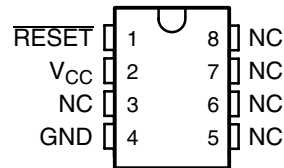


- **Power-On Reset Generator**
- **Automatic Reset Generation After Voltage Drop**
- **Low Standby Current . . . 20  $\mu$ A**
- **RESET Output Defined When  $V_{CC}$  Exceeds 1 V**
- **Precision Threshold Voltage  
4.55 V  $\pm$ 120 mV**
- **High Output Sink Capability . . . 20 mA**
- **Comparator Hysteresis Prevents Erratic Resets**

### description/ordering information

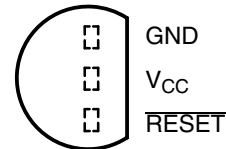
The TL7757 is a supply-voltage supervisor designed for use in microcomputer and microprocessor systems. The supervisor monitors the supply voltage for undervoltage conditions. During power up, when the supply voltage,  $V_{CC}$ , attains a value approaching 1 V, the RESET output becomes active (low) to prevent undefined operation. If the supply voltage drops below threshold voltage level ( $V_{IT-}$ ), the RESET output goes to the active (low) level until the supply undervoltage fault condition is eliminated.

**D PACKAGE  
(TOP VIEW)**

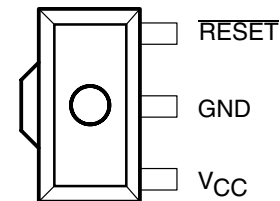


NC—No internal connection

**LP PACKAGE  
(TOP VIEW)**



**PK PACKAGE  
(TOP VIEW)**



GND is in electrical contact with the tab.

### ORDERING INFORMATION

| $T_A$         | PACKAGE†           |              | ORDERABLE PART NUMBER | TOP-SIDE MARKING |
|---------------|--------------------|--------------|-----------------------|------------------|
| 0°C to 70°C   | SOIC (D)           | Tube of 75   | TL7757CD              | 7757C            |
|               |                    | Reel of 2500 | TL7757CDR             |                  |
|               | SOT (PK)           | Reel of 1000 | TL7757CPK             | T7               |
|               | TO226 / TO-92 (LP) | Bulk of 1000 | TL7757CLP             | TL7757C          |
|               |                    | Reel of 2000 | TL7757CLPR            |                  |
| –40°C to 85°C | SOIC (D)           | Tube of 75   | TL7757ID              | 7757I            |
|               |                    | Reel of 2500 | TL7757IDR             |                  |
|               | SOT (PK)           | Reel of 1000 | TL7757IPK             | 7I               |
|               | TO226 / TO-92 (LP) | Bulk of 1000 | TL7757ILP             | TL7757I          |
|               |                    | Reel of 2000 | TL7757ILPR            |                  |

† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

 **TEXAS  
INSTRUMENTS**

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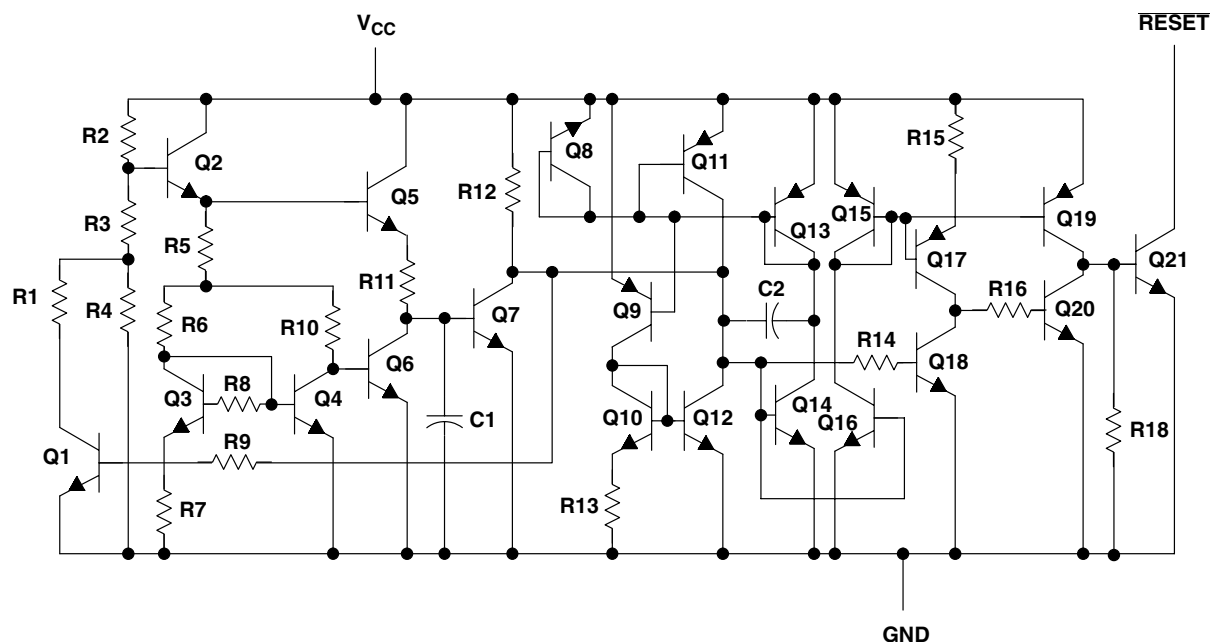
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# TL7757

## SUPPLY-VOLTAGE SUPERVISOR AND PRECISION VOLTAGE DETECTOR

SLVS0411 – SEPTEMBER 1991 – REVISED AUGUST 2003

### equivalent schematic



| ACTUAL DEVICE<br>COMPONENT COUNT |    |
|----------------------------------|----|
| Transistors                      | 27 |
| Resistors                        | 20 |
| Capacitors                       | 2  |

### absolute maximum ratings over operating junction temperature range (unless otherwise noted)<sup>†</sup>

|                                                               |                |
|---------------------------------------------------------------|----------------|
| Supply voltage range, $V_{CC}$ (see Note 1)                   | –0.3 V to 20 V |
| Off-state output voltage range (see Note 1)                   | –0.3 V to 20 V |
| Output current, $I_O$                                         | 30 mA          |
| Package thermal impedance, $\theta_{JA}$ (see Notes 2 and 3): |                |
| D package                                                     | 97°C/W         |
| LP package                                                    | 140°C/W        |
| PK package                                                    | 52°C/W         |
| Operating virtual junction temperature, $T_J$                 | 150°C          |
| Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds  | 260°C          |
| Storage temperature range, $T_{stg}$                          | –65°C to 150°C |

<sup>†</sup> Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES: 1. All voltage values are with respect to network terminal ground.

2. Maximum power dissipation is a function of  $T_J(\max)$ ,  $\theta_{JA}$ , and  $T_A$ . The maximum allowable power dissipation at any allowable ambient temperature is  $P_D = (T_J(\max) - T_A)/\theta_{JA}$ . Operating at the absolute maximum  $T_J$  of 150°C can affect reliability.

3. The package thermal impedance is calculated in accordance with JESD 51-7.

### recommended operating conditions

|          |                                | MIN     | MAX | UNIT |
|----------|--------------------------------|---------|-----|------|
| $V_{CC}$ | Supply voltage                 | 1       | 7   | V    |
| $V_{OH}$ | High-level output voltage      |         | 15  | V    |
| $I_{OL}$ | Low-level output current       |         | 20  | mA   |
| $T_A$    | Operating free-air temperature | TL7757C | 0   | 70   |
|          |                                | TL7757I | –40 | 85   |
|          |                                |         |     | °C   |

### electrical characteristics at specified free-air temperature

| PARAMETER            | TEST CONDITIONS                                                                                           | $T_A$                   | TL7757C |      |      | UNIT          |
|----------------------|-----------------------------------------------------------------------------------------------------------|-------------------------|---------|------|------|---------------|
|                      |                                                                                                           |                         | MIN     | TYP  | MAX  |               |
| $V_{IT-}$            | Negative-going input threshold voltage at $V_{CC}$                                                        | 25°C                    | 4.43    | 4.55 | 4.67 | V             |
|                      |                                                                                                           | 0°C to 70°C             | 4.4     |      | 4.7  |               |
| $V_{hys}^{\dagger}$  | Hysteresis at $V_{CC}$                                                                                    | 25°C                    | 40      | 50   | 60   | mV            |
|                      |                                                                                                           | 0°C to 70°C             | 30      |      | 70   |               |
| $V_{OL}$             | Low-level output voltage<br>$I_{OL} = 20\text{ mA}, V_{CC} = 4.3\text{ V}$                                | 25°C                    |         | 0.4  | 0.8  | V             |
|                      |                                                                                                           | 0°C to 70°C             |         |      | 0.8  |               |
| $I_{OH}$             | High-level output current<br>$V_{CC} = 7\text{ V}, V_{OH} = 15\text{ V},$<br>See Figure 1                 | 25°C                    |         |      | 1    | $\mu\text{A}$ |
|                      |                                                                                                           | 0°C to 70°C             |         |      | 1    |               |
| $V_{res}^{\ddagger}$ | Power-up reset voltage<br>$R_L = 2.2\text{ k}\Omega,$<br>$V_{CC}$ slew rate $\leq 5\text{ V}/\mu\text{s}$ | 25°C                    |         | 0.8  | 1    | V             |
|                      |                                                                                                           | 0°C to 70°C             |         |      | 1.2  |               |
| $I_{CC}$             | Supply current<br>$V_{CC} = 4.3\text{ V}$                                                                 | 25°C                    |         | 1400 | 2000 | $\mu\text{A}$ |
|                      |                                                                                                           | 0°C to 70°C             |         |      | 2000 |               |
|                      |                                                                                                           | $V_{CC} = 5.5\text{ V}$ |         |      | 40   |               |

$^{\dagger}$  This is the difference between positive-going input threshold voltage,  $V_{IT+}$ , and negative-going input threshold voltage,  $V_{IT-}$ .

$^{\ddagger}$  This is the lowest voltage at which RESET becomes active.

### switching characteristics at specified free-air temperature

| PARAMETER    | TEST CONDITIONS                                                                                                              | $T_A$       | TL7757C |      |     | UNIT          |
|--------------|------------------------------------------------------------------------------------------------------------------------------|-------------|---------|------|-----|---------------|
|              |                                                                                                                              |             | MIN     | TYP  | MAX |               |
| $t_{PLH}$    | Propagation delay time, low-to-high-level output<br>$V_{CC}$ slew rate $\leq 5\text{ V}/\mu\text{s},$<br>See Figures 2 and 3 | 25°C        |         | 3.4  | 5   | $\mu\text{s}$ |
|              |                                                                                                                              | 0°C to 70°C |         |      | 5   |               |
| $t_{PHL}$    | Propagation delay time, high-to-low-level output<br>See Figures 2 and 3                                                      | 25°C        |         | 2    | 5   | $\mu\text{s}$ |
|              |                                                                                                                              | 0°C to 70°C |         |      | 5   |               |
| $t_r$        | Rise time<br>$V_{CC}$ slew rate $\leq 5\text{ V}/\mu\text{s},$<br>See Figures 2 and 3                                        | 25°C        |         | 0.4  | 1   | $\mu\text{s}$ |
|              |                                                                                                                              | 0°C to 70°C |         |      | 1   |               |
| $t_f$        | Fall time<br>See Figures 2 and 3                                                                                             | 25°C        |         | 0.05 | 1   | $\mu\text{s}$ |
|              |                                                                                                                              | 0°C to 70°C |         |      | 1   |               |
| $t_{w(min)}$ | Minimum pulse duration at $V_{CC}$ for output response                                                                       | 25°C        |         |      | 5   | $\mu\text{s}$ |
|              |                                                                                                                              | 0°C to 70°C |         |      | 5   |               |

# TL7757

## SUPPLY-VOLTAGE SUPERVISOR AND PRECISION VOLTAGE DETECTOR

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### electrical characteristics at specified free-air temperature

| PARAMETER                                                                  | TEST CONDITIONS                                                | T <sub>A</sub> | TL7757I |      |      | UNIT |
|----------------------------------------------------------------------------|----------------------------------------------------------------|----------------|---------|------|------|------|
|                                                                            |                                                                |                | MIN     | TYP  | MAX  |      |
| V <sub>IT-</sub> Negative-going input threshold voltage at V <sub>CC</sub> |                                                                | 25°C           | 4.43    | 4.55 | 4.67 | V    |
|                                                                            |                                                                | –40°C to 85°C  | 4.4     |      | 4.7  |      |
| V <sub>hys</sub> <sup>†</sup> Hysteresis at V <sub>CC</sub>                |                                                                | 25°C           | 40      | 50   | 60   | mV   |
|                                                                            |                                                                | –40°C to 85°C  | 30      |      | 70   |      |
| V <sub>OL</sub> Low-level output voltage                                   | I <sub>OL</sub> = 20 mA, V <sub>CC</sub> = 4.3 V               | 25°C           |         | 0.4  | 0.8  | V    |
|                                                                            |                                                                | –40°C to 85°C  |         |      | 0.8  |      |
| I <sub>OH</sub> High-level output current                                  | V <sub>CC</sub> = 7 V, V <sub>OH</sub> = 15 V,<br>See Figure 1 | 25°C           |         |      | 1    | μA   |
|                                                                            |                                                                | –40°C to 85°C  |         |      | 1    |      |
| V <sub>res</sub> <sup>‡</sup> Power-up reset voltage                       | R <sub>L</sub> = 2.2 kΩ,<br>V <sub>CC</sub> slew rate ≤ 5 V/μs | 25°C           |         | 0.8  | 1    | V    |
|                                                                            |                                                                | –40°C to 85°C  |         |      | 1.2  |      |
| I <sub>CC</sub> Supply current                                             | V <sub>CC</sub> = 4.3 V                                        | 25°C           |         | 1400 | 2000 | μA   |
|                                                                            |                                                                | –40°C to 85°C  |         |      | 2100 |      |
|                                                                            | V <sub>CC</sub> = 5.5 V                                        | –40°C to 85°C  |         |      | 40   |      |

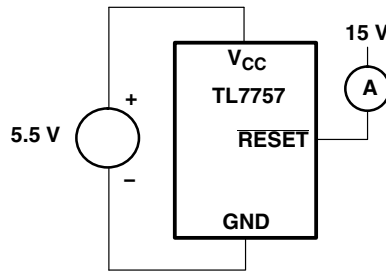
<sup>†</sup> This is the difference between positive-going input threshold voltage, V<sub>IT+</sub>, and negative-going input threshold voltage, V<sub>IT-</sub>.

<sup>‡</sup> This is the lowest voltage at which RESET becomes active.

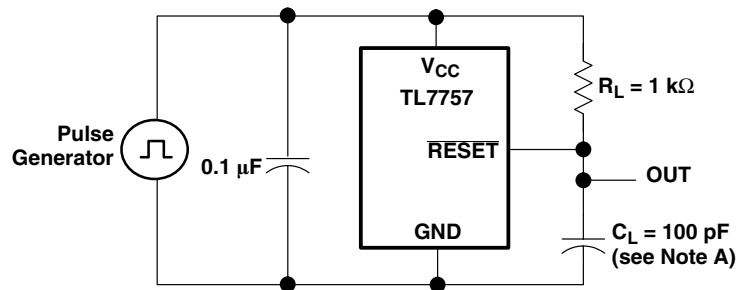
### switching characteristics at specified free-air temperature

| PARAMETER                                                                         | TEST CONDITIONS                                            | T <sub>A</sub> | TL7757I |      |     | UNIT |
|-----------------------------------------------------------------------------------|------------------------------------------------------------|----------------|---------|------|-----|------|
|                                                                                   |                                                            |                | MIN     | TYP  | MAX |      |
| t <sub>pLH</sub> Propagation delay time, low-to-high-level output                 | V <sub>CC</sub> slew rate ≤ 5 V/μs,<br>See Figures 2 and 3 | 25°C           |         | 3.4  | 5   | μs   |
|                                                                                   |                                                            | –40°C to 85°C  |         |      | 5   |      |
| t <sub>pHL</sub> Propagation delay time, high-to-low-level output                 | See Figures 2 and 3                                        | 25°C           |         | 2    | 5   | μs   |
|                                                                                   |                                                            | –40°C to 85°C  |         |      | 5   |      |
| t <sub>r</sub> Rise time                                                          | V <sub>CC</sub> slew rate ≤ 5 V/μs,<br>See Figures 2 and 3 | 25°C           |         | 0.4  | 1   | μs   |
|                                                                                   |                                                            | –40°C to 85°C  |         |      | 1   |      |
| t <sub>f</sub> Fall time                                                          | See Figures 2 and 3                                        | 25°C           |         | 0.05 | 1   | μs   |
|                                                                                   |                                                            | –40°C to 85°C  |         |      | 1   |      |
| t <sub>w(min)</sub> Minimum pulse duration at V <sub>CC</sub> for output response |                                                            | 25°C           |         |      | 5   | μs   |
|                                                                                   |                                                            | –40°C to 85°C  |         |      | 5   |      |

## PARAMETER MEASUREMENT INFORMATION

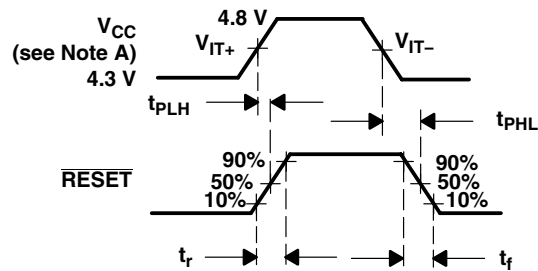


**Figure 1. Test Circuit for Output Leakage Current**



NOTE A: Includes jig and probe capacitance

**Figure 2. Test Circuit for  $\overline{\text{RESET}}$  Output Switching Characteristics**



NOTE A:  $V_{CC}$  slew rate  $\leq 5 \mu\text{s}$

**Figure 3. Switching Diagram**

# TL7757

## SUPPLY-VOLTAGE SUPERVISOR AND PRECISION VOLTAGE DETECTOR

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### TYPICAL CHARACTERISTICS†

Table of Graphs

|                                                                                      | FIGURE |
|--------------------------------------------------------------------------------------|--------|
| $V_{CC}$ Supply voltage vs $\overline{\text{RESET}}$ output voltage                  | 4      |
| $I_{CC}$ Supply current vs Supply voltage                                            | 5      |
| $I_{CC}$ Supply current vs Free-air temperature                                      | 6      |
| $V_{OL}$ Low-level output voltage vs Low-level output current                        | 7      |
| $V_{OL}$ Low-level output voltage vs Free-air temperature                            | 8      |
| $I_{OL}$ Output current vs Supply voltage                                            | 9      |
| $V_{IT-}$ Input threshold voltage (negative-going $V_{CC}$ ) vs Free-air temperature | 10     |
| $V_{res}$ Power-up reset voltage vs Free-air temperature                             | 11     |
| $V_{res}$ Power-up reset voltage and supply voltage vs Time                          | 12     |
| Propagation delay time                                                               | 13     |

SUPPLY VOLTAGE  
vs  
RESET OUTPUT VOLTAGE

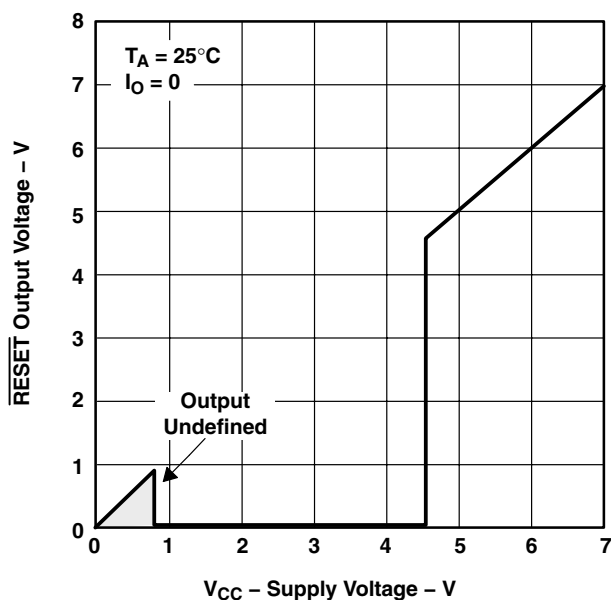


Figure 4

SUPPLY CURRENT  
vs  
SUPPLY VOLTAGE

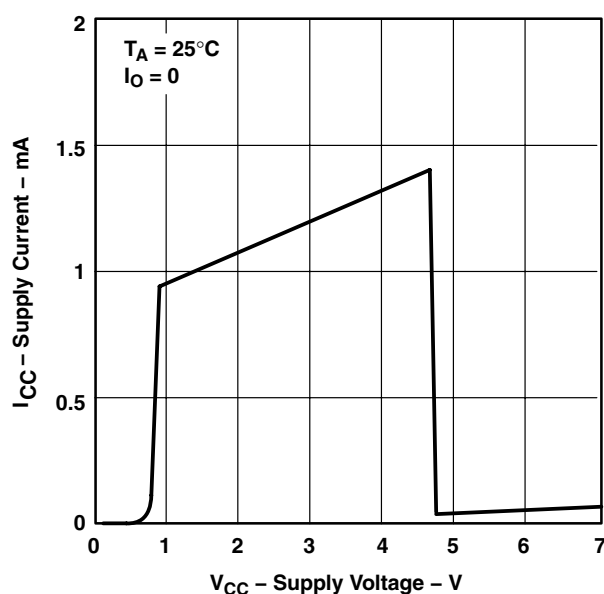
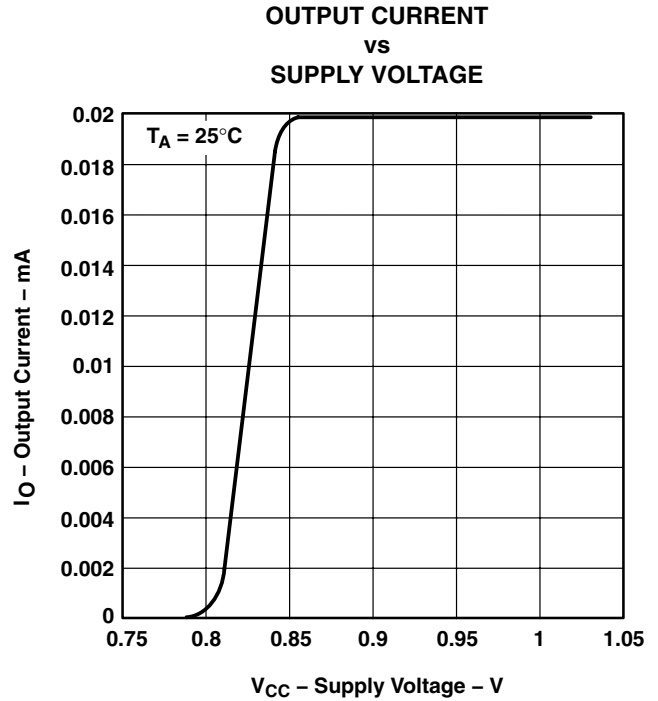
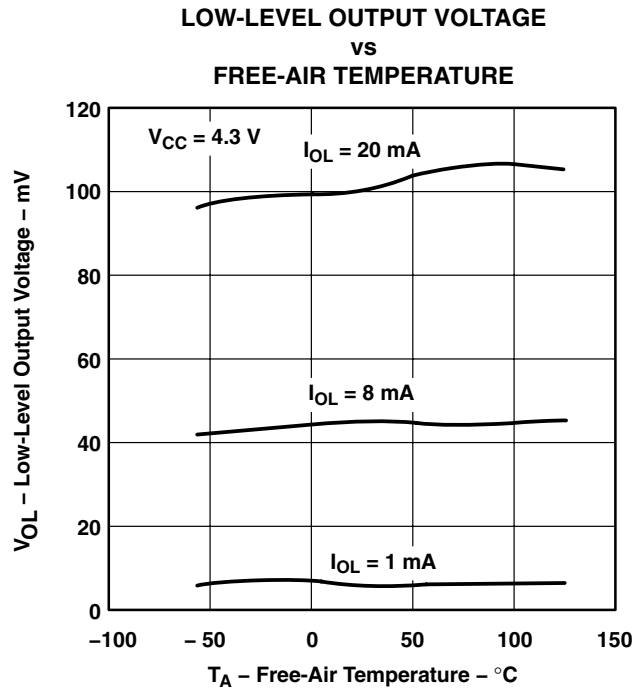
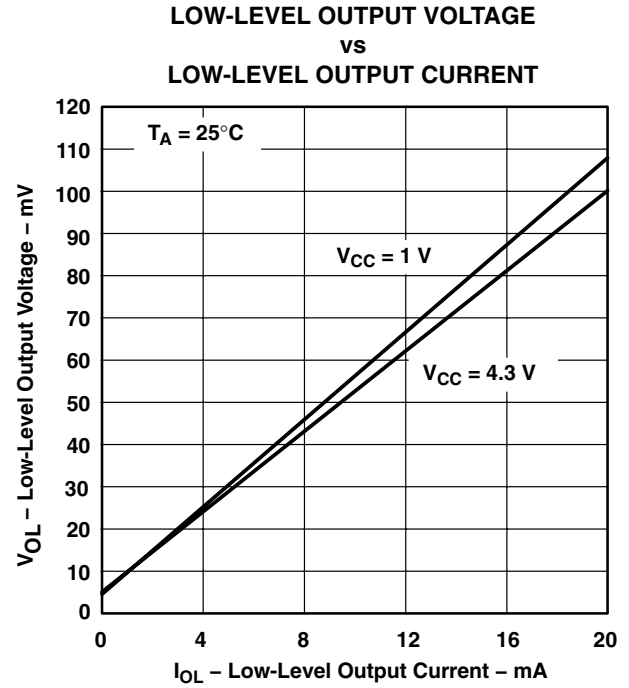
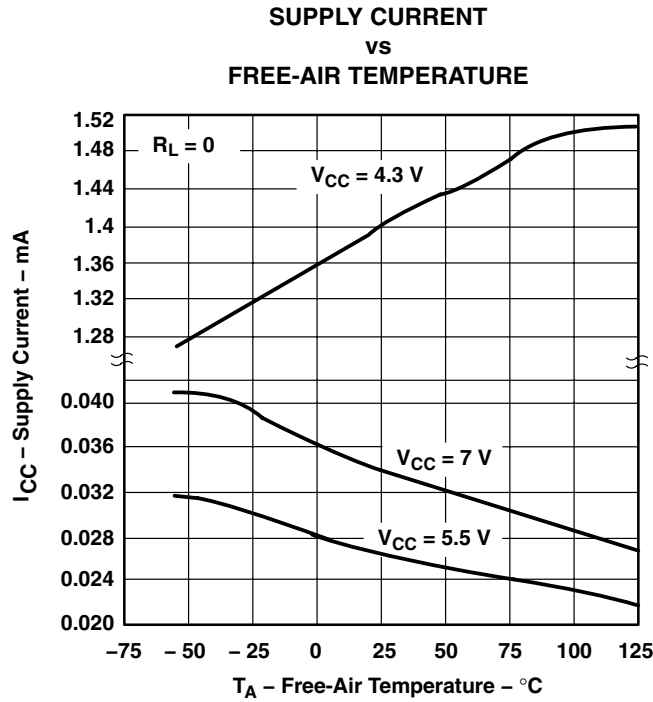


Figure 5

† Data at high and low temperatures are applicable only within the rated operating free-air temperature ranges of the various devices.

### TYPICAL CHARACTERISTICS†



† Data at high and low temperatures are applicable only within the rated operating free-air temperature ranges of the various devices.

# TL7757

## SUPPLY-VOLTAGE SUPERVISOR AND PRECISION VOLTAGE DETECTOR

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### TYPICAL CHARACTERISTICS†

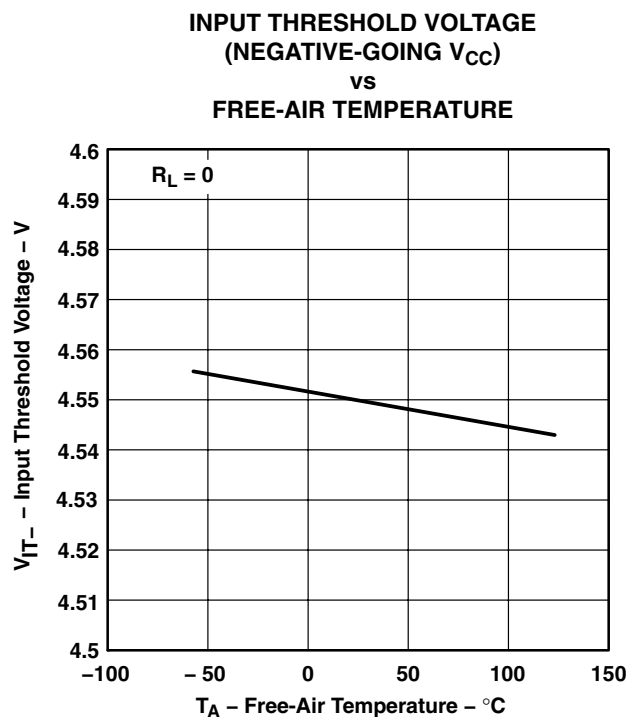


Figure 10

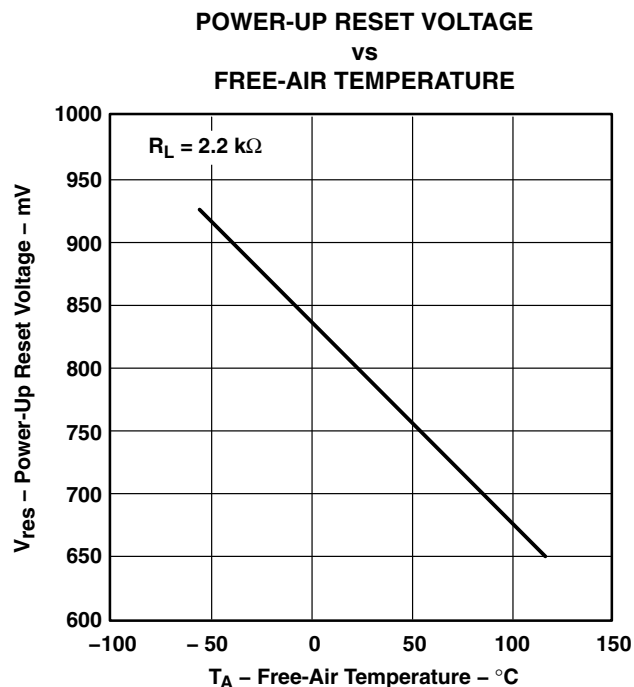


Figure 11

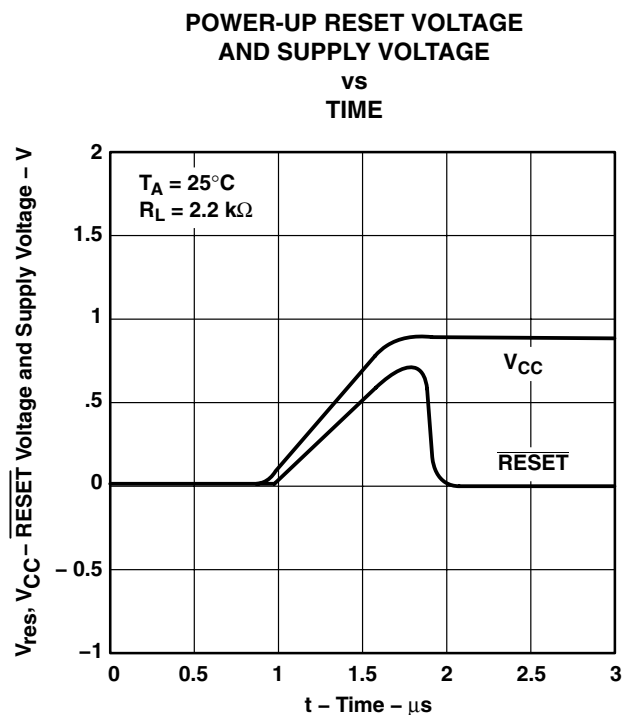


Figure 12

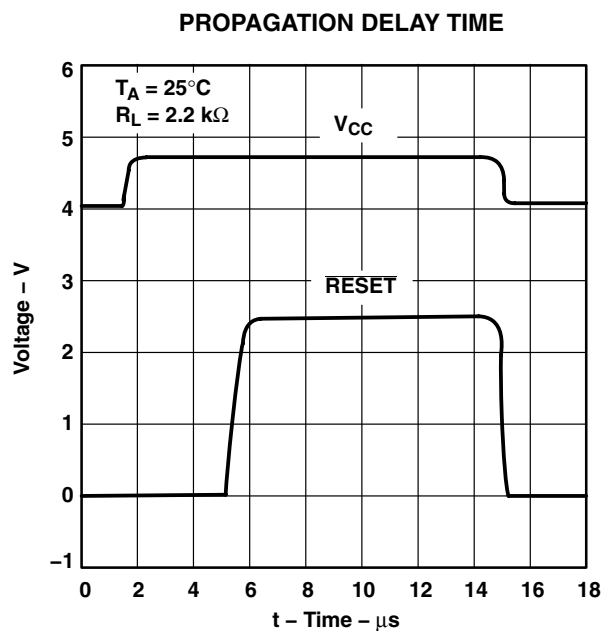
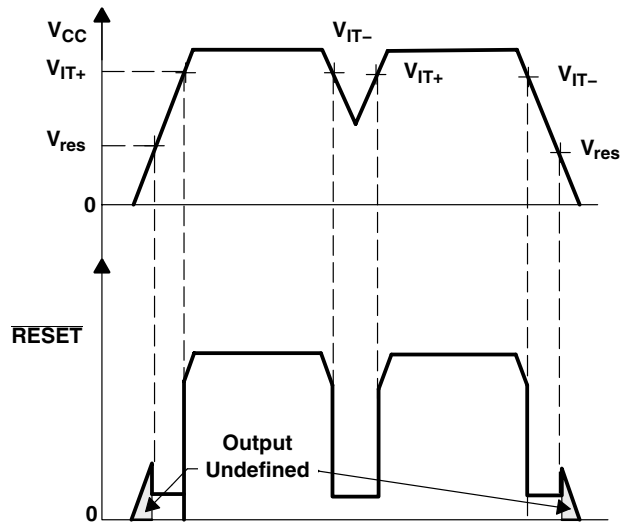


Figure 13

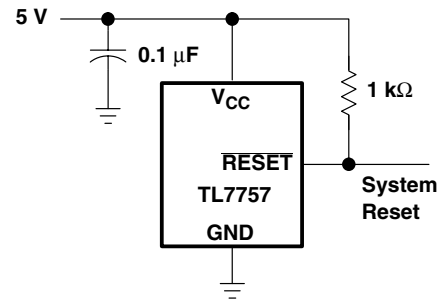
† Data at high and low temperatures are applicable only within the rated operating free-air temperature ranges of the various devices.

## APPLICATION INFORMATION

TYPICAL TIMING DIAGRAM



TYPICAL APPLICATION DIAGRAM



**PACKAGING INFORMATION**

| Orderable Device | Status<br>(1) | Package Type | Package<br>Drawing | Pins | Package<br>Qty | Eco Plan<br>(2)            | Lead/Ball Finish<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5) | Samples                 |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|-------------------------|----------------------|--------------|-------------------------|-------------------------|
| TL7757CD         | ACTIVE        | SOIC         | D                  | 8    | 75             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | 7757C                   | <a href="#">Samples</a> |
| TL7757CDE4       | ACTIVE        | SOIC         | D                  | 8    | 75             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | 7757C                   | <a href="#">Samples</a> |
| TL7757CDG4       | ACTIVE        | SOIC         | D                  | 8    | 75             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | 7757C                   | <a href="#">Samples</a> |
| TL7757CDR        | ACTIVE        | SOIC         | D                  | 8    | 2500           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | 0 to 70      | 7757C                   | <a href="#">Samples</a> |
| TL7757CLP        | ACTIVE        | TO-92        | LP                 | 3    | 1000           | Pb-Free<br>(RoHS)          | CU SN                   | N / A for Pkg Type   | 0 to 70      | TL7757C                 | <a href="#">Samples</a> |
| TL7757CLPE3      | ACTIVE        | TO-92        | LP                 | 3    | 1000           | Pb-Free<br>(RoHS)          | CU SN                   | N / A for Pkg Type   | 0 to 70      | TL7757C                 | <a href="#">Samples</a> |
| TL7757CLPR       | ACTIVE        | TO-92        | LP                 | 3    | 2000           | Pb-Free<br>(RoHS)          | CU SN                   | N / A for Pkg Type   | 0 to 70      | TL7757C                 | <a href="#">Samples</a> |
| TL7757CLPRE3     | ACTIVE        | TO-92        | LP                 | 3    | 2000           | Pb-Free<br>(RoHS)          | CU SN                   | N / A for Pkg Type   | 0 to 70      | TL7757C                 | <a href="#">Samples</a> |
| TL7757CPK        | ACTIVE        | SOT-89       | PK                 | 3    | 1000           | Green (RoHS<br>& no Sb/Br) | CU SN                   | Level-2-260C-1 YEAR  | 0 to 70      | T 7                     | <a href="#">Samples</a> |
| TL7757CPKG3      | ACTIVE        | SOT-89       | PK                 | 3    | 1000           | Green (RoHS<br>& no Sb/Br) | CU SN                   | Level-2-260C-1 YEAR  | 0 to 70      | T 7                     | <a href="#">Samples</a> |
| TL7757ID         | ACTIVE        | SOIC         | D                  | 8    | 75             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | 7757I                   | <a href="#">Samples</a> |
| TL7757IDG4       | ACTIVE        | SOIC         | D                  | 8    | 75             | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | 7757I                   | <a href="#">Samples</a> |
| TL7757IDR        | ACTIVE        | SOIC         | D                  | 8    | 2500           | Green (RoHS<br>& no Sb/Br) | CU NIPDAU               | Level-1-260C-UNLIM   | -40 to 85    | 7757I                   | <a href="#">Samples</a> |
| TL7757ILP        | ACTIVE        | TO-92        | LP                 | 3    | 1000           | Pb-Free<br>(RoHS)          | CU SN                   | N / A for Pkg Type   | -40 to 85    | TL7757I                 | <a href="#">Samples</a> |
| TL7757ILPE3      | ACTIVE        | TO-92        | LP                 | 3    | 1000           | Pb-Free<br>(RoHS)          | CU SN                   | N / A for Pkg Type   | -40 to 85    | TL7757I                 | <a href="#">Samples</a> |
| TL7757IPK        | ACTIVE        | SOT-89       | PK                 | 3    | 1000           | Green (RoHS<br>& no Sb/Br) | CU SN                   | Level-2-260C-1 YEAR  | -40 to 85    | 7I                      | <a href="#">Samples</a> |
| TL7757IPKG3      | ACTIVE        | SOT-89       | PK                 | 3    | 1000           | Green (RoHS<br>& no Sb/Br) | CU SN                   | Level-2-260C-1 YEAR  | -40 to 85    | 7I                      | <a href="#">Samples</a> |

| Orderable Device | Status<br>(1) | Package Type | Package<br>Drawing | Pins | Package<br>Qty | Eco Plan<br>(2) | Lead/Ball Finish<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5) | Samples |
|------------------|---------------|--------------|--------------------|------|----------------|-----------------|-------------------------|----------------------|--------------|-------------------------|---------|
| TL7757MD         | OBSOLETE      | SOIC         | D                  | 8    |                | TBD             | Call TI                 | Call TI              | -55 to 125   |                         |         |
| TL7757MDR        | OBSOLETE      | SOIC         | D                  | 8    |                | TBD             | Call TI                 | Call TI              | -55 to 125   |                         |         |
| TL7757MLP        | OBSOLETE      | TO-92        | LP                 | 3    |                | TBD             | Call TI                 | Call TI              | -55 to 125   |                         |         |

<sup>(1)</sup> The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

<sup>(2)</sup> Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

<sup>(3)</sup> MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

<sup>(4)</sup> There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

<sup>(5)</sup> Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "-" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

<sup>(6)</sup> Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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**TAPE AND REEL INFORMATION**



\*All dimensions are nominal

| Device    | Package Type | Package Drawing | Pins | SPQ  | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|-----------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| TL7757CDR | SOIC         | D               | 8    | 2500 | 330.0              | 12.4               | 6.4     | 5.2     | 2.1     | 8.0     | 12.0   | Q1            |
| TL7757CPK | SOT-89       | PK              | 3    | 1000 | 180.0              | 12.4               | 4.91    | 4.52    | 1.9     | 8.0     | 12.0   | Q3            |
| TL7757IDR | SOIC         | D               | 8    | 2500 | 330.0              | 12.4               | 6.4     | 5.2     | 2.1     | 8.0     | 12.0   | Q1            |
| TL7757IPK | SOT-89       | PK              | 3    | 1000 | 180.0              | 12.4               | 4.91    | 4.52    | 1.9     | 8.0     | 12.0   | Q3            |

## TAPE AND REEL BOX DIMENSIONS

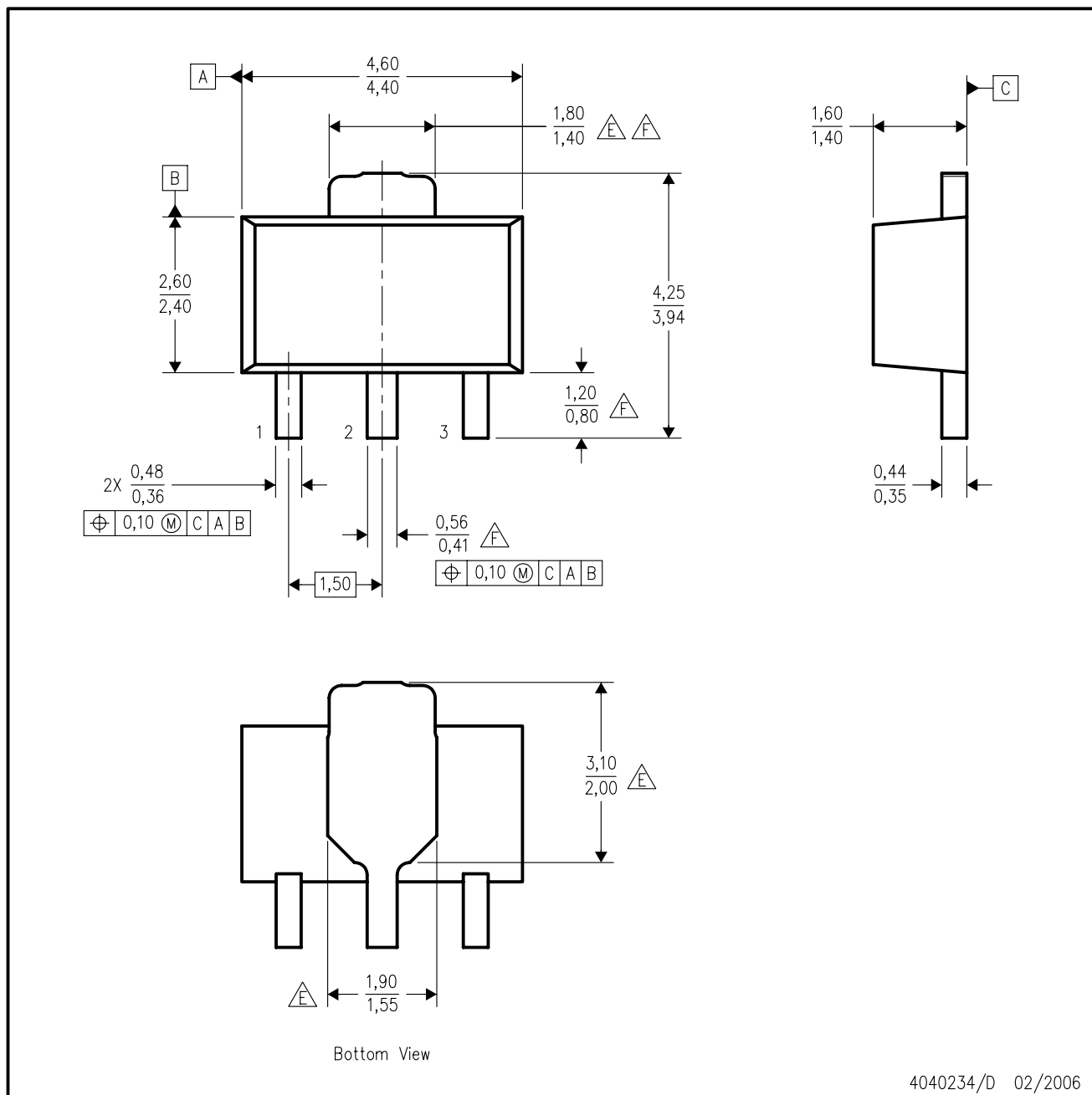


\*All dimensions are nominal

| Device    | Package Type | Package Drawing | Pins | SPQ  | Length (mm) | Width (mm) | Height (mm) |
|-----------|--------------|-----------------|------|------|-------------|------------|-------------|
| TL7757CDR | SOIC         | D               | 8    | 2500 | 340.5       | 338.1      | 20.6        |
| TL7757CPK | SOT-89       | PK              | 3    | 1000 | 340.0       | 340.0      | 38.0        |
| TL7757IDR | SOIC         | D               | 8    | 2500 | 340.5       | 338.1      | 20.6        |
| TL7757IPK | SOT-89       | PK              | 3    | 1000 | 340.0       | 340.0      | 38.0        |

PK (R-PSSO-F3)

PLASTIC SINGLE-IN-LINE PACKAGE

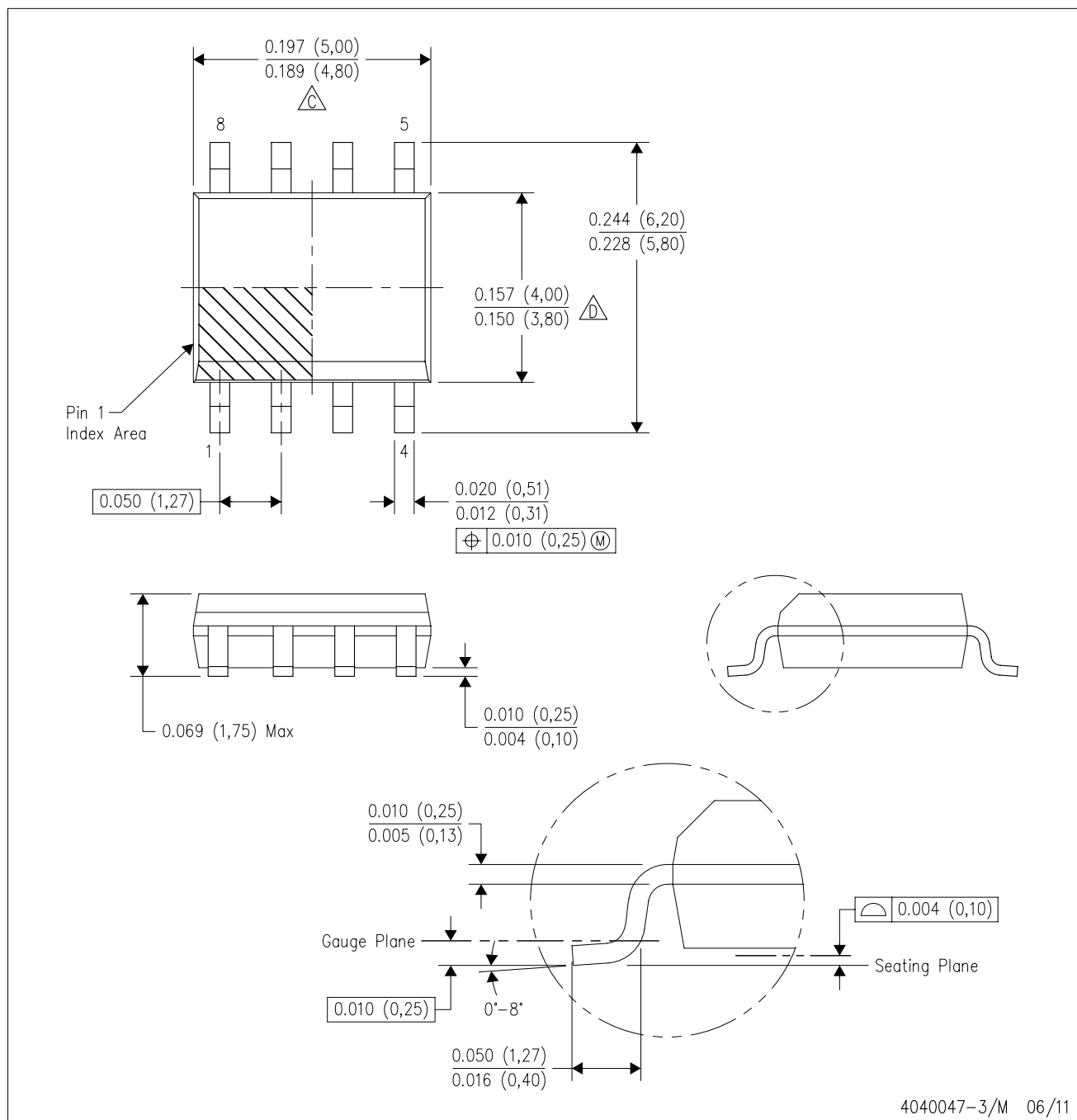


4040234/D 02/2006

- NOTES:
- All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
  - This drawing is subject to change without notice.
  - The center lead is in electrical contact with the tab.
  - Body dimensions do not include mold flash or protrusion. Mold flash and protrusion not to exceed 0.15 per side.
- (E) Thermal pad contour optional within these dimensions.
- (F) Falls within JEDEC TO-243 variation AA, except minimum lead length, pin 2 minimum lead width, minimum tab width.

D (R-PDSO-G8)

PLASTIC SMALL OUTLINE



## NOTES:

- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- $\triangle C$  Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
- $\triangle D$  Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
- E. Reference JEDEC MS-012 variation AA.

D (R-PDSO-G8)

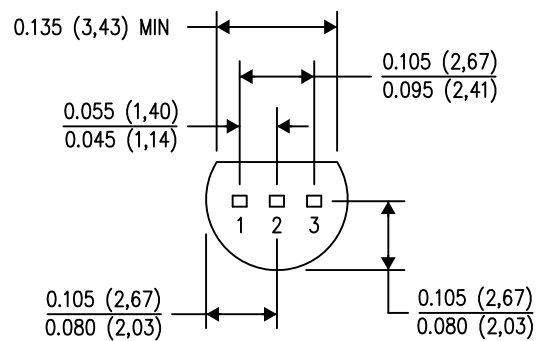
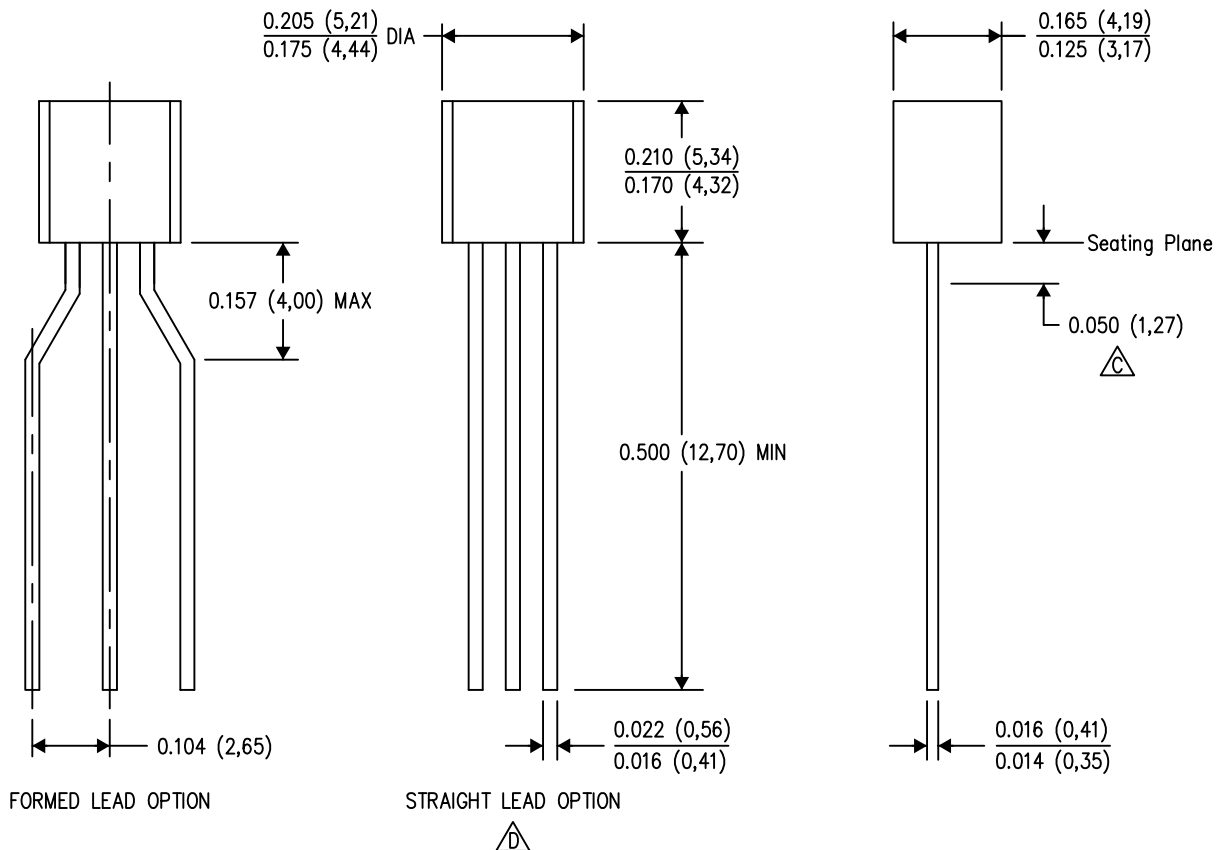
PLASTIC SMALL OUTLINE



- NOTES:
- All linear dimensions are in millimeters.
  - This drawing is subject to change without notice.
  - Publication IPC-7351 is recommended for alternate designs.
  - Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
  - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

LP (O-PBCY-W3)

PLASTIC CYLINDRICAL PACKAGE

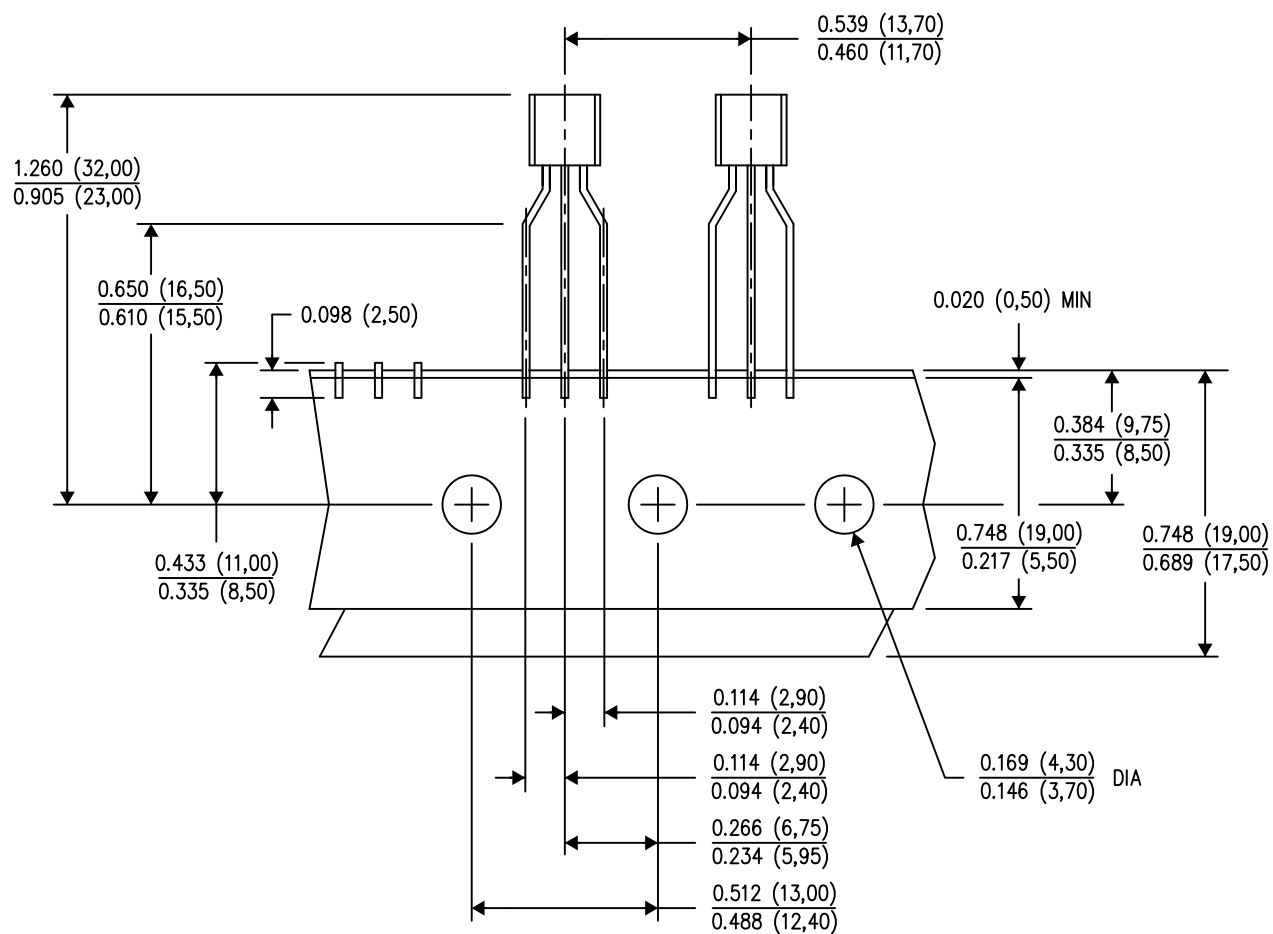


4040001-2/E 08/13

- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. Lead dimensions are not controlled within this area.
  - D. Falls within JEDEC TO-226 Variation AA (TO-226 replaces TO-92).
  - E. Shipping Method:  
 Straight lead option available in bulk pack only.  
 Formed lead option available in tape & reel or ammo pack.  
 Specific products can be offered in limited combinations of shipping mediums and lead options.  
 Consult product folder for more information on available options.

LP (O-PBCY-W3)

PLASTIC CYLINDRICAL PACKAGE



TAPE &amp; REEL

4040001-3/E 08/13

- NOTES:
- A. All linear dimensions are in inches (millimeters).
  - B. This drawing is subject to change without notice.
  - C. Tape and Reel information for the Formed Lead Option package.

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| Data Converters              | <a href="http://dataconverter.ti.com">dataconverter.ti.com</a>                       |
| DLP® Products                | <a href="http://www.dlp.com">www.dlp.com</a>                                         |
| DSP                          | <a href="http://dsp.ti.com">dsp.ti.com</a>                                           |
| Clocks and Timers            | <a href="http://www.ti.com/clocks">www.ti.com/clocks</a>                             |
| Interface                    | <a href="http://interface.ti.com">interface.ti.com</a>                               |
| Logic                        | <a href="http://logic.ti.com">logic.ti.com</a>                                       |
| Power Mgmt                   | <a href="http://power.ti.com">power.ti.com</a>                                       |
| Microcontrollers             | <a href="http://microcontroller.ti.com">microcontroller.ti.com</a>                   |
| RFID                         | <a href="http://www.ti-rfid.com">www.ti-rfid.com</a>                                 |
| OMAP Applications Processors | <a href="http://www.ti.com/omap">www.ti.com/omap</a>                                 |
| Wireless Connectivity        | <a href="http://www.ti.com/wirelessconnectivity">www.ti.com/wirelessconnectivity</a> |

### Applications

|                               |                                                                                          |
|-------------------------------|------------------------------------------------------------------------------------------|
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| Communications and Telecom    | <a href="http://www.ti.com/communications">www.ti.com/communications</a>                 |
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| Consumer Electronics          | <a href="http://www.ti.com/consumer-apps">www.ti.com/consumer-apps</a>                   |
| Energy and Lighting           | <a href="http://www.ti.com/energy">www.ti.com/energy</a>                                 |
| Industrial                    | <a href="http://www.ti.com/industrial">www.ti.com/industrial</a>                         |
| Medical                       | <a href="http://www.ti.com/medical">www.ti.com/medical</a>                               |
| Security                      | <a href="http://www.ti.com/security">www.ti.com/security</a>                             |
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