

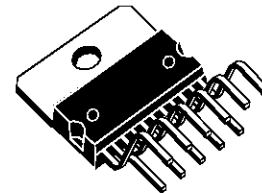
## VERTICAL DEFLECTION CIRCUIT

- RAMP GENERATOR
- INDEPENDENT AMPLITUDE ADJUSTEMENT
- BUFFER STAGE
- POWER AMPLIFIER
- FLYBACK GENERATOR
- INTERNAL REFERENCE VOLTAGE
- THERMAL PROTECTION

### DESCRIPTION

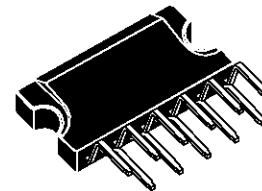
TDA8174 and TDA8174W are a monolithic integrated circuits.

It is a full performance and very efficient vertical deflection circuit intended for direct drive of a TV picture tube in Color and B & W television as well as in Monitor and Data displays.



**MULTIWATT11**  
(Plastic Package)

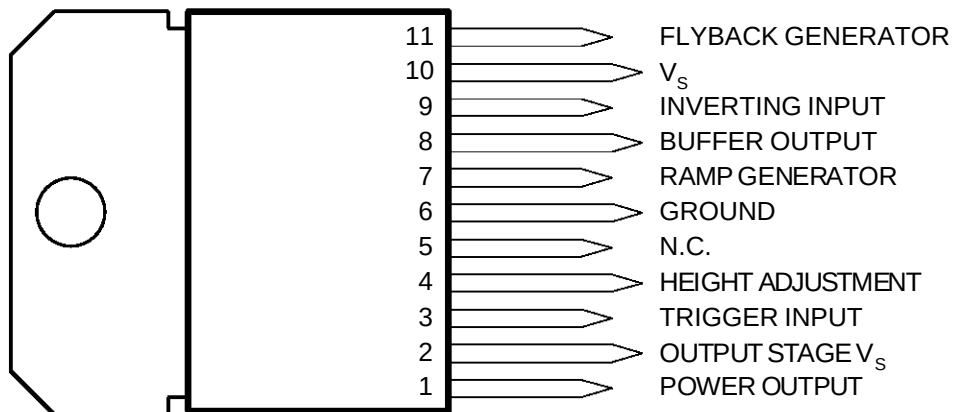
**ORDER CODE :TDA8174**



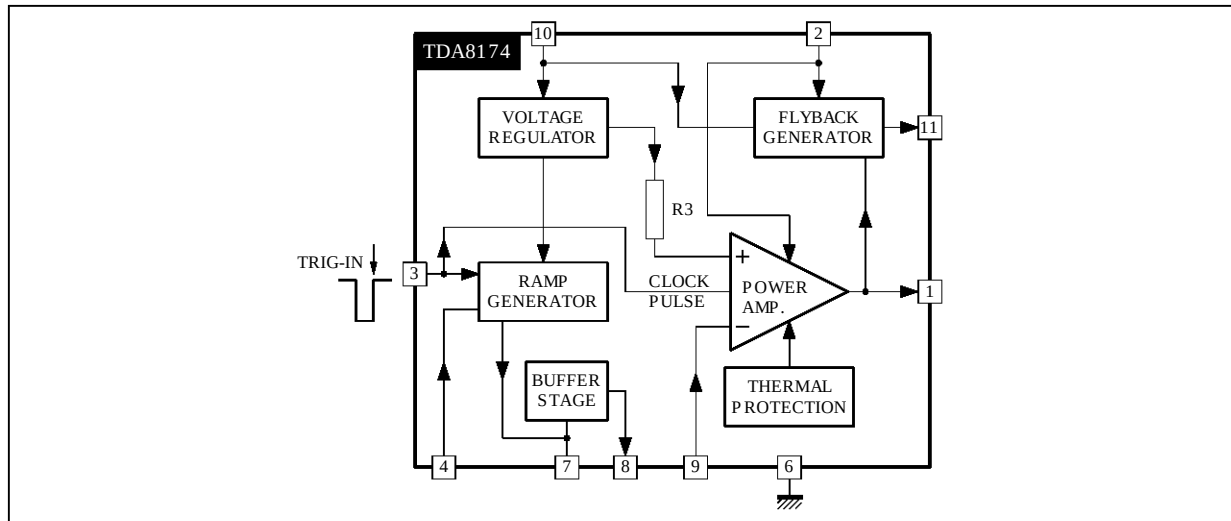
**CLIPWATT11**  
(Plastic Package)

**ORDER CODE :TDA8174W**

### PIN CONNECTIONS (top view)



## BLOCK DIAGRAM



8174-02.EPS

## ABSOLUTE MAXIMUM RATINGS

| Symbol     | Parameter                                                      | Value      | Unit             |
|------------|----------------------------------------------------------------|------------|------------------|
| $V_S$      | Supply Voltage                                                 | 35         | V                |
| $V_1, V_2$ | Flyback Peak Voltage                                           | 65         | V                |
| $V_3$      | Trigger Input Voltage                                          | 20         | V                |
| $V_9$      | Amplifier Input Voltage                                        | GND, $V_S$ | V                |
| $I_0$      | Output Peak-to-peak Current (non repetitive $t = 2\text{ms}$ ) | 6          | A                |
| $I_0$      | Output Peak-to-peak Current $t > 10\mu\text{s}$                | 4          | A                |
| $I_{11}$   | Pin 11 DC Current at $V_1 < V_{10}$                            | 100        | mA               |
| $I_{11}$   | Pin 11 Peak-to-peak Current @ $t_{fly} < 1.5\text{ms}$         | 3          | A                |
| $P_{tot}$  | Total Power Dissipation @ $T_{tab} = 60^\circ\text{C}$         | 30         | W                |
| $T_{stg}$  | Storage Temperature                                            | - 40, +150 | $^\circ\text{C}$ |
| $T_j$      | Junction Temperature                                           | 0, +150    | $^\circ\text{C}$ |
| $T_{amb}$  | Ambient Temperature                                            | 0, +70     | $^\circ\text{C}$ |

8174-01.TBL

## THERMAL DATA

| Symbol          | Parameter                           | Value   | Unit               |
|-----------------|-------------------------------------|---------|--------------------|
| $R_{th(j-tab)}$ | Thermal Resistance Junction-tab     | Max. 3  | $^\circ\text{C/W}$ |
| $R_{th(j-a)}$   | Thermal Resistance Junction-ambient | Max. 40 | $^\circ\text{C/W}$ |

8174-02.TBL

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

| Symbol     | Parameter                       | Test Conditions                                                     | Min. | Typ. | Max. | Unit          |
|------------|---------------------------------|---------------------------------------------------------------------|------|------|------|---------------|
| $I_2$      | Pin 2 Quiescent Current         | $I_1 = 0, I_{11} = 0$                                               |      | 16   | 36   | mA            |
| $I_{10}$   | Pin 10 Quiescent Current        | $I_1 = 0, I_{11} = 0$                                               |      | 15   | 30   | mA            |
| $-I_7$     | Ramp Generator Bias Current     | $V_7 = 0$                                                           |      |      | 0.5  | $\mu\text{A}$ |
| $-I_7$     | Ramp Generator Current          | $V_7 = 0, -I_4 = 20\mu\text{A}$                                     | 18.5 | 20   | 21.5 | $\mu\text{A}$ |
| $dI_7/I_7$ | Ramp Generator Linearity        | $V_6 = 0 \text{ to } 15\text{V}, -I_4 = 20\mu\text{A}$              |      | 0.2  | 1    | %             |
| $V_1$      | Quiescent Output Voltage        | $R_a = 30\text{k}\Omega, R_b = 10\text{k}\Omega, V_S = 35\text{V}$  | 17.0 | 17.8 | 18.6 | V             |
|            |                                 | $R_a = 6.8\text{k}\Omega, R_b = 10\text{k}\Omega, V_S = 15\text{V}$ | 7.2  | 7.5  | 7.8  | V             |
| $V_{1L}$   | Out Saturation Voltage to GND   | $I_1 = 0.5\text{A}$                                                 |      | 0.5  | 1    | V             |
|            |                                 | $I_1 = 1.2\text{A}$                                                 |      | 1    | 1.4  | V             |
| $V_{1H}$   | Out Saturation Voltage to $V_S$ | $-I_1 = 0.5\text{A}$                                                |      | 1.1  | 1.6  | V             |
|            |                                 | $-I_1 = 1.2\text{A}$                                                |      | 1.6  | 2.2  | V             |

8174-03.TBL

## DC ELECTRICAL CHARACTERISTICS (continued)

| Symbol       | Parameter                            | Test Conditions                         | Min. | Typ. | Max. | Unit              |
|--------------|--------------------------------------|-----------------------------------------|------|------|------|-------------------|
| $V_4$        | Reference Voltage                    | $-I_4 = 20\mu\text{A}$                  | 6.3  | 6.6  | 6.9  | V                 |
| $dV_4/V_S$   | Reference Voltage Drift Versus $V_S$ | $V_S = 10\text{V to } 35\text{V}$       |      | 1    | 2    | mV/V              |
| $dV_4/dI_4$  | Reference Voltage Drift Versus $I_4$ | $I_4 = 10\mu\text{A to } 30\mu\text{A}$ |      | 1.5  | 2    | mV/ $\mu\text{A}$ |
| $V_r$        | Internal Reference Voltage           |                                         | 4.26 | 4.40 | 4.54 | V                 |
| $V_{D11-10}$ | Diode Fwd Voltage                    | $I_D = 1.2\text{A}$                     |      | 2.2  | 3    | V                 |
| $V_{D1-2}$   | Diode Fwd Voltage                    | $I_D = 1.2\text{A}$                     |      | 2.2  | 3    | V                 |
| $G_V$        | Output Stage Open Loop Gain          | $f = 100\text{Hz}$                      |      | 60   |      | dB                |
| $V_{fs}$     | $V_{10-11}$ Saturation Voltage       | $-I_{11} = 1.2\text{A}$                 |      | 1.5  | 2.5  | V                 |
| $V_{11}$     | Pin 11 Scanning Voltage              | $I_{11} = 20\text{mA}$                  |      | 1.7  | 3    | V                 |
| $V_3$        | Trigger Input Threshold              | (see note 1)                            | 2.6  | 3.0  | 3.4  | V                 |
| $I_3$        | Trigger Input Bias Current           | $V_{IN} = V_3 - 0.2\text{V}$            |      |      | 30   | $\mu\text{A}$     |
| $t_3$        | Trigger Input Width                  | (see note 2)                            | 20   | 60   | Th   | $\mu\text{S}$     |

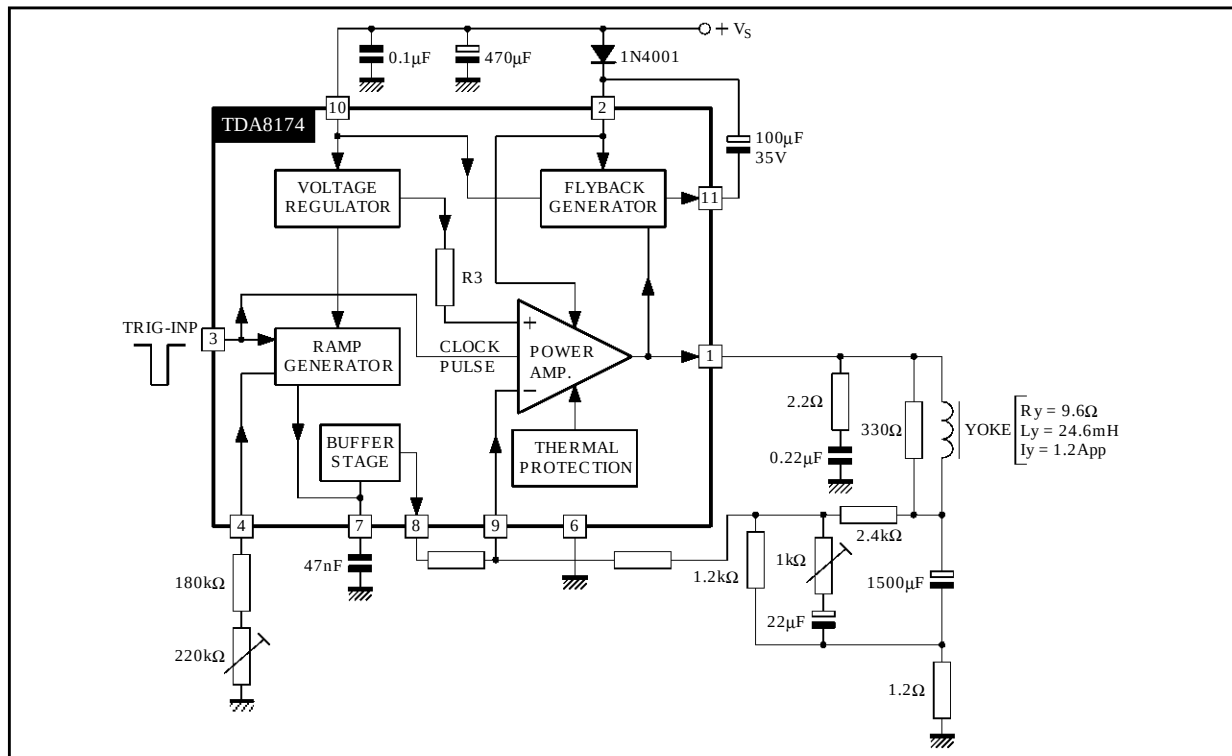
Notes : 1. The trigger input circuit can accept, with a metal option, positive and negative going input pulses.

2.  $T_h = \frac{1.2 \cdot T_s}{V_{PP}}$  where :  $T_s$  is the vertical period and  $V_{PP}$  is ramp amplitude at Pin7

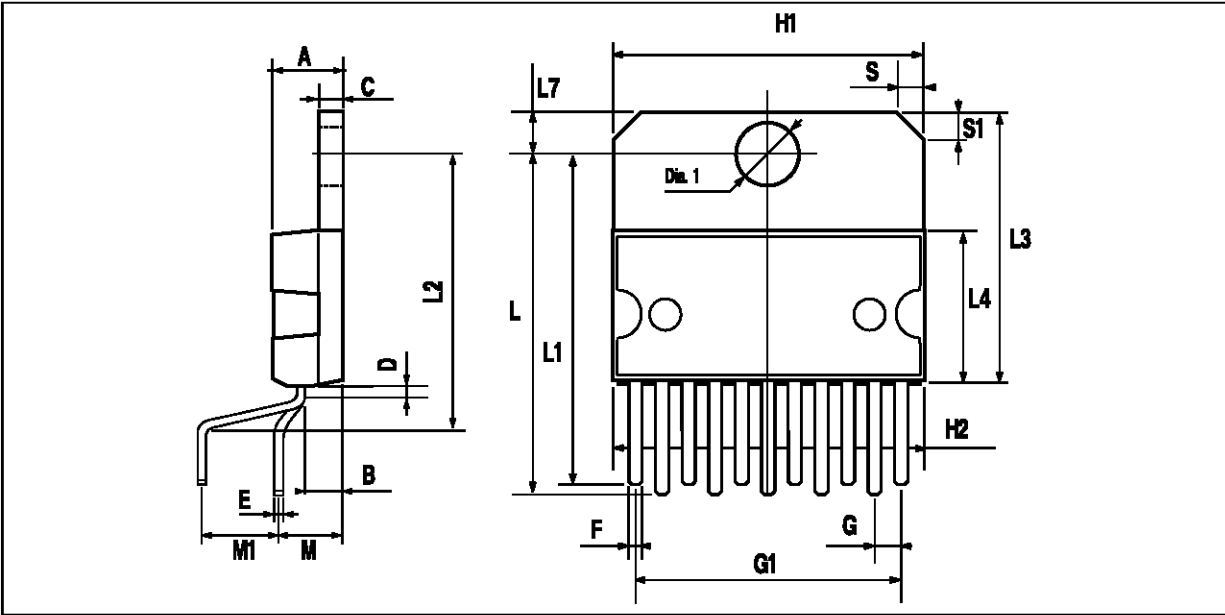
AC ELECTRICAL CHARACTERISTICS ( $V_S = 24\text{V}$  ;  $T_{\text{amb}} = 25^\circ\text{C}$  unless otherwise specified)

| Symbol   | Parameter                            | Test Conditions          | Min. | Typ. | Max. | Unit             |
|----------|--------------------------------------|--------------------------|------|------|------|------------------|
| $V_S$    | Operating Supply Voltage Range       |                          | 10   |      | 30   | V                |
| $I_1$    | Peak-to-peak Operating Current Range |                          | 0.4  |      |      | A                |
| $I_S$    | Supply Current                       | $I_y = 2.4\text{A}_{pp}$ |      | 315  |      | mA               |
| $V_1$    | Flyback Voltage                      | $I_y = 2.4\text{A}_{pp}$ |      | 51   |      | V                |
| $V_8$    | Sawtooth Pedestall Voltage           |                          |      | 1.85 |      | V                |
| $T_{js}$ | Junction Temp. for Thermal Shutdown  |                          |      | 145  |      | $^\circ\text{C}$ |

## APPLICATION CIRCUIT



PACKAGE MECHANICAL DATA  
11 PINS - PLASTIC MULTIWATT

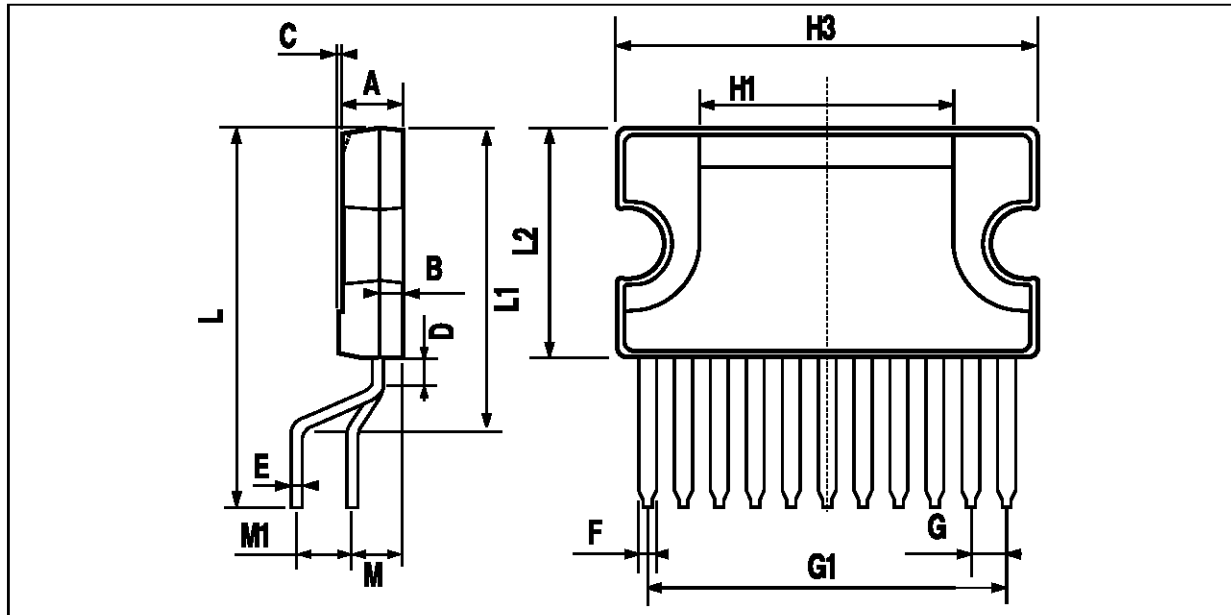


PM-MW11V/EP5

| 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          | 0.88        |      | 0.95  | 0.035  |       | 0.037 |
| G          | 1.45        | 1.7  | 1.95  | 0.057  | 0.067 | 0.077 |
| G1         | 16.75       | 17   | 17.25 | 0.659  | 0.669 | 0.679 |
| H1         | 19.6        |      |       | 0.772  |       |       |
| H2         |             |      | 20.2  |        |       | 0.795 |
| L          | 21.9        | 22.2 | 22.5  | 0.862  | 0.874 | 0.886 |
| L1         | 21.7        | 22.1 | 22.5  | 0.854  | 0.87  | 0.886 |
| L2         | 17.4        |      | 18.1  | 0.685  |       | 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          | 4.25        | 4.55 | 4.85  | 0.167  | 0.179 | 0.191 |
| M1         | 4.73        | 5.08 | 5.43  | 0.186  | 0.200 | 0.214 |
| 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 |

MW11V-TBL

**PACKAGE MECHANICAL DATA**  
**11 PINS - PLASTIC CLIPWATT**



PM-CW11EPS

| Dimensions | Millimeters |       |      | Inches |       |       |
|------------|-------------|-------|------|--------|-------|-------|
|            | Min.        | Typ.  | Max. | Min.   | Typ.  | Max.  |
| A          |             |       | 3.10 |        |       | 0.122 |
| B          |             |       | 1.10 |        |       | 0.04  |
| C          |             | 0.15  |      |        | 0.006 |       |
| D          |             | 1.50  |      |        | 0.059 |       |
| E          |             | 0.52  |      |        | 0.02  |       |
| F          |             | 0.80  |      |        | 0.03  |       |
| G          |             | 1.70  |      |        | 0.066 |       |
| G1         |             | 17.00 |      |        | 0.66  |       |
| H1         |             | 12.00 |      |        | 0.48  |       |
| H3         |             | 20.00 |      |        | 0.79  |       |
| L          |             | 17.90 |      |        | 0.70  |       |
| L1         |             | 14.40 |      |        | 0.57  |       |
| L2         |             | 11.00 |      |        | 0.43  |       |
| M          |             | 2.54  |      |        | 0.1   |       |
| M1         |             | 2.54  |      |        | 0.1   |       |

CW11.TBL

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