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## NTE846 Integrated Circuit TV Video Modulator

### **Description:**

The NTE846 is designed to interface color difference, audio, and luminance signals to the antenna terminals of a TV receiver. It consists of a sound subcarrier oscillator, chroma subcarrier oscillator, quadrature chroma modulators, and RF oscillators and modulators for two low-VHF channels.

The NTE846 allows video information from VTR's test equipment, games, or similar sources to be displayed on black and white or color TV receivers.

### **Features:**

- DC Channel Switching
- Excellent Oscillator Stability
- 12V to 18V Supply Operation
- Low Intermodulation Products
- 5V<sub>p-p</sub> Chroma Reference Signal
- May Be Used to Encode Composite Video

### **Absolute Maximum Ratings:**

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Supply Voltage                                                  | 19V            |
| (V <sub>16</sub> -V <sub>15</sub> ) Max                         | ±5V            |
| (V <sub>14</sub> -V <sub>10</sub> ) Max                         | 7V             |
| (V <sub>14</sub> -V <sub>11</sub> ) Max                         | 7V             |
| Power Dissipation Package (Note 1), P <sub>D</sub>              | 1390mW         |
| Chroma Osc Current I <sub>17</sub> Max                          | 10mA           |
| Operating Temperature Range, T <sub>opr</sub>                   | 0° to 150°C    |
| Storage Temperature Range, T <sub>stg</sub>                     | -55° to +150°C |
| Lead Temperature (During Soldering, 10 seconds), T <sub>L</sub> | +300°C         |

Note 1. For operation in ambient temperatures above 25°C, the device must be derated based on a 150°C maximum junction temperature and a thermal resistance of 90°C/W junction to ambient.



**DC Electrical Characteristics:** (All SW Normally Pos. 1,  $V_A = 15V$ ,  $V_B = 12V$  unless otherwise specified)

| Parameter                            | Symbol                          | Test Conditions                                                                                                              | Min  | Typ  | Max  | Unit |
|--------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|
| Supply Current                       | $I_S$                           |                                                                                                                              | 20   | 35   | 45   | mA   |
| Sound Oscillator, Current Change     | $\Delta I_{15}$                 | Change $V_A$ from 12.5V to 17.5V                                                                                             | 0.3  | 0.6  | 0.9  | mA   |
| Chroma Oscillator Balance            | $V_{17}$                        |                                                                                                                              | 9.5  | 11.0 | 12.5 | V    |
| Chroma Modulator Balance             | $V_{13}$                        |                                                                                                                              | 7.0  | 7.4  | 7.8  | V    |
| R–Y Modulator Output Level           | $\Delta V_{13}$                 | SW 3: Pos. 2,<br>Change SW 1 from Pos. 1 to Pos. 2                                                                           | 0.6  | 0.9  | 1.2  | V    |
| B–Y Modulator Output Level           | $\Delta V_{13}$                 | SW 3: Pos. 2,<br>Change SW 2 from Pos. 1 to Pos. 2                                                                           | 0.6  | 0.9  | 1.2  | V    |
| Chroma Modulator Conversion Ratio    | $\Delta V_{13}/\Delta V_3$      | Divide $\Delta V_{13}$ by $\Delta V_3$ , SW 3: Pos. 2,<br>Change SW 0 from Pos. 1 to Pos. 2,                                 | 0.45 | 0.70 | 0.95 | V/V  |
| Channel A Oscillator “OFF” Voltage   | $V_8, V_9$                      | SW 4: Pos. 2                                                                                                                 | 0.5  | 1.5  | 3.0  | V    |
| Channel A Oscillator Current Level   | $I_9$                           | $V_B = 12V$ , $V_C = 13V$                                                                                                    | 2.5  | 3.5  | 5.0  | mA   |
| Channel B Oscillator “OFF” Voltage   | $V_6, V_7$                      | SW 4: Pos. 2                                                                                                                 | 0.5  | 1.5  | 3.0  | V    |
| Channel B Oscillator Current Level   | $I_6$                           | $V_B = 12V$ , $V_C = 13V$                                                                                                    | 2.5  | 3.5  | 5.0  | mA   |
| Channel A Modulator Conversion Ratio | $\Delta V_{11}/(V_{13}-V_{12})$ | SW 1, SW 2, SW 3: Pos. 2, $V_B = 12V$ ,<br>Change $V_C$ from 13V to 11V for $\Delta V_{11}$ ,<br>Divide by $V_{13} - V_{12}$ | 0.35 | 0.55 | 0.75 | V/V  |
| Channel B Modulator Conversion Ratio | $\Delta V_{10}/(V_{13}-V_{12})$ | All SW: Pos. 2, $V_B = 12V$ , Change $V_C$<br>from 13V to 11V, Divide as Above                                               | 0.35 | 0.55 | 0.75 | V/V  |

**AC Electrical Characteristics:** ( $V = 15V$  unless otherwise specified)

| Parameter                      | Symbol     | Test Conditions                                  | Min | Typ | Max | Unit       |
|--------------------------------|------------|--------------------------------------------------|-----|-----|-----|------------|
| Chroma Oscillator Output Level | $V_{17}$   | $C_{LOAD} \leq 20pF$                             | 4   | 5   | –   | $V_{P-P}$  |
| Sound Carrier Oscillator Level | $V_{15}$   | Loaded by RC Coupling Network                    | 2   | 3   | 4   | $V_{P-P}$  |
| Channel 3 RF Oscillator Level  | $V_8, V_9$ | Ch SW: Pos. 3, $f = 61.25MHz$ ,<br>Use FET Probe | 200 | 350 | –   | $mV_{P-P}$ |
| Channel 4 RF Oscillator Level  | $V_6, V_7$ | Ch SW: Pos. 4, $f = 67.25MHz$ ,<br>Use FET Probe | 200 | 350 | –   | $mV_{P-P}$ |

## Pin Connection Diagram

