



TDA8145

TV EAST/WEST CORRECTION CIRCUIT FOR SQUARE TUBES

FEATURES SUMMARY

- LOW DISSIPATION
- SQUARE GENERATOR FOR PARABOLIC CURRENT SPECIALLY DESIGNED FOR SQUARE C.R.T. CORRECTION
- EXTERNAL KEYSTONE ADJUSTMENT (symmetry of the parabola)
- INPUT FOR DYNAMIC FIELD CORRECTION (beam current change)
- STATIC PICTURE WIDTH ADJUSTMENT
- PULSE-WIDTH MODULATOR
- FINAL STAGE D-CLASS WITH ENERGY REDELIVERY
- PARASITIC PARABOLA SUPPRESSION, DURING FLYBACK TIME OF THE VERTICAL SAWTOOTH

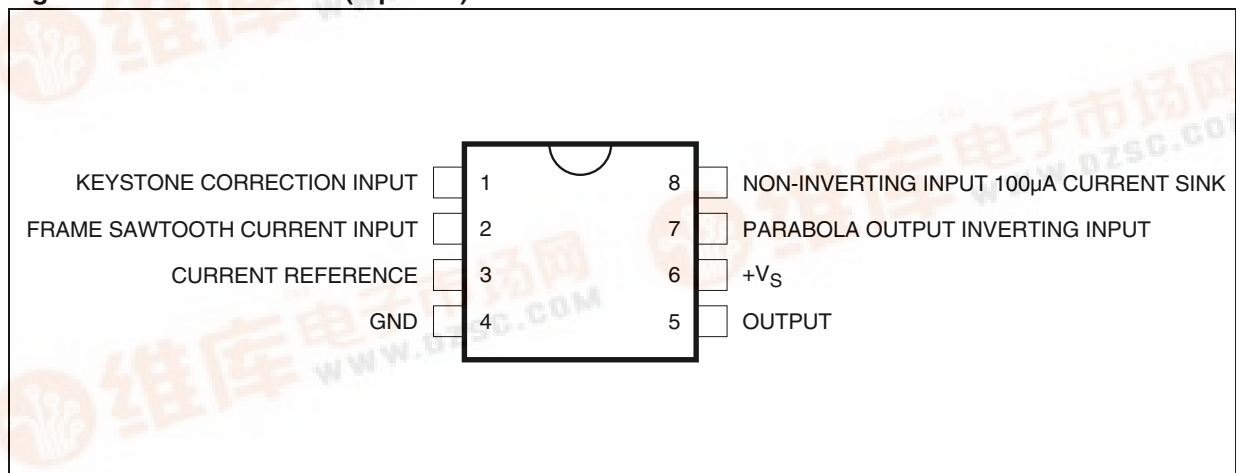
Figure 1. Package



DESCRIPTION

The TDA8145 is a monolithic integrated circuit in a 8 pin minidip plastic package designed for use in the square C.R.T. east-west pin-cushion correction by driving a diode modulator in TV and monitor applications.

Figure 2. Pin Connections (top view)



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Figure 3. Schematic Diagram

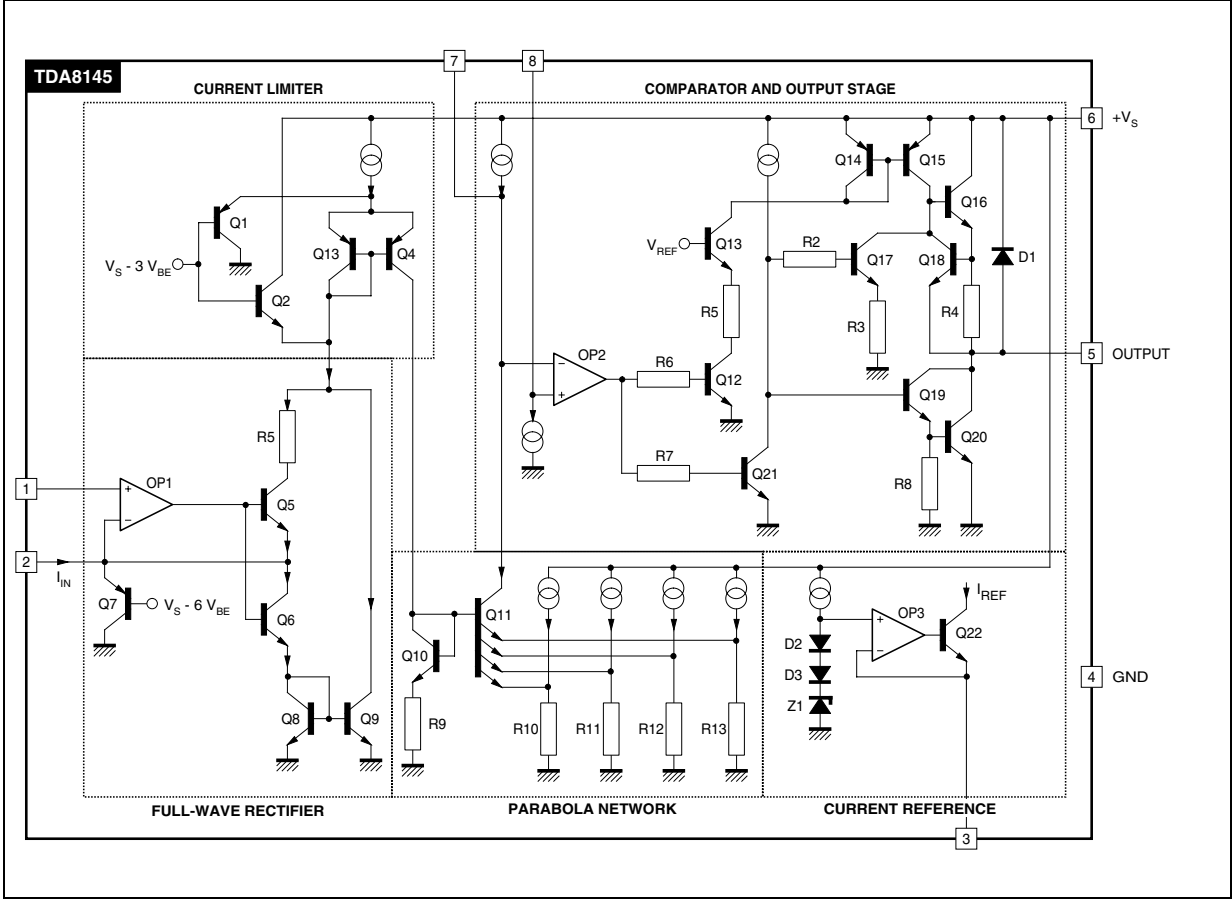


Table 1. Absolute Maximum Ratings

| Symbol | Parameter | Value | Unit |
|----------------|--|-------------|-------------|
| V_S | Supply Voltage | 35 | V |
| I_S | Supply Current | 500 | mA |
| P_{TOT} | Power Dissipation at $T_{amb} = 50^{\circ}C$ | 500 | mW |
| T_{STG}, T_j | Storage and Junction Temperature | - 25 to 150 | $^{\circ}C$ |

Table 2. Thermal Data

| Symbol | Parameter | Value | Unit |
|---------------|---|-------|---------------|
| $R_{th(j-c)}$ | Thermal Resistance Junction-ambient Max | 100 | $^{\circ}C/W$ |
| $R_{th(j-a)}$ | Thermal Resistance Junction-pin 4 Max. | 70 | $^{\circ}C/W$ |

Table 3. ELECTRICAL CHARACTERISTICS

($T_{amb} = 25^{\circ}\text{C}$, $V_S = 26\text{V}$, $V_{fr} = 0$, S1 and S2 in "a" position, refer to the test circuit unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------------------|-------------------------------------|---|------|------|------|------|
| V _S | Supply Voltage | | 17 | 24 | 30 | V |
| I _S | Supply Current | | | 4.5 | 7 | mA |
| V _{REF} | Internal Reference Voltage | | 7.6 | 8.0 | 8.8 | V |
| −I _{REF} | Internal Reference Current | V _{ref} /R3 | | 0.73 | | mA |
| V _{7(A)} (*) | Pin 7 Output Voltage | I _{fr} = 0 μA | 15.3 | 16.0 | 16.7 | V |
| V _{7(B)} (*) | Pin 7 Output Voltage | I _{fr} = 30 μA | | 15 | | V |
| K ₁ | Parabola Coefficient (see Figure 5) | $K_1 = \frac{V_{7A} - V_{7B}}{V_{7A} - V_{7C}}$ | | 0.26 | | |
| K ₂ | Parabola Coefficient (see Figure 5) | $K_2 = \frac{V_{7A} - V_{7C}}{V_{7A} - V_{7D}}$ | | 0.70 | | |
| ΔV ₇ (*) | | ΔV ₇ = V _{7E} − V _{7F} | − 40 | | 40 | mV |
| I ₈ | Current Source | S1 → b | | 100 | | μA |
| V _{SATL} | Saturation Voltage | I _o = 400 mA Sink S2 → b | | 1 | 2 | V |
| V _{SATH} | Saturation Voltage | I _o = 100 mA Source S2 → c S1 → b | | 0.8 | 1.5 | V |
| V _F | Forward Voltage | I _o = 400 mA S2 → d S1 → b | | 1.2 | 1.7 | V |
| I _{FR} | Frame Sawtooth Current | V _{fr} = 6.6 V _{PP} | | 66 | | μA |

Figure 4. Test Circuit

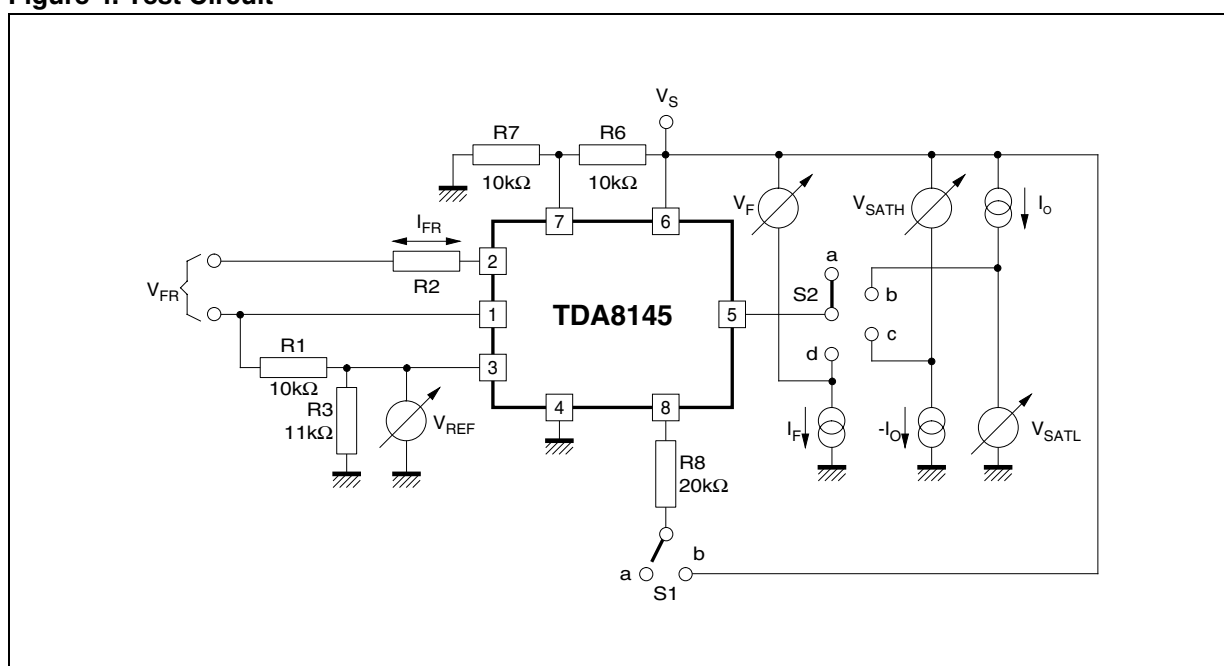


Figure 5. Parabola Characteristics

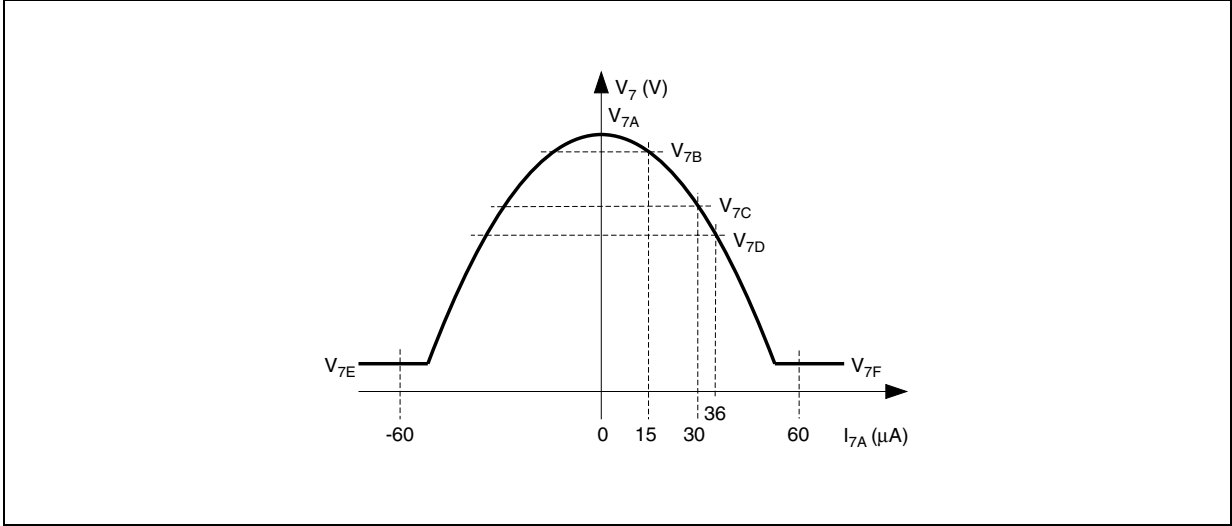
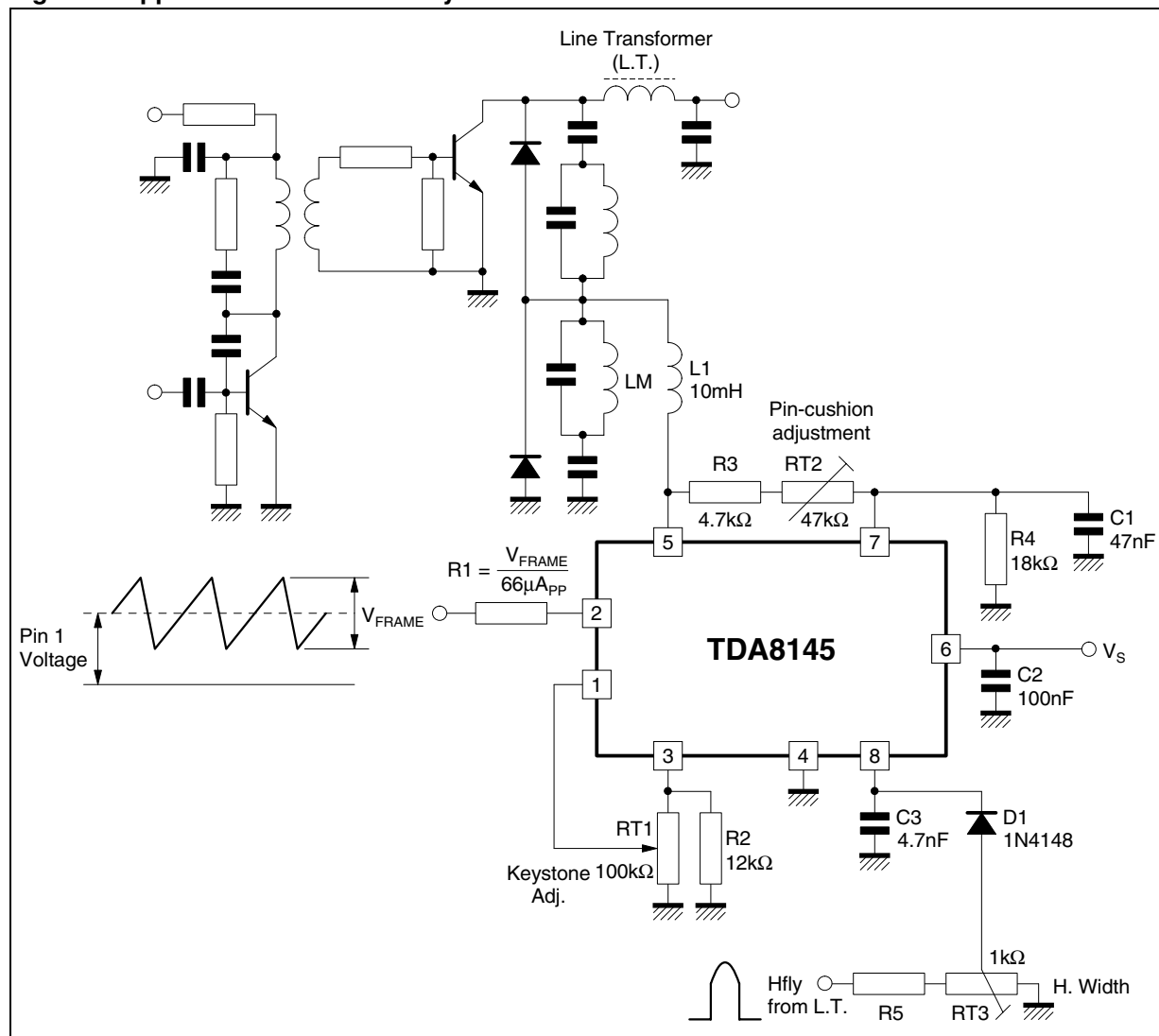


Figure 6. Application Circuit with Keystone Correction



CIRCUIT OPERATION

(see the schematic diagram)

A differential amplifier OP1 is driven by a vertical frequency sawtooth current of $\pm 33\mu\text{A}$ which is produced via an external resistor from the sawtooth voltage. The non-inverting input of this amplifier is connected with a reference voltage corresponding to the DC level of the sawtooth voltage. This DC voltage should be adjustable for the keystone correction. The rectified output current of this amplifier drives the parabola network which provides a parabolic output current.

This output current produces the corresponding voltage due to the voltage drop across the external resistor at pin 7.

If the input is overmodulated ($> 40\mu\text{A}$) the internal current is limited to $40\mu\text{A}$. This limitation can be used for suppressing the parasitic parabolic current generated during the flyback time of the frame sawtooth.

A comparator OP2 is driven by the parabolic current. The second input of the comparator is connected with a horizontal frequency sawtooth voltage the DC level of which can be changed by the external circuitry for the adjustment of the picture width.

The horizontal frequency pulse-width modulated output signal drives the final stage. It consists of a class D push-pull output amplifier that drives, via an external inductor, the diode modulator.

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PART NUMBERING

Table 4. Order Codes

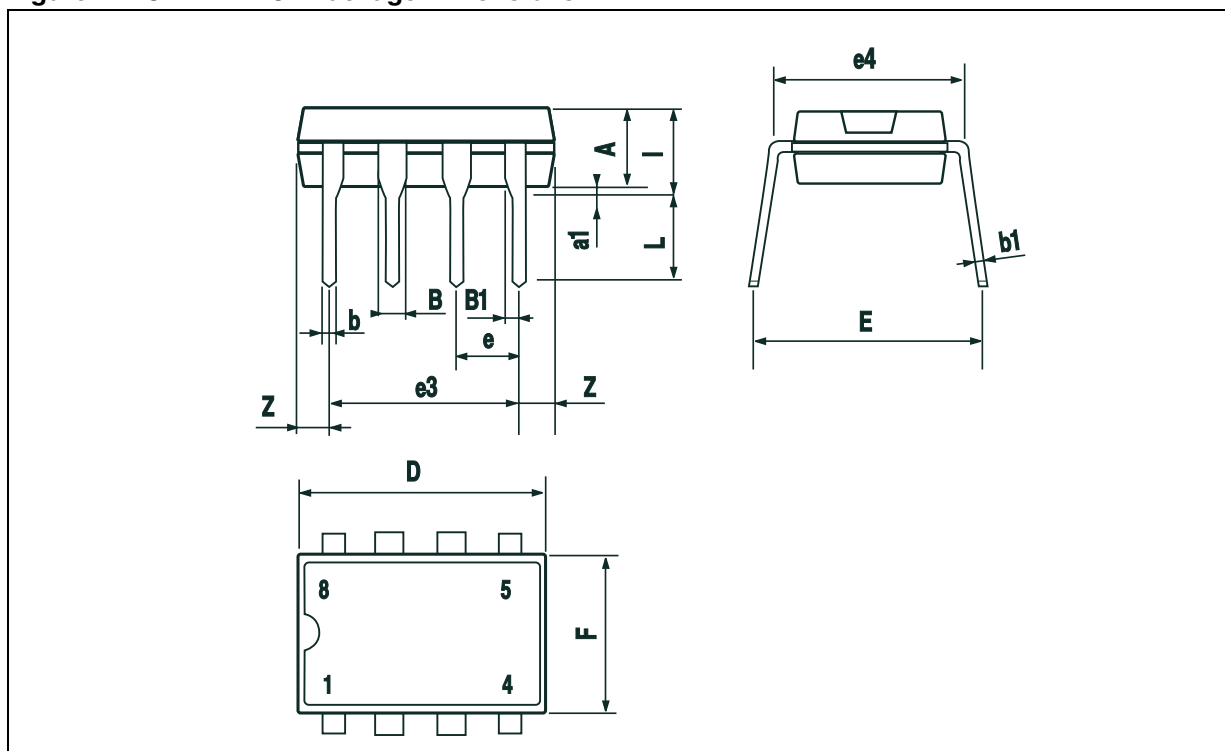
| Part Number | Package | Temperature Range |
|-------------|-----------|-------------------|
| TDA8145 | POWERDIP8 | 0 to 70 °C |

PACKAGE MECHANICAL

Table 5. POWERDIP8 - Mechanical Data

| Symbol | millimeters | | | inches | | |
|--------|-------------|------|------|--------|-------|-------|
| | Min | Typ | Max | Min | Typ | Max |
| A | | 3.3 | | | 0.130 | |
| a1 | 0.7 | | | 0.020 | | |
| B | 1.39 | | 1.65 | 0.055 | | 0.065 |
| B1 | 0.91 | | 1.04 | 0.036 | | 0.041 |
| b | | 0.5 | | | 0.020 | |
| b1 | 0.38 | | 0.5 | 0.015 | | 0.020 |
| D | | | 9.8 | | | 0.386 |
| E | | 8.8 | | | 0.346 | |
| e | | 2.54 | | | 0.100 | |
| e3 | | 7.62 | | | 0.300 | |
| e4 | | 7.62 | | | 0.300 | |
| F | | | 7.1 | | | 0.280 |
| I | | | 4.8 | | | 0.189 |
| L | | 3.3 | | | 0.130 | |
| Z | 0.44 | | 1.6 | 0.017 | | 0.063 |

Figure 7. POWERDIP8 - Package Dimensions



Note: Drawing is not to scale

REVISION HISTORY

Table 6. Revision History

| Date | Revision | Description of Changes |
|---------------|-----------------|---------------------------------------|
| October -1998 | 1 | First Issue |
| 14-May-2004 | 2 | Stylesheet update. No content change. |

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