

# DBL 1018

## FM IF SYSTEM

The DBL1018 has versatile muting characteristics and allows receiver designers to realize the muting performance according to their design concept.

### FUNCTIONS

- FM IF Amplifier/Limiter
- Quadrature Detector
- AFC Clamp
- AGC Drive
- AF Mute Amplifier
- Signal Meter Drive
- DC Level Detector

### FEATURES

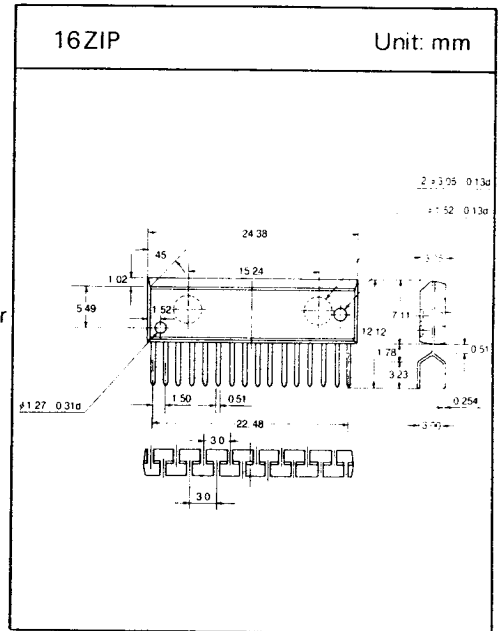
- Adjustable muting sensitivity
- Soft muting function
- Variable maximum muting attenuation(6dB~40dB)
- Variable muting slope with respect to input signal level
- High limiting sensitivity with muting off
- Good S/N ratio
- Clamped AFC output
- Delayed AGC output for front end circuit
- Recommended supply voltage:  $V_{CC} = 8V$
- Operating supply voltage range:  $V_{CC} = 7.5V \sim 16V$
- Low distortion
- Good AMR

### APPLICATIONS

- FM car stereo receiver

### MAXIMUM RATINGS ( $T_a=25^\circ C$ )

Characteristic	Symbol	Rating	Unit
Supply Voltage	$V_{CC}$	16	V
Supply Current	$I_{CC}$	40	mA
Power Dissipation	$P_D$	640	mW
Operation Temperature	$T_{opr}$	-20 ~ +70	$^\circ C$
Storage Temperature	$T_{stg}$	-40 ~ +125	$^\circ C$



# DBL 1018

## FM IF SYSTEM

The DBL1018 has versatile muting characteristics and allows receiver designers to realize the muting performance according to their design concept.

### FUNCTIONS

- FM IF Amplifier/Limiter
- Quadrature Detector
- AFC Clamp
- AGC Drive
- AF Mute Amplifier
- Signal Meter Drive
- DC Level Detector

### FEATURES

- Adjustable muting sensitivity
- Soft muting function
- Variable maximum muting attenuation(6dB~40dB)
- Variable muting slope with respect to input signal level
- High limiting sensitivity with muting off
- Good S/N ratio
- Clamped AFC output
- Delayed AGC output for front end circuit
- Recommended supply voltage:  $V_{CC} = 8V$
- Operating supply voltage range:  $V_{CC} = 7.5V \sim 16V$
- Low distortion
- Good AMR

### APPLICATIONS

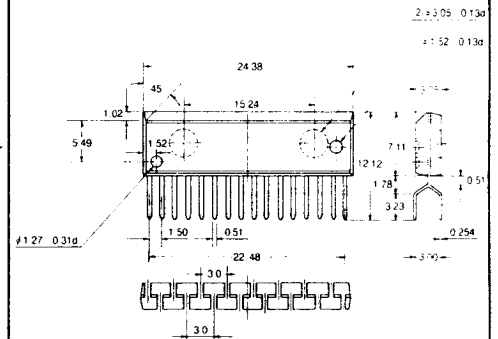
- FM car stereo receiver

### MAXIMUM RATINGS (Ta=25°C)

Characteristic	Symbol	Rating	Unit
Supply Voltage	$V_{CC}$	16	V
Supply Current	$I_{CC}$	40	mA
Power Dissipation	$P_D$	640	mW
Operation Temperature	$T_{opr}$	-20 ~ +70	°C
Storage Temperature	$T_{stg}$	-40 ~ +125	°C

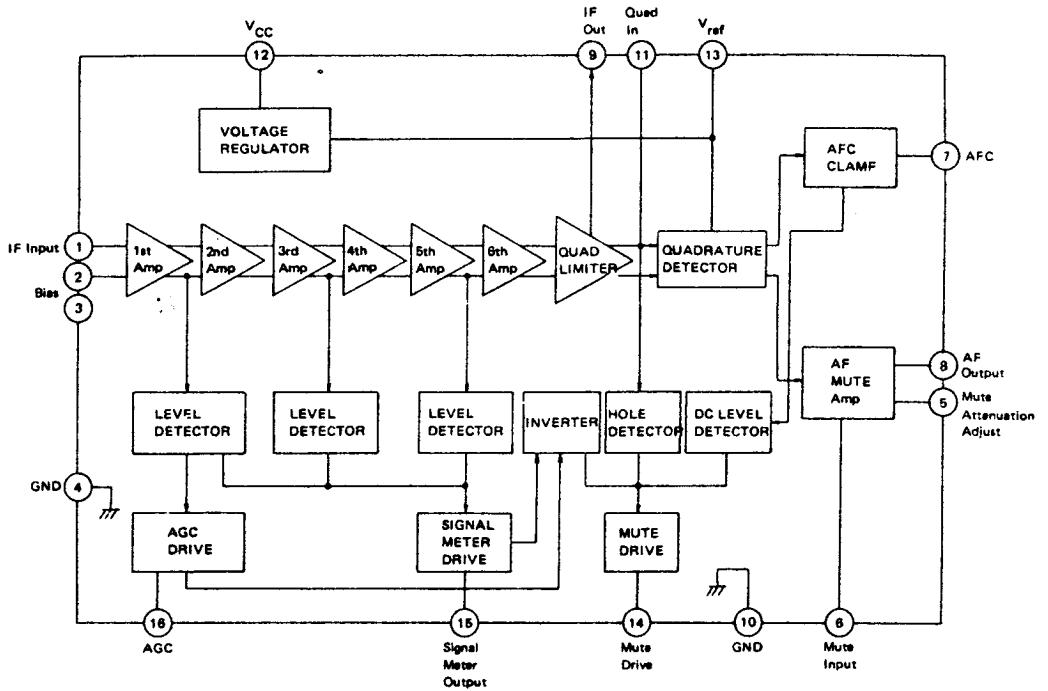
16ZIP

Unit: mm

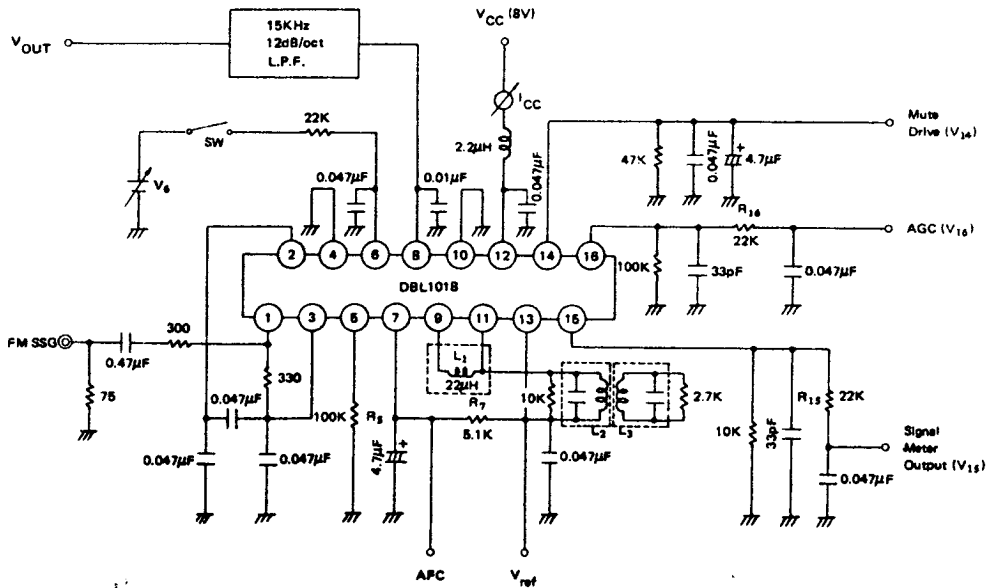


# DBL 1018

## □ BLOCK DIAGRAM



## □ TEST CIRCUIT



## □ INFORMATION ON MUTING CHARACTERISTIC (continued)

The inverted output of the signal meter drive output is obtained as shown Fig. 3.

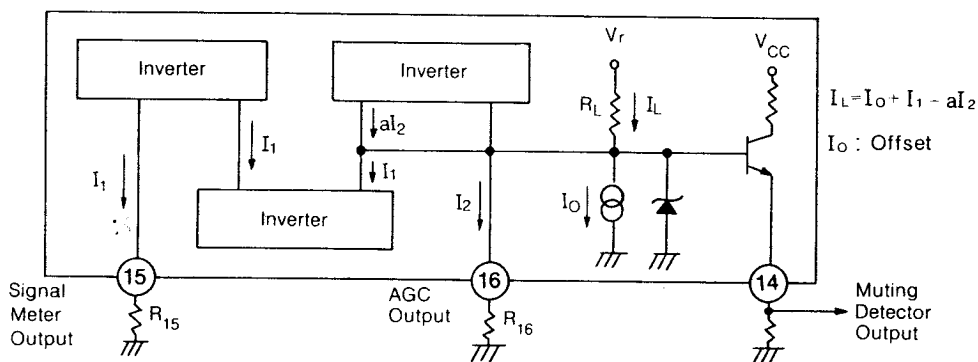


Fig. 3

By Fig. 3,  $V_{14}$  is given by  $V_{14} = V_r - (I_0 + I_1 - aI_2)R_L - V_{BE}$ . Conditions are  $V_r = 4.9\text{V}$ ,  $I_0 \cong 0.2\text{mA}$ ,  $a \cong 2$ ,  $R_L = 22\text{K}\Omega$ ,  $V_{BE} = 0.7\text{V}$ ,  $I_1 = V_{15}/R_{15}$ ,  $I_2 = V_{16}/R_{16}$ , where  $V_{16}$  is a constant equal to 4.1V (Typ.) for medium or lower signal input levels where the muting drive output is required. Since the  $V_{15}$  increases proportionally to the increase of the input signal level,  $I_1$  will also increase, and the  $V_{14}$  will decrease. Thus the required muting drive output can be obtained by selecting proper values of  $R_{15}$  and  $R_{16}$ . Increasing  $R_{15}$  makes the slope of the curve for the muting drive output vs. antenna signal input decrease, or decreasing the  $R_{15}$  increase the slope of the curve.

Furthermore, varying the value of a resistor connected between the pin 14 and pin 16 changes the value of the muting control current required to obtain the same muting drive output, accordingly a slope of curve for muting attenuation vs. antenna signal input level is also changed. Fig. 4 shows these characteristics investigated by using an actual receiver.

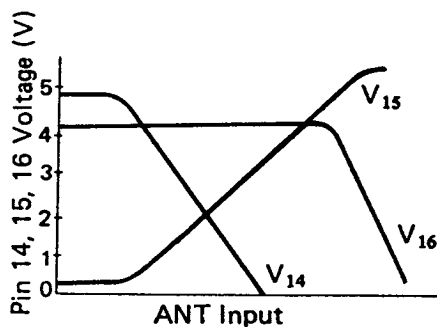
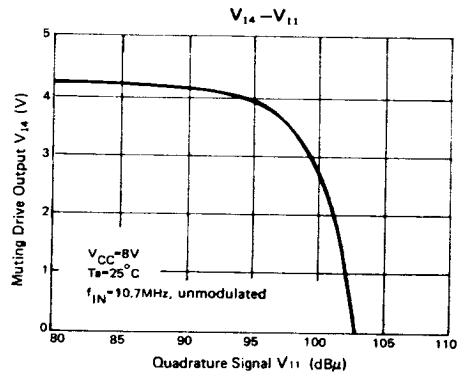
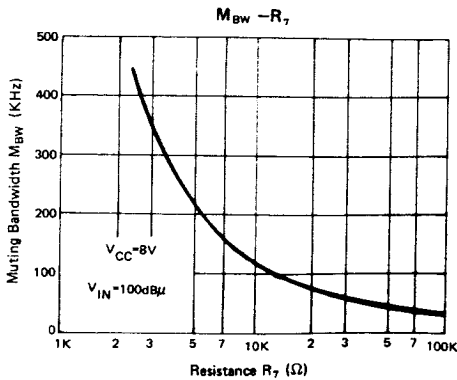
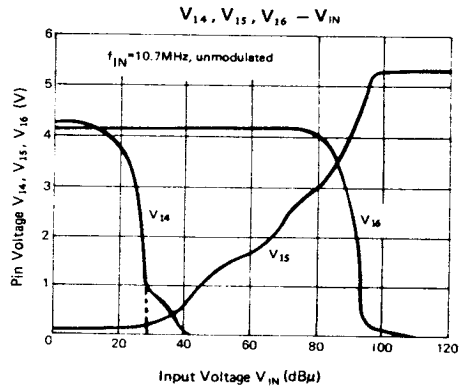
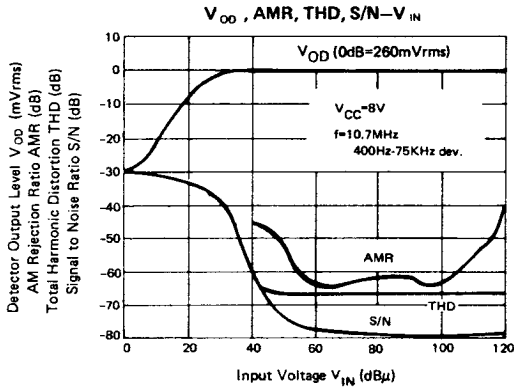
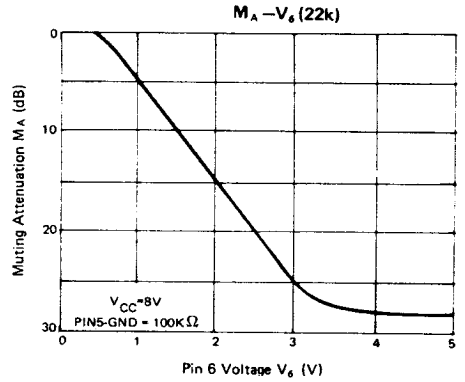
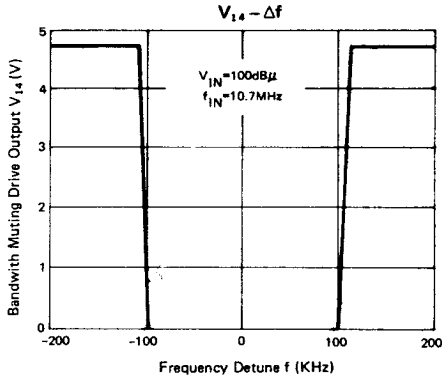


Fig. 4

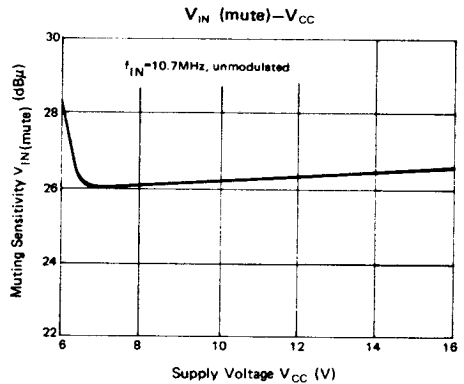
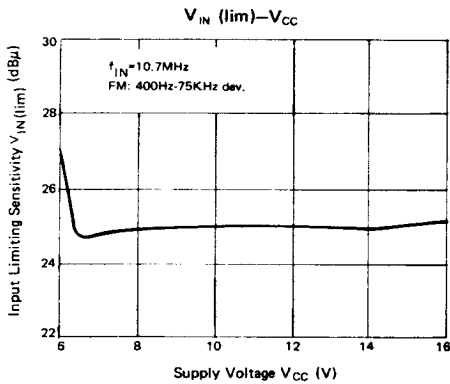
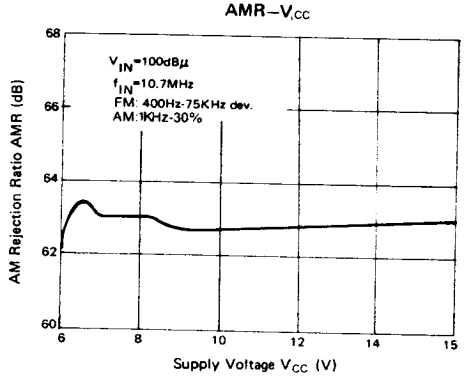
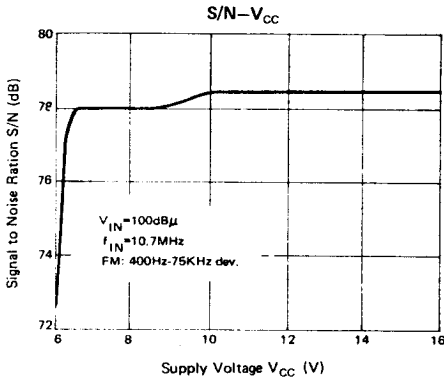
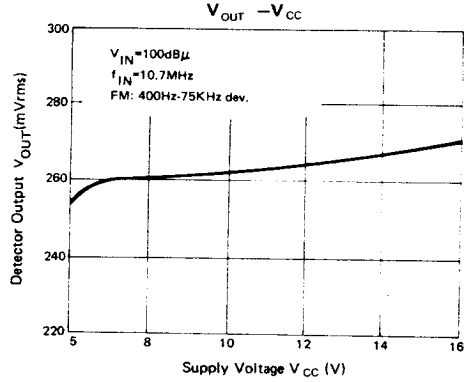
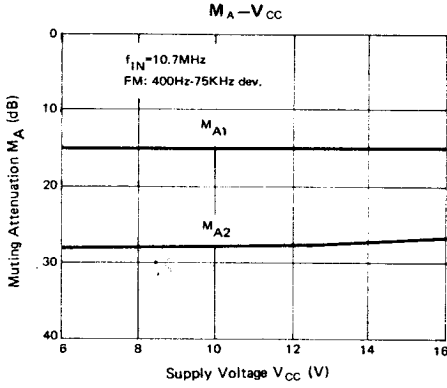
The method to adjust the muting circuit is to set the signal input level required to actuate the muting circuit with the  $R_{16}$ , to adjust the slope of the curve for the muting attenuations vs. antenna signal input with the  $R_{15}$  and to adjust the maximum muting attenuation determined by setting the noise level at no signal. The slope of the curve for the muting attenuation vs. antenna signal input level can also be adjusted by the resistor connected between the pin 14 and the pin 6. However, if the resistor is too high, the muting control current does not flow into pin 6 over than  $120\mu\text{A}$  even though the maximum muting drive output ( $V_{14}$ ) is applied, namely the muting attenuation doesn't reach its maximum value. A recommended value of the resistor between the pin 14 and the pin 6 is about  $22\text{K}\Omega$ .

## □ TYPICAL PERFORMANCE CHARACTERISTICS



# DBL 1018

## □ TYPICAL PERFORMANCE CHARACTERISTICS (continued)



# DBL 1018

APPLICATION CIRCUIT

