

## Vertical Deflection Booster for Slim CRTs

DATASHEET

### OVERVIEW

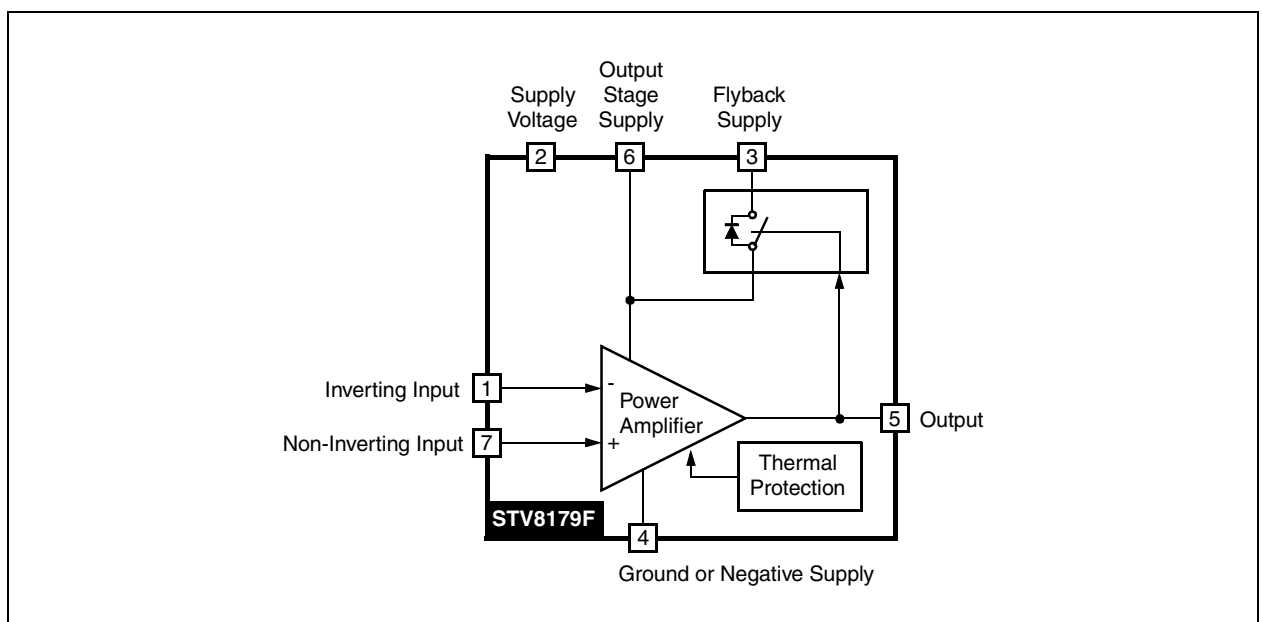
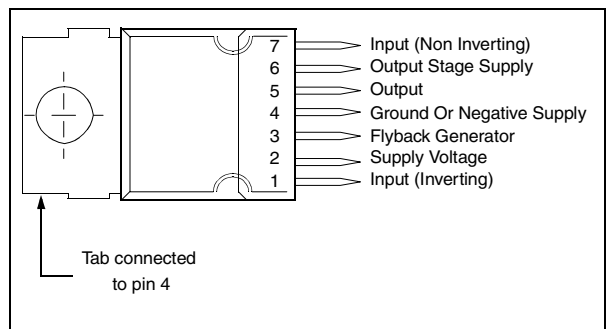
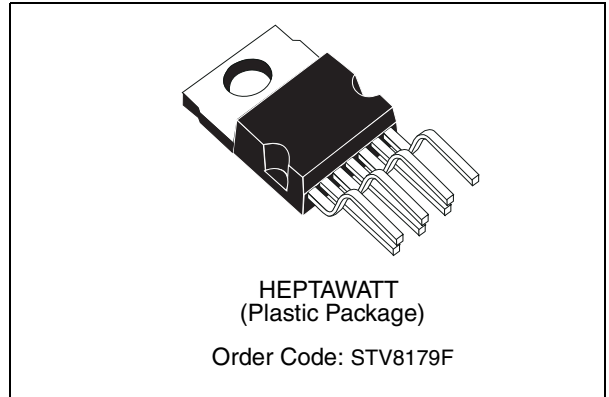
- Power Amplifier
- Thermal Protection
- Output Current up to 3.6A<sub>pp</sub>
- Flyback Voltage up to 90V (on Pin 5)
- Suitable for DC Coupling Application
- External Flyback Supply

### DESCRIPTION

Designed for monitors and high performance TVs, the STV8179F vertical deflection booster can handle flyback voltages of up to 90V. In addition, it is possible to have a flyback voltage which is more than double that of the supply (Pin 2). This allows decreasing power consumption or decreasing the flyback time for a given supply voltage.

The STV8179F operates with supplies of up to 42V and outputs up to 3.6A<sub>pp</sub> to drive the yoke.

The STV8179F is offered in a HEPTAWATT package.



Rev. 3

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# 1 Absolute Maximum Ratings

| Symbol     | Parameter   | Value         | Unit |
|------------|---|---------------|------|
| $V_S$      | Supply Voltage (Pin 2) (see note 1)   | 50            | V    |
| $V_6$      | Flyback Peak Voltage (Pin 6) (see note 1)   | 120           | V    |
| $V_1, V_7$ | Amplifier Input Voltage (Pins 1-7) (see note 1)                                     | -0.3, + $V_S$ | V    |
| $I_O$      | Maximum Output Peak Current (see notes 2 and 3)                                     | 3.0           | A    |
| $I_3$      | Maximum Sink Current ( $t < 1$ ms)  | 3.0           | A    |
| $I_3$      | Maximum Source Current ( $t < 1$ ms) (in the diode, see Block Diagram) (see note 2) | 3.0           | A    |
| $V_{ESD}$  | ESD Susceptibility: EIAJ Norm (200pF discharged through 0 $\Omega$ )                | 300           | V    |
| $V_3-V_2$  | Voltage Difference between Flyback Supply and Supply Voltage                        | 50            | V    |
| $T_{OPER}$ | Operating Ambient Temperature   | -20, +75      | °C   |
| $T_{STG}$  | Storage Temperature   | -40, +150     | °C   |
| $T_J$      | Junction Temperature  | + 150         | °C   |

Note: 1 Versus Pin 4.

2 The output current can reach 6A peak for  $t \leq 10\mu\text{s}$  (up to 120 Hz)

3 Provided SOAR is respected (see Figures 3 and 4).

# 2 Thermal Data

| Symbol        | Parameter                             | Value | Unit |
|---------------|---------------------------------------|-------|------|
| $R_{th(j-c)}$ | Junction-Case Thermal Resistance Max. | 3     | °C/W |
| $T_T$         | Temperature for Thermal Shutdown      | 150   | °C   |
| $T_{JR}$      | Recommended Max. Junction Temperature | 120   | °C   |

### 3 Electrical Characteristics

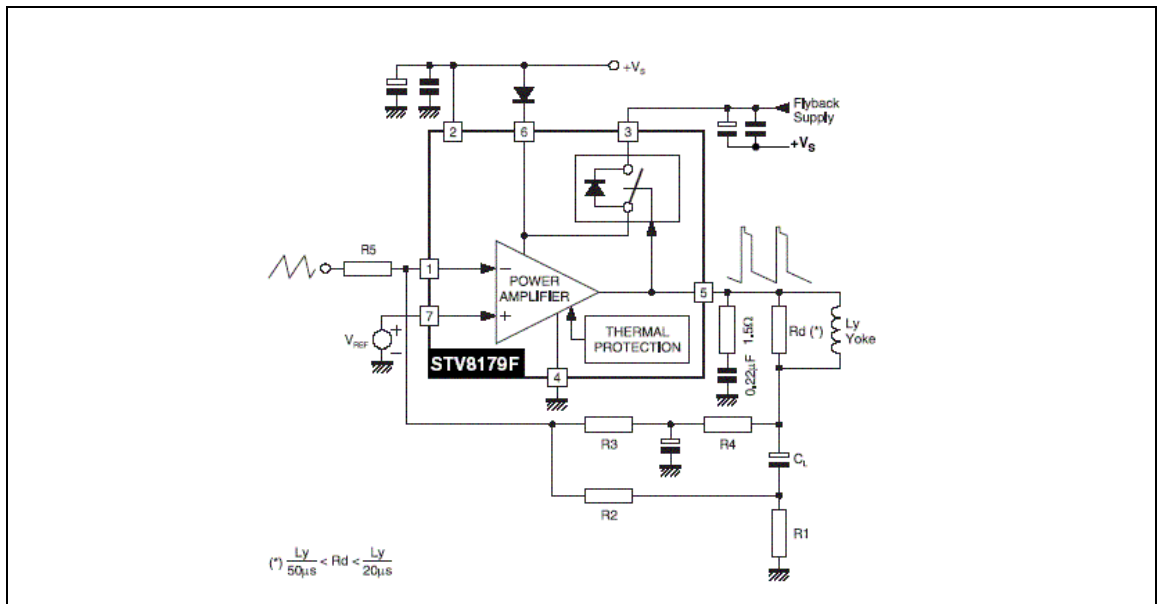
( $V_S = 42V$ ,  $T_A = 25^\circ C$ , unless otherwise specified)

| Symbol             | Parameter   | Test Conditions           | Min.  | Typ.        | Max. | Unit             |
|--------------------|---|---------------------------|-------|-------------|------|------------------|
| $V_S$              | Operating Supply Voltage Range                                  | Versus Pin 4              | 10    |             | 42   | V                |
| $V_{3M}$           | Operating Flyback Supply Voltage<br>( $V_{3M} \leq V_S + 50V$ ) | Versus Pin 4              | $V_S$ |             | 90   | V                |
| $I_2$              | Pin 2 Quiescent Current   | $I_3 = 0$ , $I_5 = 0$     |       | 13          | 20   | mA               |
| $I_6$              | Pin 6 Quiescent Current   | $I_3 = 0$ , $I_5 = 0$     | 7     | 12          | 35   | mA               |
| $I_o$              | Max. Operating Peak Output Current                              | Refer to Note 1           |       |             | 1.8  | A                |
| $I_1$              | Amplifier Bias Current  | $V_1 = 22V$ , $V_7 = 23V$ |       | -0.15       | -1   | $\mu A$          |
| $I_3$              | Flyback current during scanning period                          | $V_{FLYBACK} = 100V$      |       | 2.0         | 5.0  | mA               |
| $I_7$              | Amplifier Bias Current  | $V_1 = 23V$ , $V_7 = 22V$ |       | -0.15       | -1   | $\mu A$          |
| $V_{IO}$           | Offset Voltage  |                           |       |             | 7    | mV               |
| $\Delta V_{IO}/dt$ | Offset Drift Versus Temperature                                 |                           |       | -10         |      | $\mu V/^\circ C$ |
| GV                 | Voltage Gain  |                           | 80    |             |      | dB               |
| $V_{5L}$           | Output Saturation Voltage to GND (Pin 4)                        | $I_5 = 1.8A$              |       | 1.35        | 2.2  | V                |
| $V_{5H}$           | Output Saturation Voltage to Supply (Pin 6)                     | $I_5 = -1.8A$             |       | 2.2         | 3.0  | V                |
| $V_{D5-6}$         | Diode Forward Voltage between Pins 5-6                          | $I_5 = 1.8A$              |       | 1.8         | 2.3  | V                |
| $V_{D3-6}$         | Diode Forward Voltage between Pins 3-6                          | $I_3 = 1.8A$              |       | 2.3         | 3.3  | V                |
| $V_{3-6}$          | Voltage Drop between Pin 3-6 (2nd part of flyback)              | $I_3 = -1.8A$             |       | 3.6         | 4.2  | V                |
| $V_{5Th}$          | Threshold voltage for triggering Flyback                        |                           |       | $V_S + V_d$ |      | V                |

Note: 1 Provided SOA for the output transistors is respected (see Figures 3 and 4).

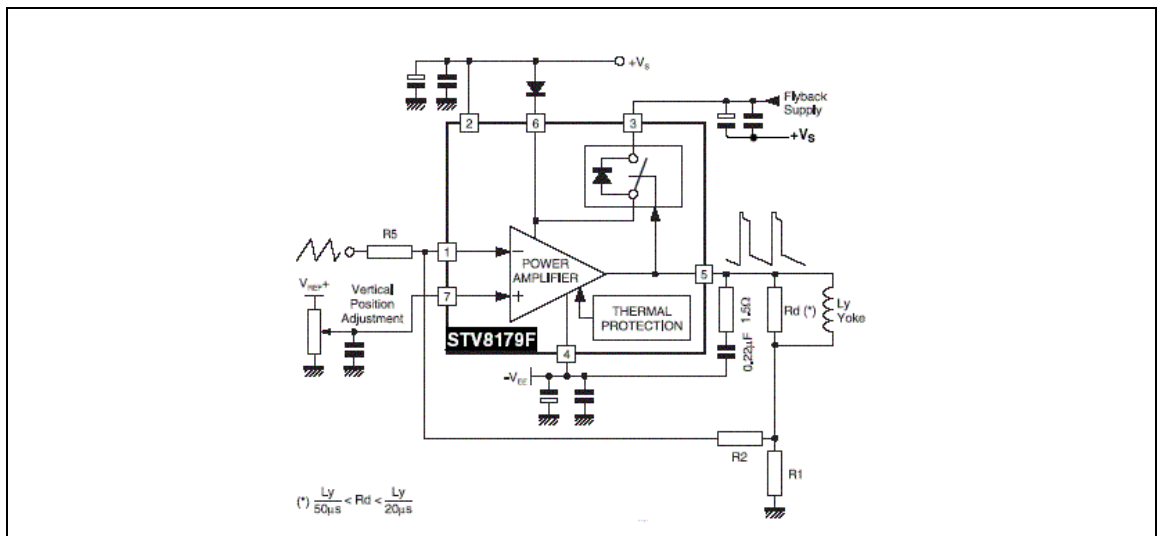
## 4 Application Circuits

Figure 1: AC Coupling



Note: To prevent spurious voltages during power-on/power-off phases, you must refer the flyback voltage to +Vs rather than to Ground.

Figure 2: DC Coupling



Note: To prevent spurious voltages during power-on/power-off phases, you must refer the flyback voltage to +Vs rather than to Ground.

Figure 3: Output Transistor SOA (for Secondary Breakdown)

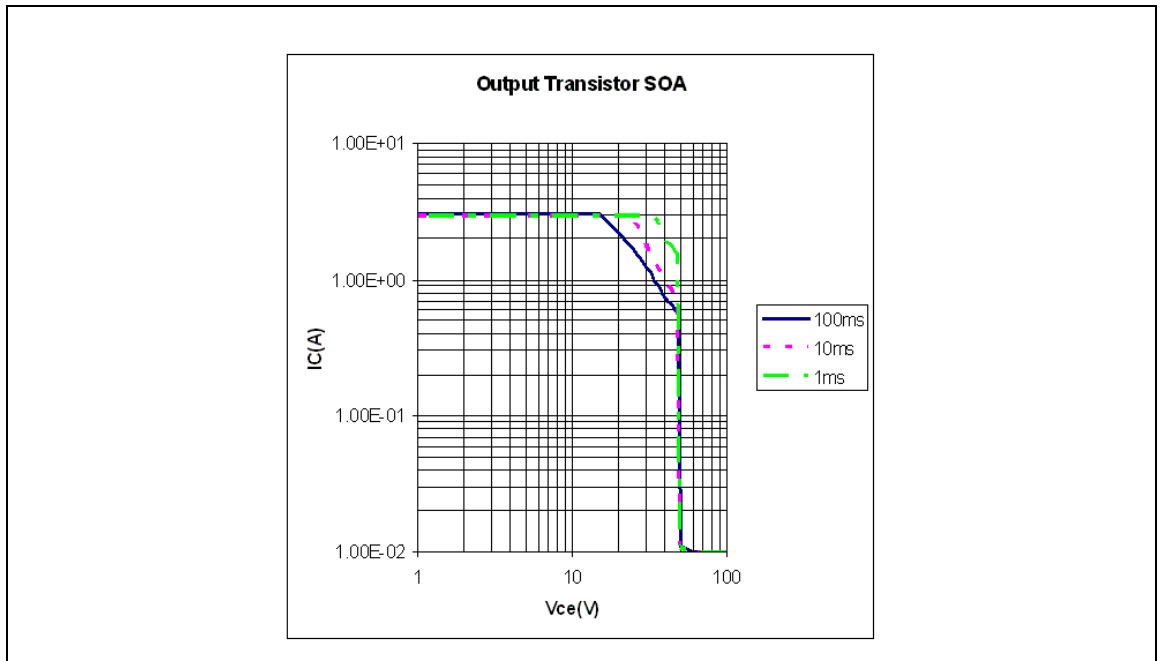
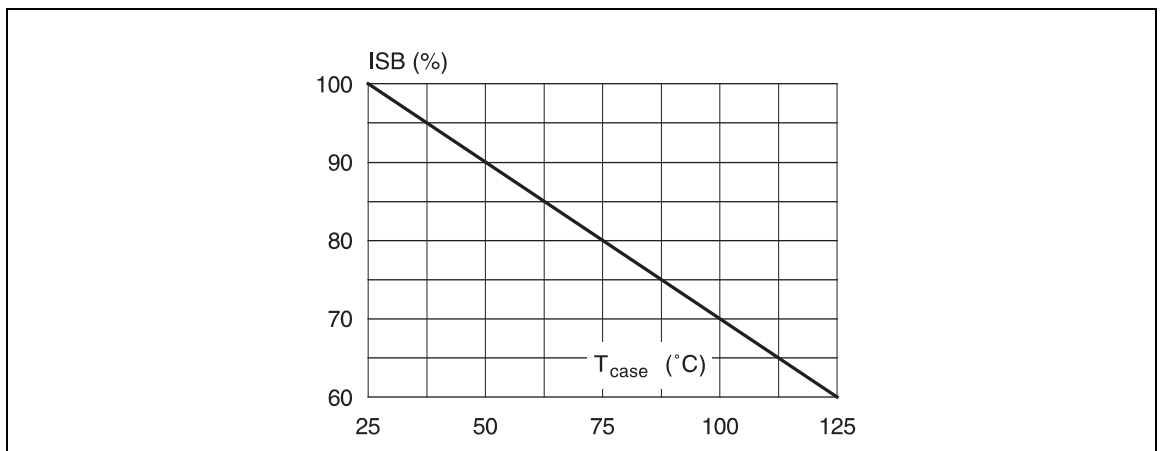


Figure 4: Secondary Breakdown Temperature De-rating Curve (ISB = Secondary Breakdown Current)



## 5 Package Mechanical Data

Figure 5: 7-pin Plastic Heptawatt Package

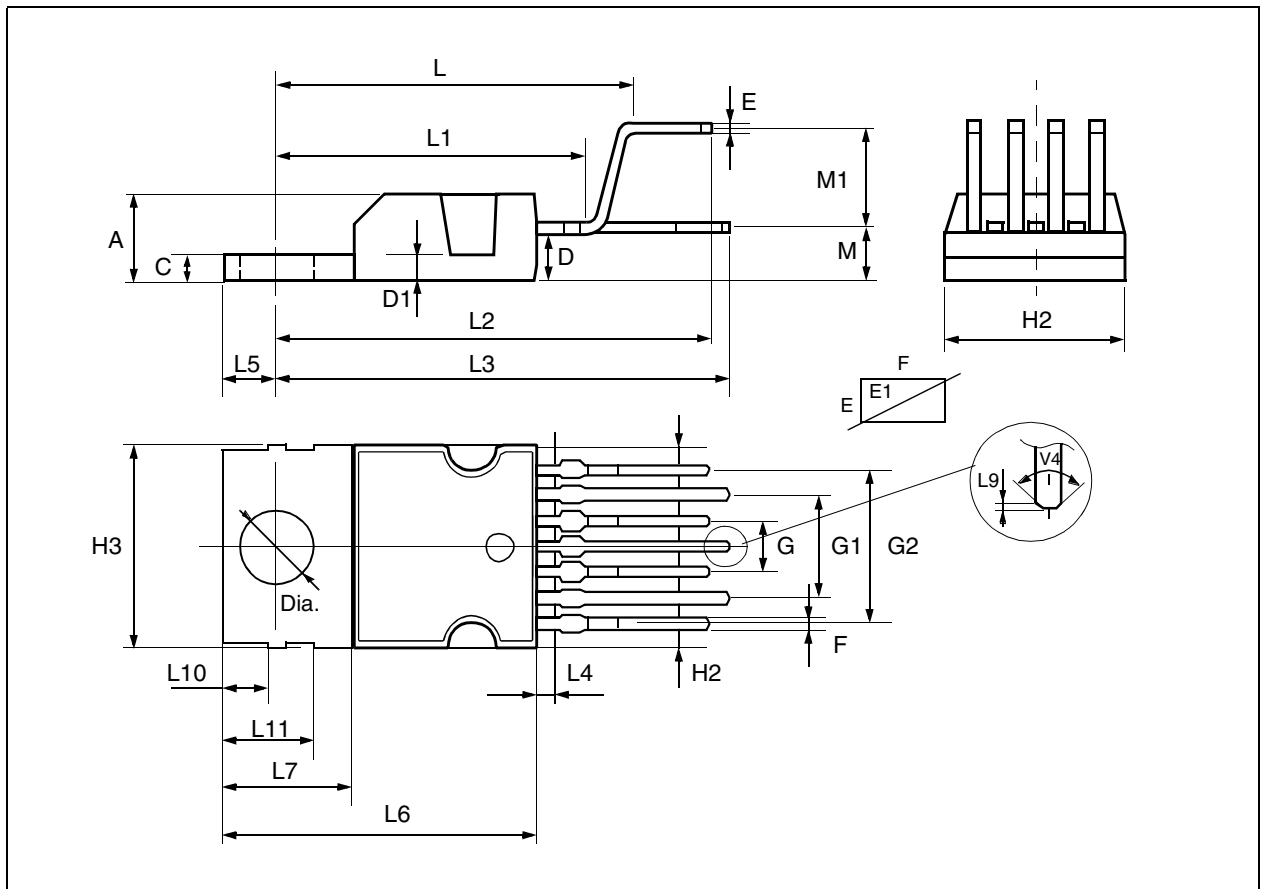


Table 1: Heptawatt Package

| Dim. | mm    |       |       | inches |       |       |
|------|-------|-------|-------|--------|-------|-------|
|      | Min.  | Typ.  | Max.  | Min.   | Typ.  | Max.  |
| A    |       |       | 4.8   |        |       | 0.189 |
| C    |       |       | 1.37  |        |       | 0.054 |
| D    | 2.40  |       | 2.80  | 0.094  |       | 0.110 |
| D1   | 1.20  |       | 1.35  | 0.047  |       | 0.053 |
| E    | 0.35  |       | 0.55  | 0.014  |       | 0.022 |
| E1   | 0.70  |       | 0.97  | 0.028  |       | 0.038 |
| F    | 0.60  |       | 0.80  | 0.024  |       | 0.031 |
| G    | 2.34  | 2.54  | 2.74  | 0.095  | 0.100 | 0.105 |
| G1   | 4.88  | 5.08  | 5.28  | 0.193  | 0.200 | 0.205 |
| G2   | 7.42  | 7.62  | 7.82  | 0.295  | 0.300 | 0.307 |
| H2   |       |       | 10.40 |        |       | 0.409 |
| H3   | 10.05 |       | 10.40 | 0.396  |       | 0.409 |
| L    | 16.70 | 16.90 | 17.10 | 0.657  | 0.668 | 0.673 |

Table 1: Heptawatt Package (continued)

| Dim. | mm        |       |       | inches |       |       |
|------|-----------|-------|-------|--------|-------|-------|
|      | Min.      | Typ.  | Max.  | Min.   | Typ.  | Max.  |
| L1   |           | 14.92 |       |        | 0.587 |       |
| L2   | 21.24     | 21.54 | 21.84 | 0.386  | 0.848 | 0.860 |
| L3   | 22.27     | 22.52 | 22.77 | 0.877  | 0.891 | 0.896 |
| L4   |           |       | 1.29  |        |       | 0.051 |
| L5   | 2.60      | 2.80  | 3.00  | 0.102  | 0.110 | 0.118 |
| L6   | 15.10     | 15.50 | 15.80 | 0.594  | 0.610 | 0.622 |
| L7   | 6.00      | 6.35  | 6.60  | 0.0236 | 0.250 | 0.260 |
| L9   |           | 0.20  |       |        | 0.008 |       |
| L10  | 2.10      |       | 2.70  | 0.082  |       | 0.106 |
| L11  | 4.30      |       | 4.80  | 0.169  |       | 0.190 |
| M    | 2.55      | 2.80  | 3.05  | 0.100  | 0.110 | 0.120 |
| M1   | 4.83      | 5.08  | 5.33  | 0.190  | 0.200 | 0.210 |
| V4   | 40 (Typ.) |       |       |        |       |       |
| Dia. | 3.65      |       | 3.85  | 0.144  |       | 0.152 |



**Notes:**

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