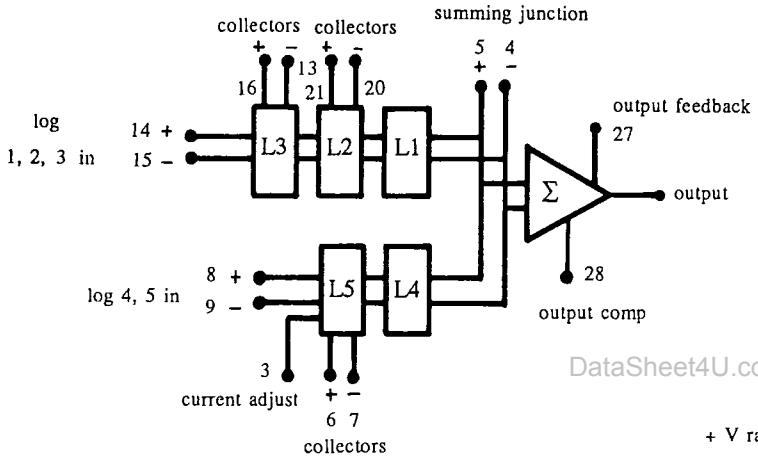
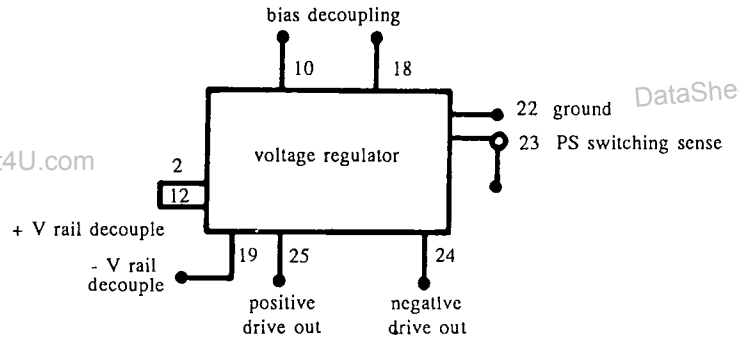
MMIS-910B LOG VIDEO AMPLIFIER INTEGRATED CIRCUIT

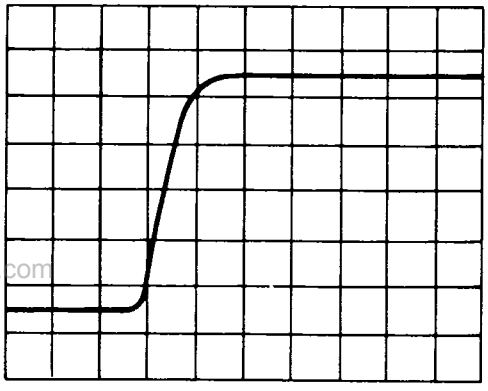
The MMIS-910B is a monolithic, extremely wideband, bipolar, low noise log amplifier that provides a log output over a large dynamic range. It will accept positive or negative input signals and contains an integral onboard regulator. Additional applications for the MMIS-910B are X-ray, video, electro-optical processing, and ultrasound image processing. It is available in a leadless chip carrier package



MMIS-910B block diagram.

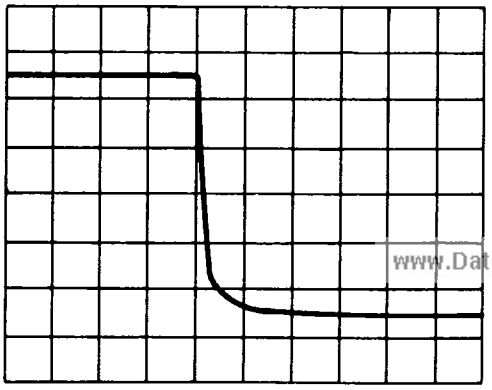


MMIS-910B rise time in a typical system configuration.



20 ns/div

MMIS-910B recovery time in a typical system configuration.



1 µs/div

MMIS-910B SPECIFICATIONS

Description	Value	Unit
Video Bandwidth	DC to 20	MHz
Rise Time	<17	ns
Video Dynamic Range	95	dB
Logging Range (1)	0.5 to 5000	mV
	80	dB
Linearity	±1	dB
Logging Slope (2)	55	mV/dB
Delay Time	<18	ns
Recovery Time	<100	ns
Tangential Signal Sensitivity	88	µV
Output Voltage Range	-2.4 to 3.6	V
Output Load (min) (3)	50	ohms
Duty Cycle (4)	100	%
Operating Temperature (5)	-54 to +125	°C
Output Drift over Temperature (6)	0.04	dB/°C
Input Drift over Temperature (7)	4	µV/°C
Power Supply Required (8)		
+ Voltage at 85 mA	>11	V
- Voltage at 85 mA	<11	V

Due to the square law characteristics of the detector, when used with an RF detector each dB at RF is equivalent to 2 dB of video.

The MMIS-910B is also available screened to MIL-STD-883 requirements.

Notes:

(1) When used with a detector, the logging range can be increased to approximately 45 dB (at RF) by adding the detector signal directly to the output amplifier.

(2) The logging slope is adjustable downward - for maximum bandwidth it should be used at less than 30 mV/dB.

(3) The MMIS-910B is designed for use with an outboard NPN drive transistor.

(4) The duty cycle is 100% for DC coupled applications: there is negligible output amplitude shift (less than 0.2 dB) at any duty cycle.

(5) The MMIS-910B must have a heat sink for operation at high temperature.

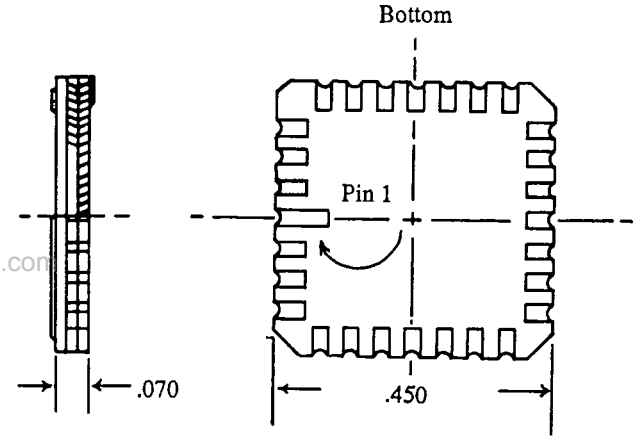
(6) This drift can easily be compensated in two ways:
a) On a DC coupled unit, using a sensistor to change the DC offset versus temperature; or
b) A change in gain preceding the chip.

(7) The input drift can be compensated by applying an opposite drift to the input. This can be accomplished by using a sensistor network or a diode.

(8) The maximum voltage is dependent on the external pass transistors in the power supply, not on the MMIS-910B.

MMIS-910B PINOUTS

Pin	Description
1	Output
2	Positive power supply
3	5th stage current adjust
4	Summing point; -V
5	Summing point; +V
6	Collector log 5; +V
7	Collector log 5; -V
8	Logs 4 and 5 IN; +V
9	Logs 4 and 5 IN; -V
10	Bias line 1 decoupling
11	Internal connection
12	Positive power supply
13	Collector log 3; -V
14	Logs 1, 2, and 3 IN; +V
15	Logs 1, 2, and 3 IN; -V
16	Collector log 3; +V
17	Internal connection
18	Bias line 2 decoupling
19	Negative power supply
20	Collector log 2; -V
21	Collector log 2; +V
22	Ground
23	Ground
24	Negative regulator drive
25	Positive regulator drive
26	Not used
27	Output feedback
28	Output frequency compensation



MMIS-910B package