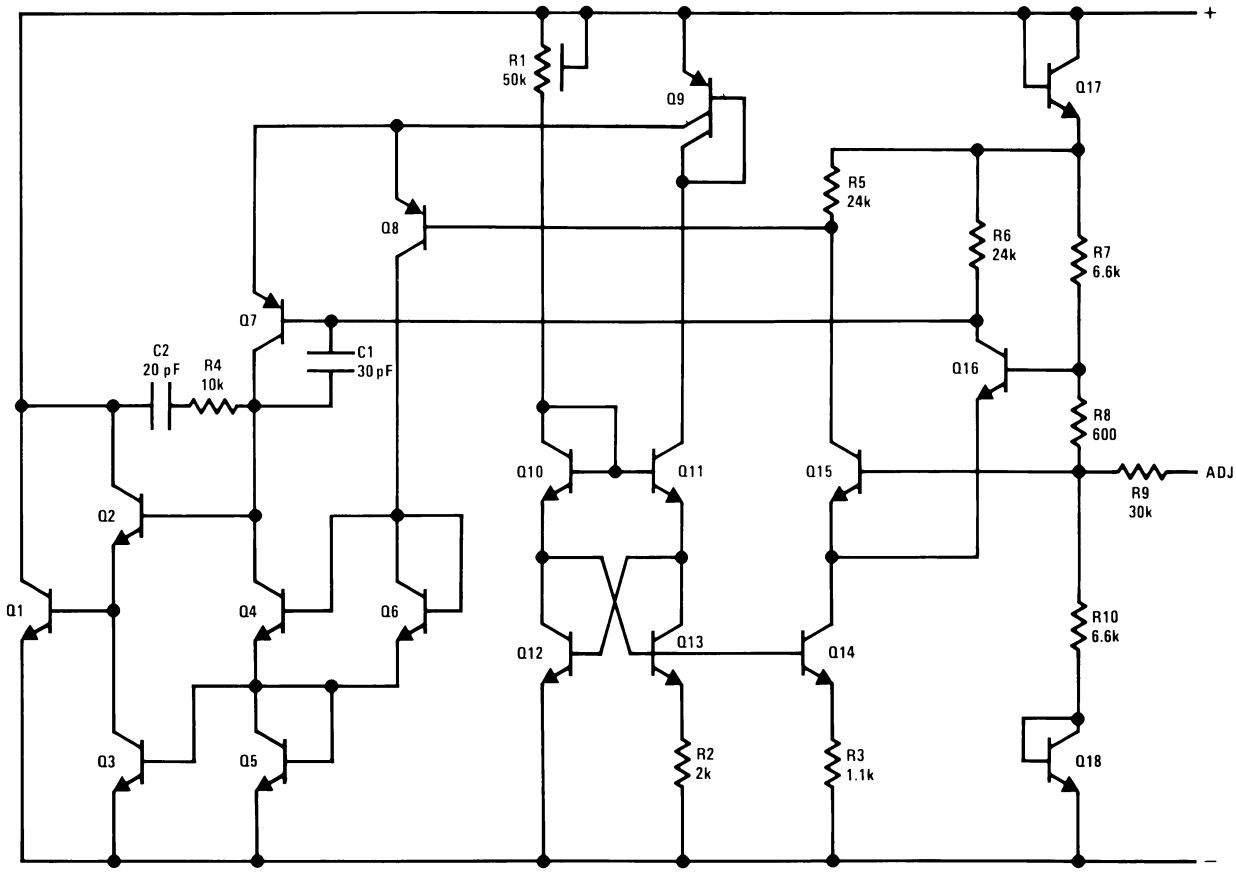
5V Buffered Reference

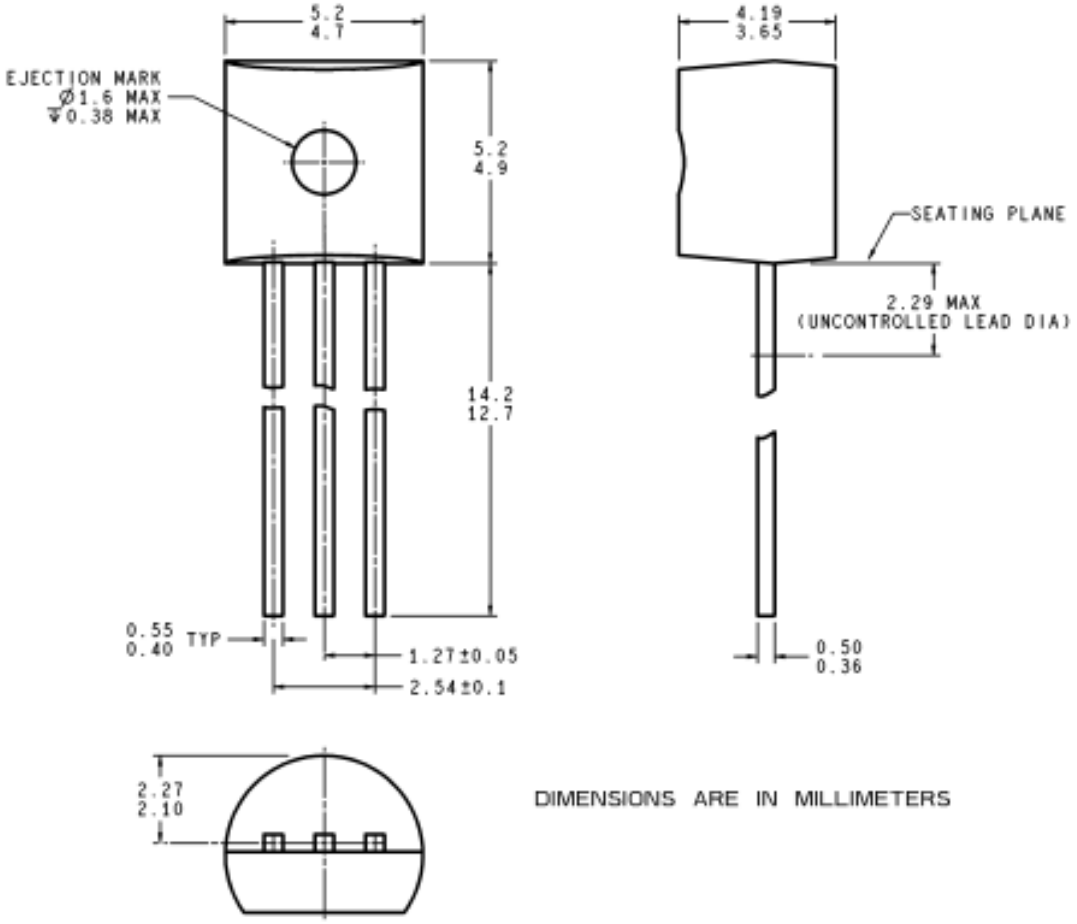


Low Noise Buffered Reference

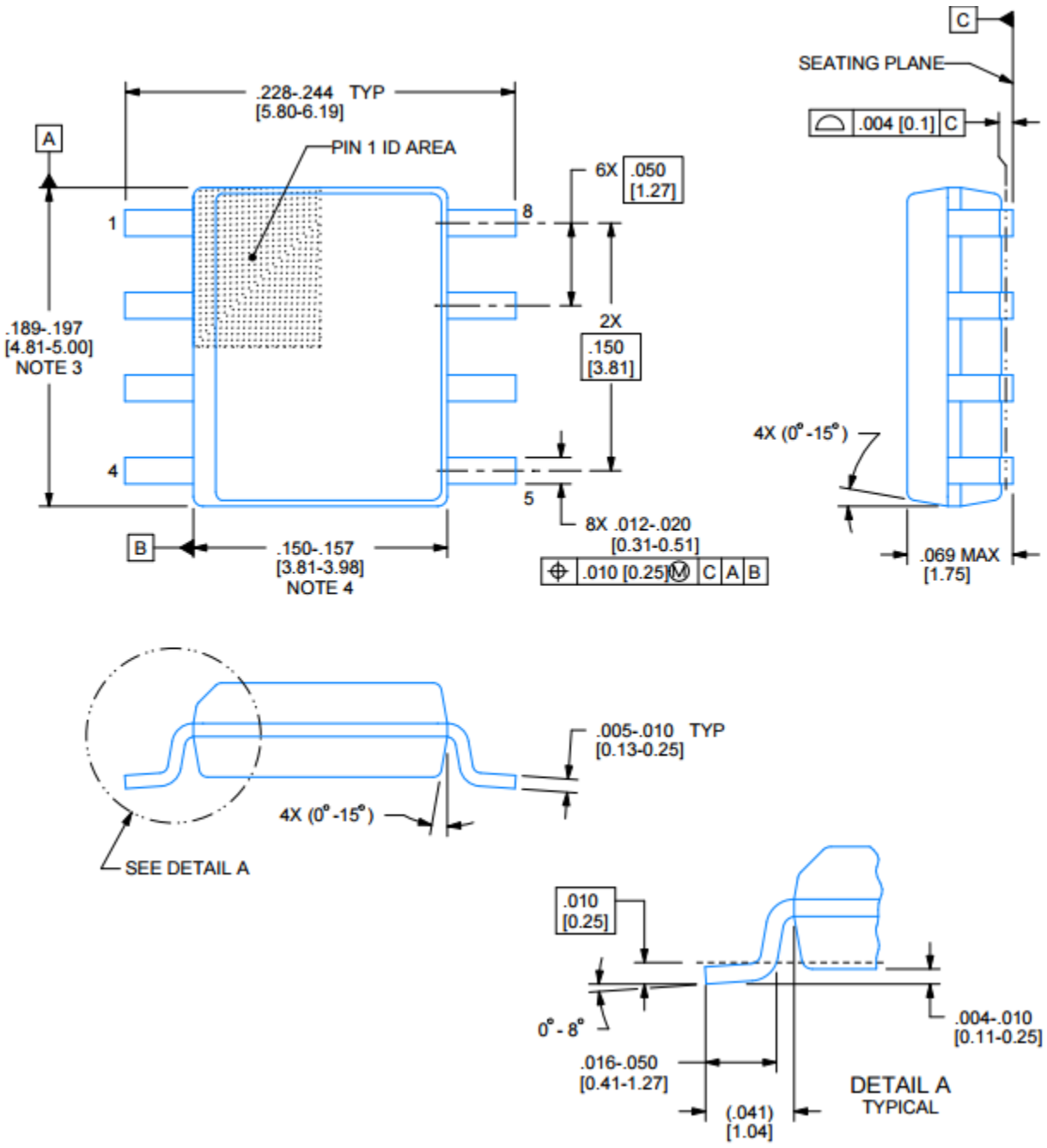


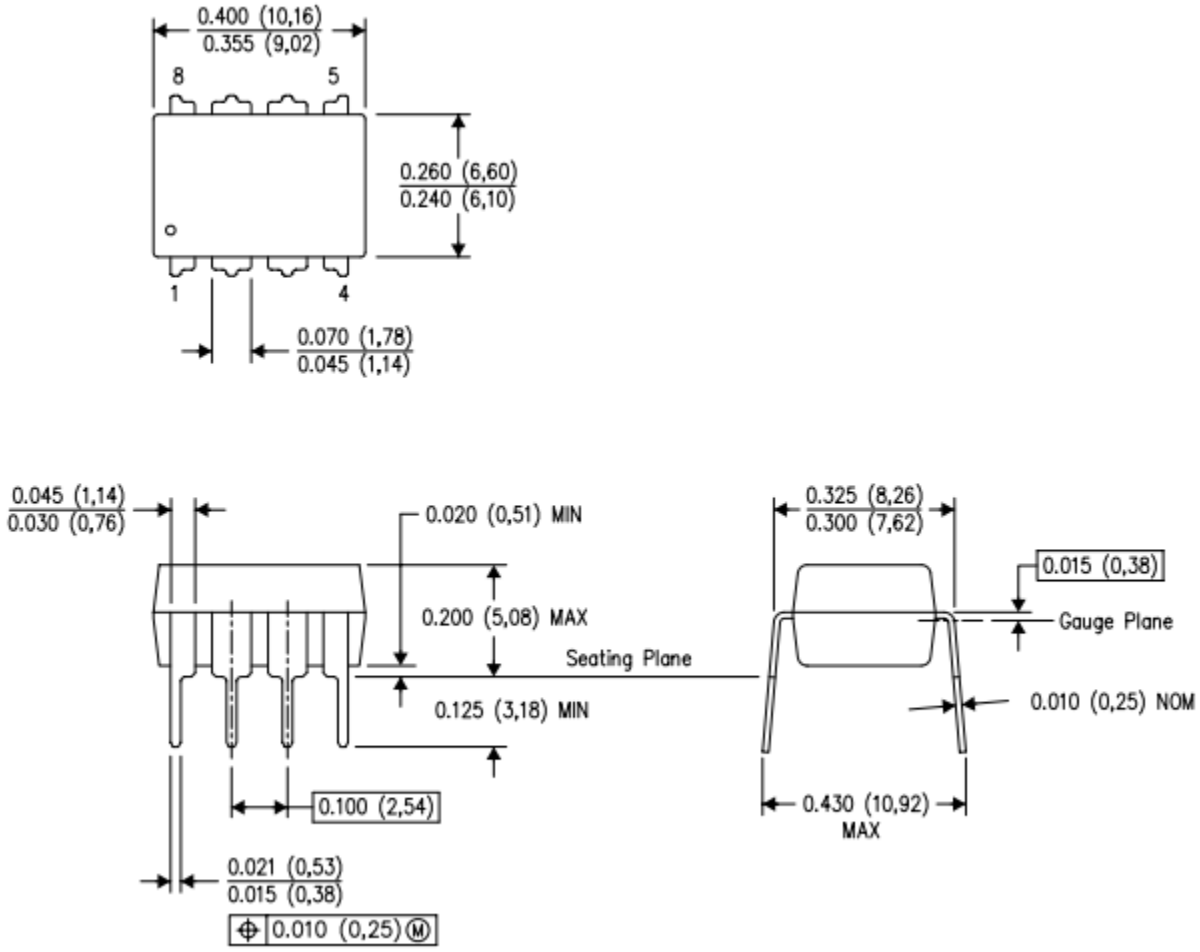
Schematic Diagram




5.2
4.7
EJECTION MARK
Ø1.6 MAX
▼0.38 MAX
5.2
4.9
14.2
12.7
0.55
0.40 TYP
1.27±0.05
2.54±0.1
4.19
3.65
SEATING PLANE
2.29 MAX
(UNCONTROLLED LEAD DIA)
0.50
0.36
2.27
2.10
DIMENSIONS ARE IN MILLIMETERS

XL236-2.5 SOP8/XL336-2.5 SOP8/XT336-2.5 TO-92





以上信息仅供参考.如需帮助联系客服人员。谢谢 XINLUDA