Signetics

TDA6800
Video Modulator Circuit

Product Specification

Linear Products

DESCRIPTION

The TDA6800 is a modulator circuit for modulation of video signals on a VHF/UHF carrier. The circuit requires a 5V power supply and few external components for the negative modulation mode. For positive modulation an external clamp circuit is required. This circuit can be used as a general-purpose modulator without additional external components.

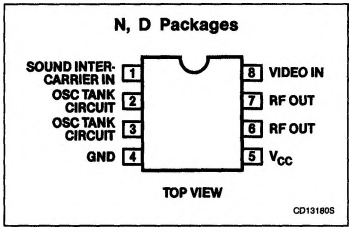
FEATURES

- **Balanced modulator**
- **Symmetrical oscillator**
- **Video clamp circuit for negative modulation**
- **Frequency range 50 to 800MHz**

APPLICATIONS

- **Video modulators**
- **General-purpose modulators**
- **Computers**

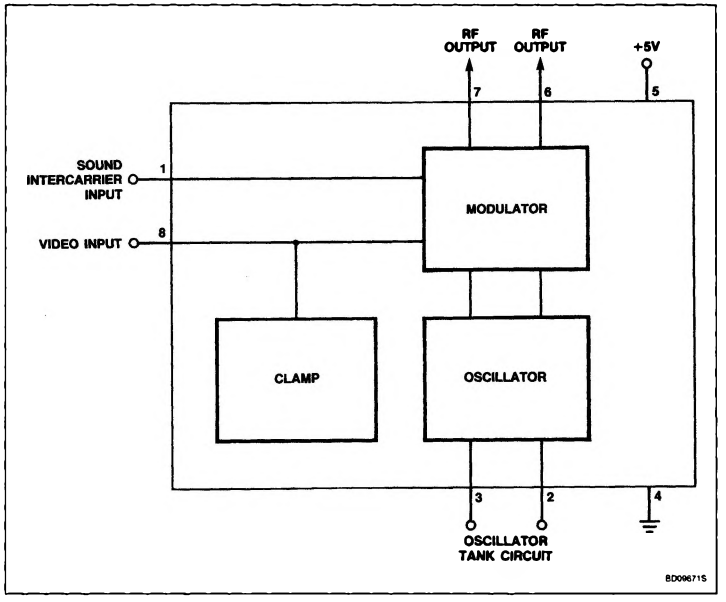
PIN CONFIGURATION



ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE
8-Pin Plastic DIP (SOT-97A)	−25°C to 85°C	TDA6800N
8-Pin Plastic SO (SOT-96A)	−25°C to +85°C	TDA6800TD

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	RATING	UNIT
V_{CC}	Supply voltage	7	V
V_{8-4}	Input voltage	4	V
$V_{6,7-4}$	Output voltage	9	V
T_{STG}	Storage temperature	−65 to +150	°C
T_J	Junction temperature	125	°C
T_A	Operating ambient temperature range	−65 to +85	°C
θ_{JA}	Thermal resistance from junction to ambient in free air TDA6800T TDA6800	 260 120	 °C/W °C/W

DC AND AC ELECTRICAL CHARACTERISTICS V_{CC} = 5V; T_A = 25°C; unless otherwise specified.

SYMBOL	PARAMETER	LIMITS			UNIT
		Min	Typ	Max	
V_{CC}	Supply voltage range	4.5		5.5	V
I_{CC}	Supply current consumption		9	13	mA
$V_{8(P-P)}$	Video input voltage		1		V
R_8	Input impedance	30			kΩ
V_8	Voltage (DC) at video input (clamp voltage)		1.4		V
V_1	Voltage (DC) at sound input		2.5		V
V_{6-7}	Output voltage f = 50MHz; R_L = 75Ω		13		mV
V_{6-7}	Output voltage f = 600MHz; R_L = 75Ω		10		mV
Δ_G	Differential gain			10	%
Δ_ϕ	Differential phase			10	deg.
	Intermodulation[1] (1.1MHz)		−80	−60	dB
Δ_F	Frequency shift V_B = 5%, f = 600MHz			100	kHz
Δ_F	Frequency shift V_B = 5%, f = 800MHz		TBD		kHz
Δ_F	Frequency drift 25 to 40°C			100	kHz
Δ_F	Frequency drift 15 to 55°C			300	kHz
Positive modulation (see Figure 2)					
V_R	Residual carrier voltage			2.5	%
α	Cross modulation[2]		0.1	0.25	%

NOTES:

1. Input signal: DC 0.45V (V_{8-4} = 1.85V)
   4.4MHz; input voltage (P-P) = 0.6V
   5.5MHz; input voltage (P-P) = 1.26V
   measured with respect to picture carrier, at f = 600MHz.
2. Input signal: DC 1V (V_{8-4} = 3.5V)
   5.5MHz AM modulated, f_M = 100kHz
   m = 0.8; input voltage (P-P) = 2.27V (including modulation)
   measured with respect to the picture carrier, at f = 600MHz.

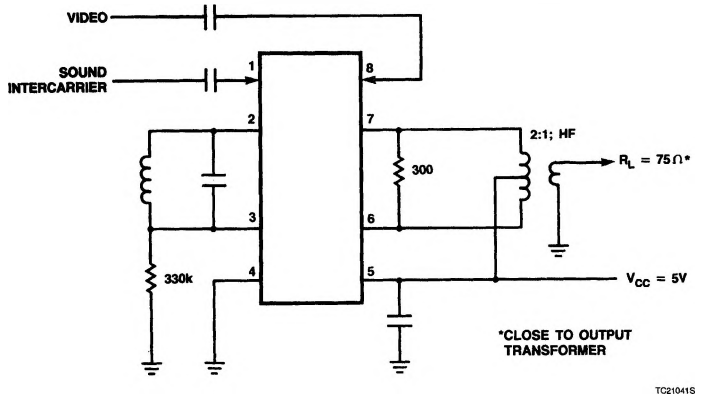


Figure 1. Application for Negative Modulation

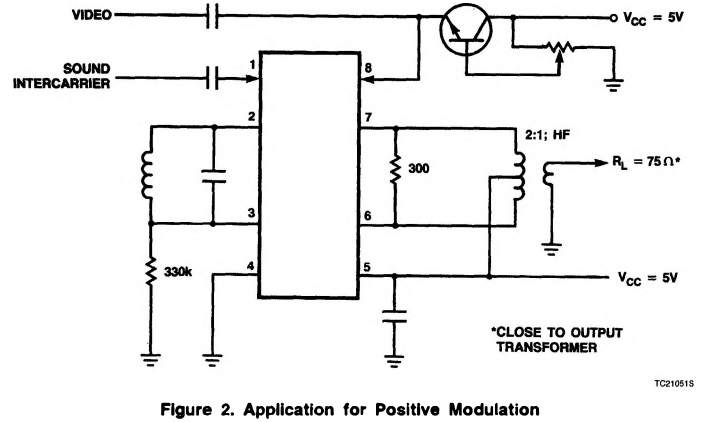


Figure 2. Application for Positive Modulation

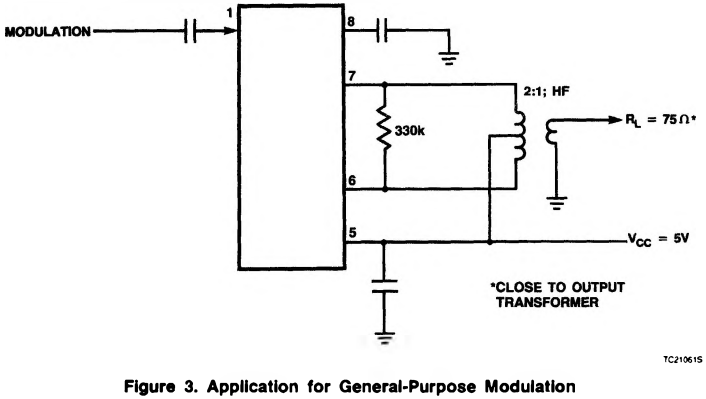


Figure 3. Application for General-Purpose Modulation