LM2479

LM2479 120V Triple Bias Clamp

Literature Number: SNOS539A

National Semiconductor

October 2000

LM2479
120V Triple Bias Clamp

General Description

The LM2479 is an Integrated 120V triple bias clamp circuit for DC recovery of each of the AC coupled outputs of a CRT driver. It is well matched with the DAC outputs of the LM126X family of pre-amplifiers. Each amplifier has its gain internally set to -18. The IC is packaged in an industry standard 8 lead molded DIP package.

Features

- Wide range integrated triple bias clamp
- High input impedance
- Single supply operation
- Matched to the LM126X family of preamplifiers

Recommended Applications

- CRT monitors requiring DC restoration at the cathodes

Block Diagrams

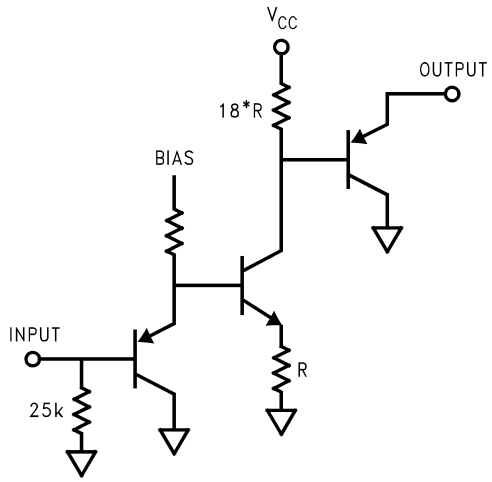


FIGURE 1. Simplified Schematic (One Channel)

Package Pinout

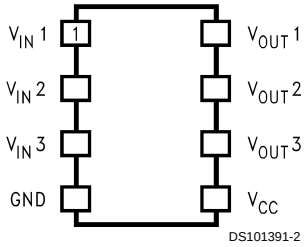


FIGURE 2. LM2479 Package Pinout
Order Number LM2479NA
NS Package Number: N08E

Absolute Maximum Ratings (Note 1)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/ Distributors for availability and specifications.

Supply Voltage, V_{CC}	+130V
Input Voltage, V_{IN}	0V to 5V
Storage Temperature Range, T_{STG}	-65˚C to +150˚C
Lead Temperature (Soldering, <10sec.)	300˚C
ESD Tolerance, Machine Model	200V

Limits of Operating Ranges (Note 3)

V_{CC}	110 to 125
V_{OUT}, V_{CC} = 120V	50 to 120V
Ambient Temperature Range, T_A	0 to 70˚C

DC CLAMP ELECTRICAL CHARACTERISTICS TARGETS AND LIMIT

Unless otherwise noted: V_{CC} = +120V, V_{IN} = 2.25V_{DC}, T_A = 25˚C.

Symbol	Spec Parameter	Conditions	Min	Typ	Max	Units
I_{CC}	Supply Current	All channels		2.3	3.5	mA
V_{OUT}	DC Output Voltage		83	87	91	V_{DC}
$V_{OUT-Range}$	Output Voltage Range	V_{IN} Range = 1.0V - 4.0V		53		V
A_V	DC Voltage Gain		-16	-18	-20	
LE	Linearity Error	See Note 1		5		%
R_{IN}	Input Resistance			24K		Ω

Note 1: Linearity Error is the variation in DC gain from V_{IN} = 1.0V to V_{IN} = 4.0V.

Note 2: Absolute Maximum Ratings indicate limits beyond which damage to the device may occur.

Note 3: Operating Ratings indicate conditions for which the device is functional, but do not guarantee specific performance limits. For guaranteed specifications and the test conditions, see the Electrical Characteristics. The guaranteed specifications apply only for the test conditions listed. Some performance characteristics may change when the device is not operated under the listed test conditions.

Note 4: All voltages are measured with respect to GND, unless otherwise specified.

Test Circuit

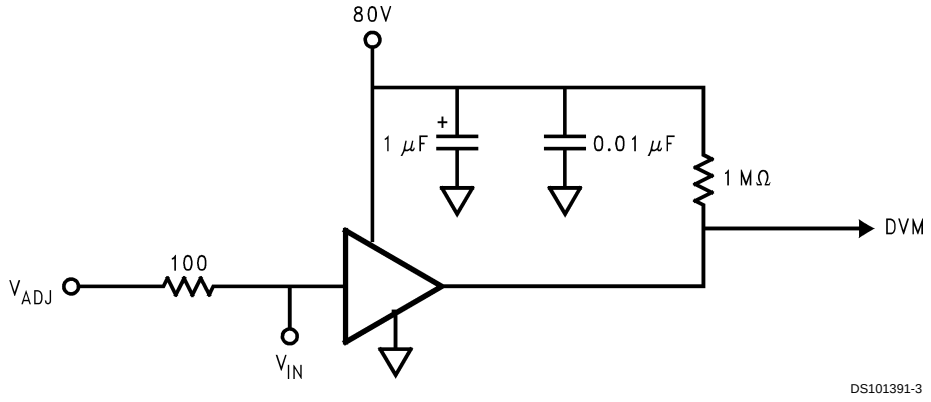


FIGURE 3. Test Circuit (One Channel)

Figure 3 shows the test circuit for evaluation of the LM2479 Clamp Amplifier. A high impedance VM (>100MΩ) is used for DC measurements at the output.

Typical Performance Characteristics

(V_{CC} = +120V), Test Circuit - Figure 3 unless otherwise specified.

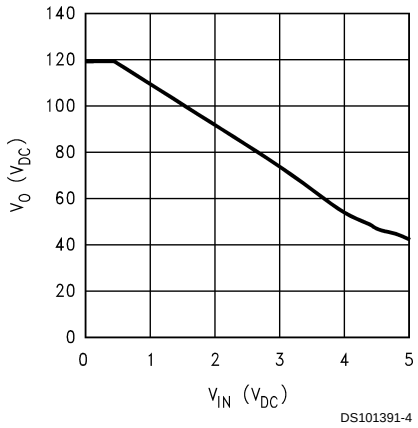


FIGURE 4. V_{out} vs V_{in}

THEORY OF OPERATION

The circuit diagram of the LM2479 is shown in Figure 1. The DC clamp circuit amplifies the input signal by -18 and the gain is set by the resistor ratio of 18R and R. The output requires pull-up resistor to 120V. Figure 2 shows the test circuit used for evaluation of the LM2479 Clamp Amplifier. A high impedance voltmeter (100MΩ) is used for DC measurements at the output. The DC transfer function is shown in Figure 4.

APPLICATION HINTS

Power Supply Bypass

The LM2479 should have proper power supply bypassing for optimum performance. A 0.1µF capacitor should be connected from the supply pin, V_{cc}, to ground, as close to the supply and ground pins as is practical. Additionally, a 1.0µF electrolycelectrolytictic capacitor should be connected from the supply pin to ground. The electrolytic capacitor should also be placed reasonably close to the LM2479's supply and ground pins.

Application Circuit

The application circuit shown in Figure 5 is designed to help clamp the voltage at the output of the driver to the desired level. Capacitor C_4 stabilizes the entire node at the anode of the clamp diode, D_3, by creating a low impedance at high frequencies. Figure 5 also shows the standard application circuit topology when used with an LM246X CRT driver. It shows all the components necessary to optimize performance as well as to protect against damage from a CRT arc event. No additional components are required to protect the LM2479 from arc damage.

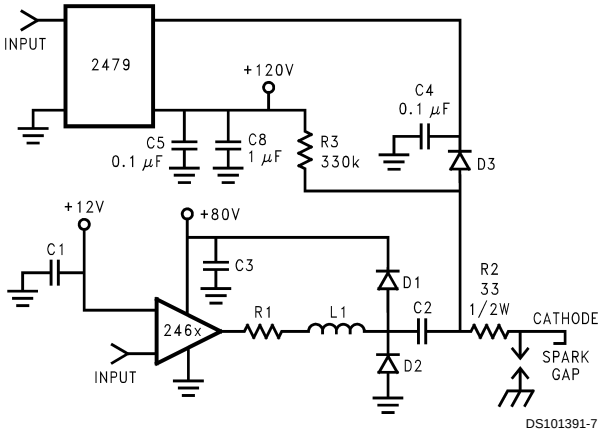
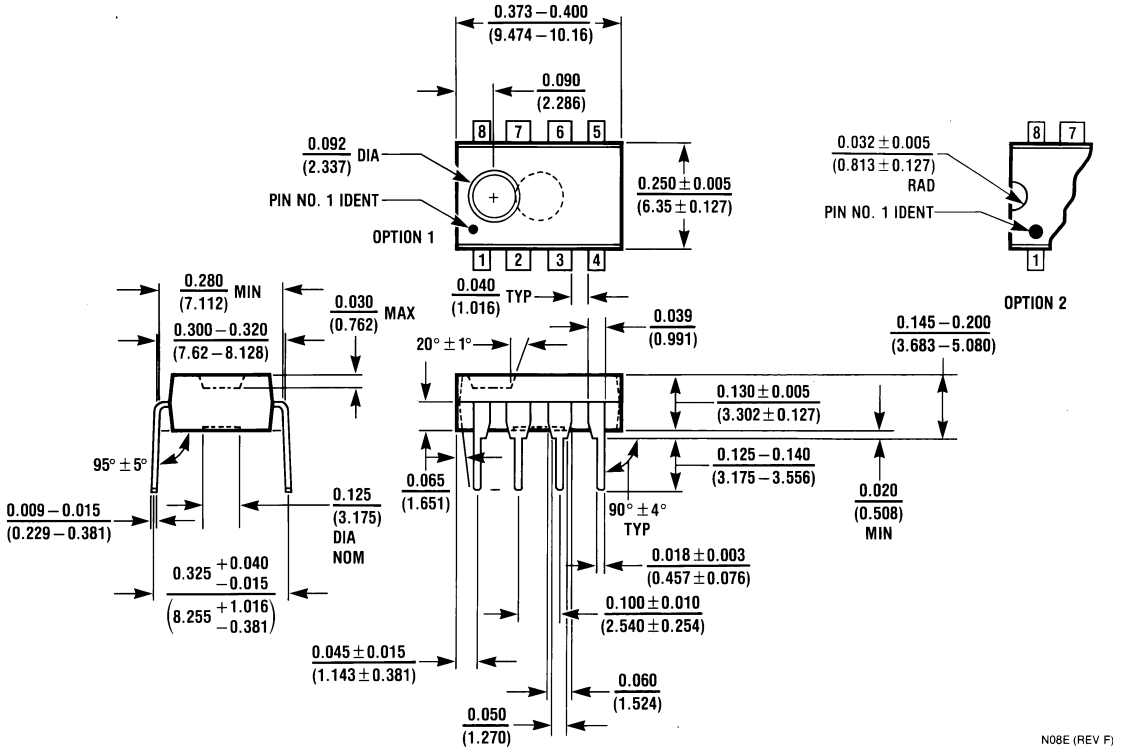


FIGURE 5. One Channel of the LM2479 and LM246X Application Circuit

Demonstration Hardware

National Semiconductor has designed a demonstration neckboard for the LM126X, LM246X, and the LM2479 chipset. To obtain demonstration boards contact the National Semiconductor Sales Office in your region.

Physical Dimensions inches (millimeters) unless otherwise noted



Note: Information contained in this data sheet is preliminary and may be subject to change without notice.

Molded Dual-In-Line Package (N)
NS Package Number N08E
Order NumbernLM2479NA

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