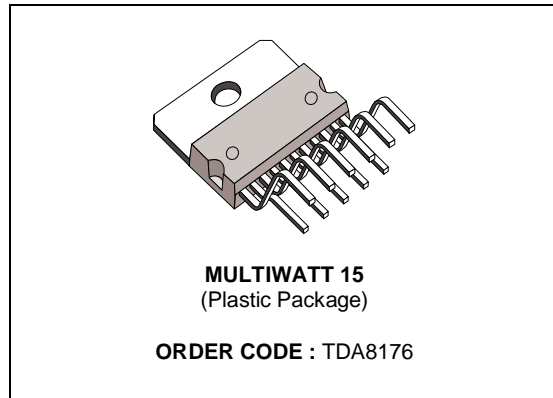


**TV VERTICAL DEFLECTION SYSTEM
FOR TV AND MONITORS**

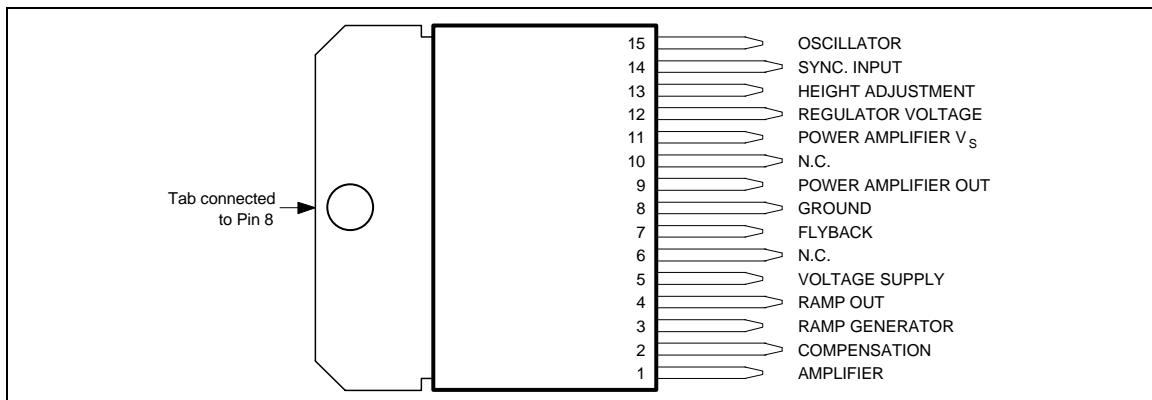
- SYNCHRONIZATION CIRCUIT
- OSCILLATOR AND RAMP GENERATOR
- HIGH POWER GAIN AMPLIFIER
- FLYBACK GENERATOR
- VOLTAGE REGULATOR



DESCRIPTION

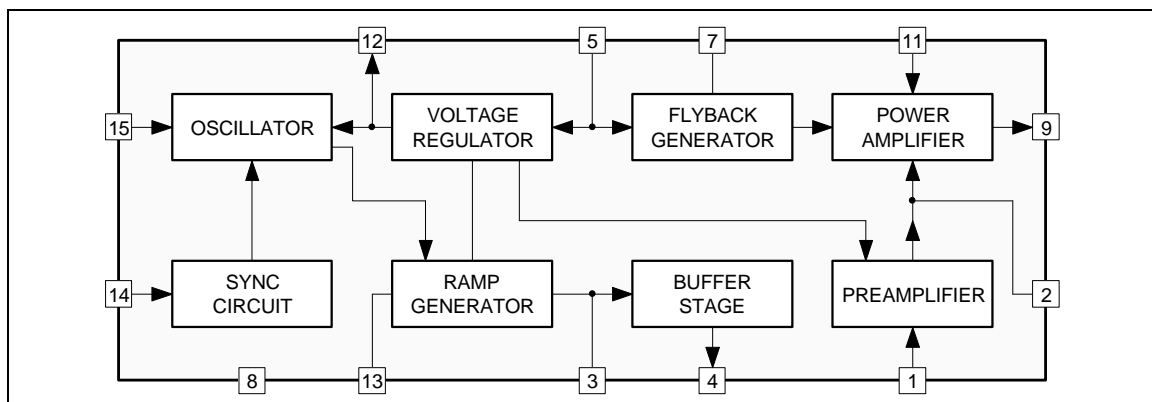
The TDA8176 is a monolithic integrated circuit in Multiwatt 15 package. It is intended for use in color TV sets and monitors.

PIN CONNECTIONS



8176-01.EPS

BLOCK DIAGRAM



8176-02.EPS

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|-----------------------------------|--|---------------|--------|
| V ₅ | Supply Voltage at Pin 2 | 35 | V |
| V ₄ , V ₅ | Flyback Peak Voltage | 60 | V |
| V ₁₀ | Power Amplifier Input Voltage | + 10 - 0.5 | V V |
| I _o | Output Peak Current (non repetitive) at t = 2 ms | 2 | A |
| I _o | Output Peak Current at f = 50 Hz t ≤ 10 μs | 2.5 | A |
| I _o | Output Peak Current at f = 50 Hz t > 10 μs | 1.5 | A |
| I ₃ | Pin 3 DC Current at V ₄ < V ₂ | 100 | mA |
| I ₃ | Pin 3 Peak to Peak Flyback Current for f = 50 Hz, t _{fly} ≤ 1.5 ms | 1.8 | A |
| I ₈ | Pin 8 Current | ± 20 | mA |
| P _{tot} | Power Dissipation at T _{tab} = 90 °C at T _{amb} = 80 °C | 20 1.4 | W W |
| T _{stg} , T _j | Storage and Junction Temperature | - 40, + 150 | °C |

8176-01.TBL

THERMAL DATA

| Symbol | Parameter | Value | Unit |
|----------------------|-------------------------------------|---------|------|
| R _{th(j-c)} | Thermal Resistance Junction-case | Max. 3 | °C/W |
| R _{th(j-a)} | Thermal Resistance Junction-ambient | Max. 50 | °C/W |

8176-02.TBL

AC ELECTRICAL CHARACTERISTICS

(refer to the test circuit, V_S = 25V ; f = 50Hz ; T_{amb} = 25°C, unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------------------------------|--|---|------|-------|------|-------|
| I _s | Supply Current | I _y = 1 App | | 140 | | mA |
| I ₁₄ | Sync. Input Current (positive or negative) | | 500 | | | μA |
| V ₉ | Flyback Voltage | I _y = 1 App | | 51 | | V |
| V ₁₅ | Peak to peak Oscillator Sawtooth Voltage | | | 2.4 | | V |
| t _{fly} | Flyback Time | I _y = 1 App | | 0.7 | | ms |
| f _o | Free Running Frequency | (P ₁ + R ₁) = 300kΩ C ₂ = 100 nF | | 44 | | Hz |
| | | (P ₁ + R ₁) = 260kΩ C ₂ = 100 nF | | 52 | | Hz |
| Δf | Synchronization Range | I ₈ = 0.5 mA | 14 | | | Hz |
| $\frac{\Delta f}{\Delta V_S}$ | Frequency Drift with Supply Voltage | V _S = 10 to 35 V | | 0.005 | | Hz/V |
| $\frac{\Delta f}{\Delta T_{tab}}$ | Frequency Drift with Tab Temperature | T _{tab} = 40 to 120 °C | | 0.01 | | Hz/°C |

8176-03.TBL

DC ELECTRICAL CHARACTERISTICS ($V_S = 35V$, $T_{amb} = 25^\circ C$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|------|------|------|------------|
| I_5 | Pin 5 Quiescent Current | $I_7 = 0$ | | 7 | 14 | mA |
| I_{11} | Pin 11 Quiescent Current | $I_9 = 0$ | | 8 | 17 | mA |
| $-I_{15}$ | Oscillator Bias Current | $V_{15} = 1 V$ | | 0.1 | 1 | μA |
| $-I_1$ | Amplifier Input Bias Current | $V_1 = 1 V$ | | 0.1 | 10 | μA |
| $-I_3$ | Ramp Generator Bias Current | $V_3 = 0$ | | 0.02 | 0.3 | μA |
| $-I_3$ | Ramp Generator Current | $I_{13} = 20 \mu A$, $V_3 = 0$ | 18.5 | 20 | 21.5 | μA |
| $\frac{\Delta I_3}{I_3}$ | Ramp Generator Non-linearity | $\Delta V_{12} = 0$ to $12 V$ $I_{13} = 20 \mu A$ | | 0.2 | 1 | % |
| V_S | Supply Voltage Range | | 10 | | 35 | V |
| V_4 | Pin 4 Saturation Voltage to Ground | $I_4 = 1 mA$ | | 1 | 1.4 | V |
| V_7 | Pin 7 Saturation Voltage to Ground | $I_7 = 10 mA$ | | 300 | 450 | mV |
| V_9 | Quiescent Output Voltage | $V_S = 10 V$ $R_1 = 10 k\Omega$ $R_2 = 10 k\Omega$ | 4.1 | 4.4 | 4.75 | V |
| | | $V_S = 35 V$ $R_1 = 30 k\Omega$ $R_2 = 10 k\Omega$ | 8.3 | 8.8 | 9.45 | V |
| V_{9L} | Output Saturation Voltage to Ground | $-I_9 = 0.1 A$ | | 0.9 | 1.2 | V |
| | | $-I_9 = 0.8 A$ | | 1.9 | 2.3 | V |
| V_{9H} | Output Saturation Voltage to Supply | $I_9 = 0.1 A$ | | 1.4 | 2.1 | V |
| | | $I_9 = 0.8 A$ | | 2.8 | 3.2 | V |
| V_{12} | Regulated Voltage at Pin 12 | | 6.1 | 6.5 | 6.9 | V |
| V_{13} | Regulated Voltage at Pin 13 | $I_{13} = 10 \mu A$ | 6.2 | 6.6 | 7 | V |
| $\frac{\Delta V_{12}}{\Delta V_S}$, $\frac{\Delta V_{13}}{\Delta V_S}$ | Regulated Voltage Drift with Supply Voltage | $\Delta V_S = 10$ to $35 V$ | | 1 | | mV/V |
| V_1 | Amplifier Input Reference Voltage | | 2.07 | 2.2 | 2.3 | V |
| R_{14} | Pin 8 Input Resistance | $V_{14} \leq 0.4 V$ | 1 | | | M Ω |

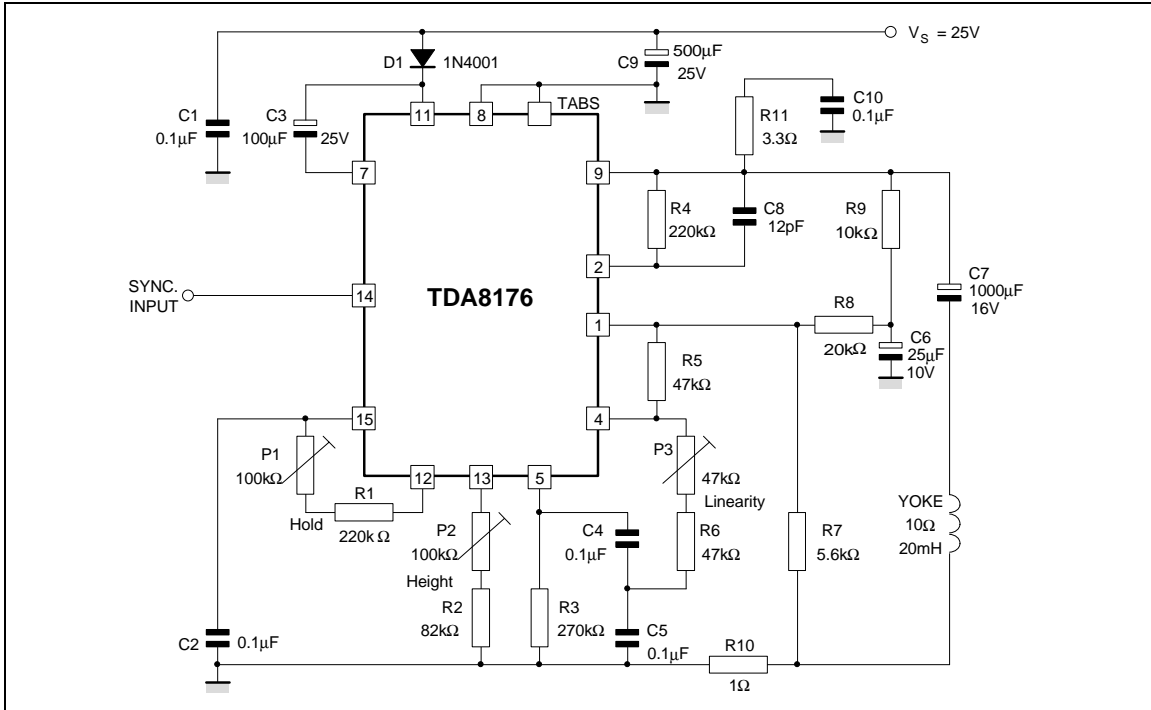
8176-04.TEL

TYPICAL PERFORMANCE OF THE CRUIT OF FIG.1

| Symbol | Parameter | Value | Unit |
|-----------|---|-------|------|
| V_S | Operating Supply Voltage | 25 | V |
| I_S | Supply Current | 175 | mA |
| t_{fly} | Flyback Time | 1 | ms |
| P_{tot} | Power Dissipation | 3.25 | W |
| i_y | Maximum Scanning Current (peak-to-peak) | 1.4 | A |

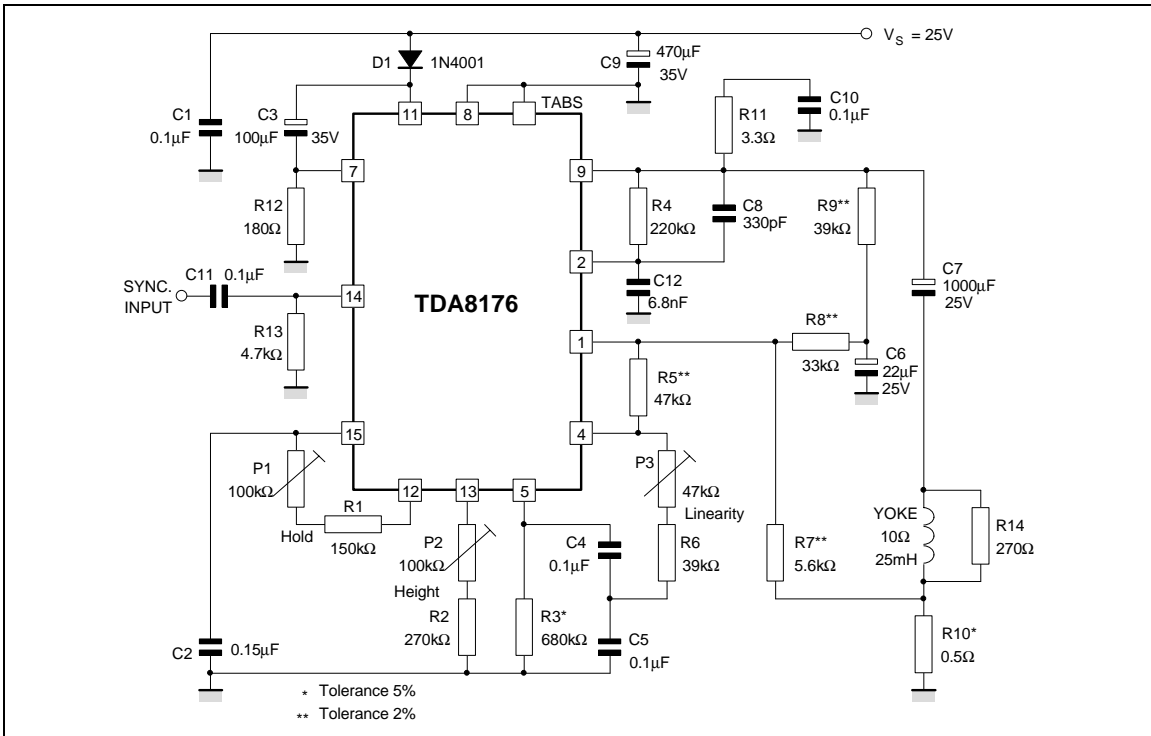
8176-05.TEL

AC TEST CIRCUITS



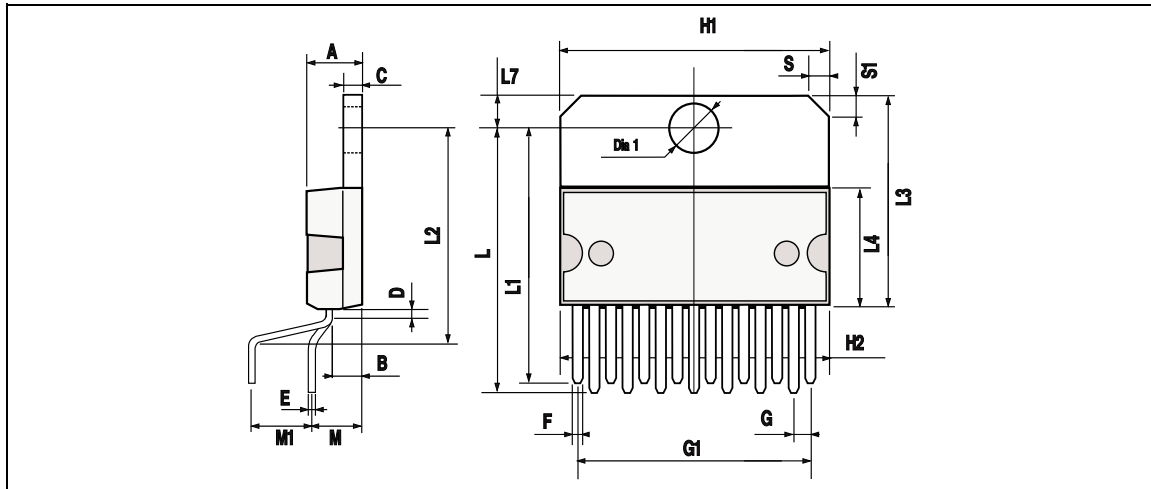
8176-03.EPS

Figure 1 : Typical Application Circuit for large Screen 110° PIL TVC Set ($R_y = 10 \Omega$; $L_y = 25 \text{ mH}$; $l_y = 1.25 \text{ App}$).



8176-04.EPS

PACKAGE MECHANICAL DATA : 15 PINS - PLASTIC MULTIWATT



PMML15V/EP5

| Dimensions | Millimeters | | | Inches | | |
|------------|-------------|-------|-------|--------|-------|-------|
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | | | 5 | | | 0.197 |
| B | | | 2.65 | | | 0.104 |
| C | | | 1.6 | | | 0.063 |
| D | | 1 | | | 0.039 | |
| E | 0.49 | | 0.55 | 0.019 | | 0.022 |
| F | 0.66 | | 0.75 | 0.026 | | 0.030 |
| G | 1.14 | 1.27 | 1.4 | 0.045 | 0.050 | 0.055 |
| G1 | 17.57 | 17.78 | 17.91 | 0.692 | 0.700 | 0.705 |
| H1 | 19.6 | | | 0.772 | | |
| H2 | | | 20.2 | | | 0.795 |
| L | 22.1 | | 22.6 | 0.870 | | 0.890 |
| L1 | 22 | | 22.5 | 0.866 | | 0.886 |
| L2 | 17.65 | | 18.1 | 0.695 | | 0.713 |
| L3 | 17.25 | 17.5 | 17.75 | 0.679 | 0.689 | 0.699 |
| L4 | 10.3 | 10.7 | 10.9 | 0.406 | 0.421 | 0.429 |
| L7 | 2.65 | | 2.9 | 0.104 | | 0.114 |
| M | 4.2 | 4.3 | 4.6 | 0.165 | 0.169 | 0.181 |
| M1 | 4.5 | 5.08 | 5.3 | 0.177 | 0.200 | 0.209 |
| S | 1.9 | | 2.6 | 0.075 | | 0.102 |
| S1 | 1.9 | | 2.6 | 0.075 | | 0.102 |
| Dia. 1 | 3.65 | | 3.85 | 0.144 | | 0.152 |

MUL15V/TBL

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