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## **NTE7168**

### **Integrated Circuit**

### **NTSC Single Chip Color TV**

#### **Description:**

The NTE7168 combines all the functions required for an NTSC color TV system in a 56-Lead DIP type package. This device includes PIF/SIF circuits, video/chroma/deflection circuits, chroma band pass filters, red and green OSD interfaces, and 1ch Audio Video switches.

#### **Features:**

##### **PIF Stage**

- 3-Stage Variable-Gain PIF Amplification Stage
- High-Speed Response AGC with Dual Time Constants (Peak AGC)
- Single End AFT Output with Defeat Function
- RF Delay AGC Output (Reverse AGC)
- Sync. Negative Detected Video Output Polarity
- Internal Black/White Noise Inverter
- Minimum Externally Mounted Parts and Adjusting Spots

##### **SIF Stage**

- 3-Stage limiter Amplification Stage
- Quadrature FM Detector Circuit with Sound Mute Function
- 1 Channel External Audio Input
- High-Performance Electronic Attenuator Circuit
- Preamplifier Circuit

##### **Video Stage**

- 2<sup>nd</sup> Order-Differential-Type Picture Sharpness Circuit (DC Control)
- Contrast Control with Unicolor Function
- Brightness Control with Pedestal Clamping Circuit (Variable DC Restoration Ratio)
- External Video Input

##### **Chroma Stage**

- Internal  $1/2f_{SC}$  Trap
- Internal band Pass Filter
- ACC Circuit
- Color Control Circuit
- Unicolor Control Circuit
- Color Differential Output
- Tint Control Circuit
- Adjustment-Free APC Circuit

## **Features (Cont'd):**

### **Deflection Stage**

- High-Performance Sync Separation Circuit
- Adjustment-Free Horizontal Oscillation Circuit
- Stable Vertical Synchronization
- Sawtooth-Type AFC (Internal sawtooth Wave Generator)
- Horizontal Predrive Output
- X-Ray Protection Circuit
- Vertical NFB Amplification Circuit

### **OSD Interface Stage**

- Fast Blanking SW

### **Absolute Maximum Ratings:** ( $T_A = +25^{\circ}\text{C}$ unless otherwise specified)

Power Supply Voltage, $V_{CC}$	13V
Input Terminal Voltage, $V_{in}$	GND-0.3V to $V_{CC}+0.3V$
Input Signal Amplitude, $e_{in}$	$4V_{P-P}$
Power Dissipation (Note 1), $P_D$	1.92W
Operating Temperature Range, $T_{opr}$	$-20^{\circ}$ to $+65^{\circ}\text{C}$
Storage Temperature Range, $T_{stg}$	$-55^{\circ}$ to $+150^{\circ}\text{C}$

Note 1. When using the device at above  $T_A = +25^{\circ}\text{C}$ , decrease the power dissipation by 15.3mW for each increase of  $+1^{\circ}\text{C}$ .

### **Recommended Power Supply Voltage:**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Power Supply Voltage	$V_{CC}$	Pin14, Pin48	8.5	9.0	9.5	V
	H. $V_{CC}$	Pin26	8.5	9.0	9.5	V

### **OSD Logic Table:**

Mode	Input				Output		
	$Y_S$ (Pin29)	R (Pin19)	G (Pin20)	B (Pin28)	R-Y (Pin15)	B-Y (Pin17)	G-Y (Pin18)
TV	L	L	L	L	TV	TV	TV
Black	H	L	L	L	L	L	L
Red	(*)	H	L	L	H	L	L
Blue	(*)	L	L	H	L	H	L
Green	(*)	L	H	L	L	L	H
Yellow	(*)	H	H	L	H	L	H
Magenta	(*)	H	L	H	H	H	L
Cyan	(*)	L	H	H	L	H	H
White	(*)	H	H	H	H	H	H

(\*): Don't Care.

## Pin Connection Diagram

Audio Output	1	56	Audio Control
RF AGC Output	2	55	Audio TV Input
RF AGC Delay	3	54	De-Emphasis
SIF Tank	4	53	SIF Input
1 <sup>st</sup> AGC	5	52	AFT Output
External Audio Input	6	51	AFT Tank
2 <sup>nd</sup> AGC	7	50	PIF Tank (2)
PIF/SIF GND	8	49	PIF Tank (1)
PIF Input (1)	9	48	PIF/SIF V <sub>CC</sub>
PIF Input (2)	10	47	TV Detection Output
f <sub>c</sub> Adjustment	11	46	Tint Control
APC Filter	12	45	TV Input
3.58 X'tal	13	44	Color Control
V/C/D V <sub>CC</sub>	14	43	Contrast Control
R-Y Output	15	42	External Video Input
-Y Output	16	41	V/C/D GND
G-Y Output	17	40	Video OUT (1)
B-Y Output	18	39	Vert Sync Sep Filter
R OSD Input	19	38	Brightness Control
G OSD Input	20	37	Video IN
FBP Input	21	36	Sharpness Control
X-Ray	22	35	OSD Bright Control
Horizontal Output	23	34	Video Out (2)
Horizontal AFC	24	33	Chroma Input
32f <sub>H</sub> VCO	25	32	Killer Filter
H. V <sub>CC</sub>	26	31	Vertical Ramp
Vertical Output	27	30	Vertical NFB
B OSD Input	28	29	Y <sub>S</sub> OSD Input

