

3-Pin Supply Voltage Supervisors

 Check for Samples: [TLV809J25](#), [TLV809L30](#), [TLV809K33](#), [TLV809I50](#)

FEATURES

- 3-Pin SOT23 Package
- Supply Current: 9 μ A (Typical)
- Precision Supply Voltage Monitor: 2.5 V, 3 V, 3.3 V, 5 V
- Power-On Reset Generator with Fixed Delay Time of 200 ms
- Pin-for-Pin Compatible with MAX809
- Temperature Range: -40°C to $+85^{\circ}\text{C}$

APPLICATIONS

- DSPs, Microcontrollers, and Microprocessors
- Wireless Communication Systems
- Portable/Battery-Powered Equipment
- Programmable Controls
- Intelligent Instruments
- Industrial Equipment
- Notebook and Desktop Computers
- Automotive Systems

DESCRIPTION

The TLV809 family of supervisory circuits provides circuit initialization and timing supervision, primarily for DSPs and processor-based systems.

During power-on, $\overline{\text{RESET}}$ is asserted when the supply voltage (V_{DD}) becomes higher than 1.1 V. Thereafter, the supervisory circuit monitors V_{DD} and keeps $\overline{\text{RESET}}$ active as long as V_{DD} remains below the threshold voltage V_{IT} . An internal timer delays the return of the output to the inactive state (high) to ensure proper system reset. The delay time ($t_{\text{d(typ)}} = 200$ ms) starts after V_{DD} has risen above the threshold voltage, V_{IT} . When the supply voltage drops below the V_{IT} threshold voltage, the output becomes active (low) again. No external components are required. All the devices in this family have a fixed sense-threshold voltage (V_{IT}) set by an internal voltage divider.

The product spectrum is designed for supply voltages of 2.5 V, 3 V, 3.3 V, and 5 V. The circuits are available in a 3-pin SOT-23 package. The TLV809 devices are characterized for operation over a temperature range of -40°C to $+85^{\circ}\text{C}$.

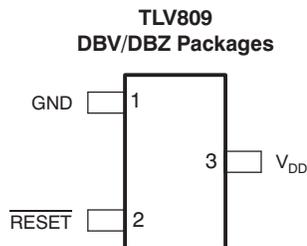
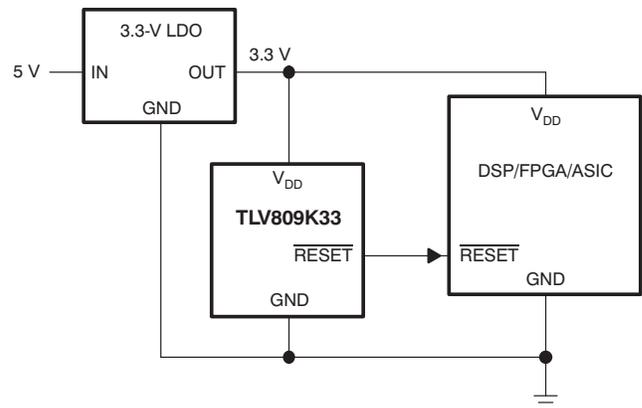


Figure 1. TYPICAL APPLICATION



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.

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This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

PACKAGE/ORDERING INFORMATION⁽¹⁾

| PRODUCT | THRESHOLD VOLTAGE | PACKAGE-LEAD | PACKAGE DESIGNATOR | SPECIFIED OPERATING TEMPERATURE | PACKAGE MARKING | ORDERING INFORMATION | TRANSPORT MEDIA, QUANTITY |
|-----------|-------------------|--------------|--------------------|---------------------------------|-----------------|----------------------|---------------------------|
| TLV809J25 | 2.25 V | SOT23-3 | DBV | -40°C to +85°C | VTCI | TLV809J25DBVR | Tape and Reel, 3000 |
| | | | | | | TLV809J25DBVT | Tape and Reel, 250 |
| | | | DBZ | -40°C to +85°C | BCMТ | TLV809J25DBZR | Tape and Reel, 3000 |
| | | | | | | TLV809J25DBZT | Tape and Reel, 250 |
| TLV809L30 | 2.64 V | SOT23-3 | DBV | -40°C to +85°C | VTXI | TLV809L30DBVR | Tape and Reel, 3000 |
| | | | | | | TLV809L30DBVT | Tape and Reel, 250 |
| | | | DBZ | -40°C to +85°C | BCMZ | TLV809L30DBZR | Tape and Reel, 3000 |
| | | | | | | TLV809L30DBZT | Tape and Reel, 250 |
| TLV809K33 | 2.93 V | SOT23-3 | DBV | -40°C to +85°C | VTRI | TLV809K33DBVR | Tape and Reel, 3000 |
| | | | | | | TLV809K33DBVT | Tape and Reel, 250 |
| | | | DBZ | -40°C to +85°C | BCMХ | TLV809K33DBZR | Tape and Reel, 3000 |
| | | | | | | TLV809K33DBZT | Tape and Reel, 250 |
| TLV809I50 | 4.55 V | SOT23-3 | DBV | -40°C to +85°C | VTBI | TLV809I50DBVR | Tape and Reel, 3000 |
| | | | | | | TLV809I50DBVT | Tape and Reel, 250 |
| | | | DBZ | -40°C to +85°C | BCMV | TLV809I50DBZR | Tape and Reel, 3000 |
| | | | | | | TLV809I50DBZT | Tape and Reel, 250 |

(1) For the most current package and ordering information, see the Package Option Addendum at the end of this data sheet, or visit the device product folder at www.ti.com.

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Over operating free-air temperature range (unless otherwise noted) .

| | VALUE | UNIT |
|---|-------------|------|
| V_{DD} Supply voltage ⁽²⁾ | 7 | V |
| All other pins ⁽²⁾ | -0.3 to 7 | V |
| I_{OL} Maximum low output current | 5 | mA |
| I_{OH} Maximum high output current | -5 | mA |
| I_{IK} Input clamp current ($V_I < 0$ or $V_I > V_{DD}$) | ±20 | mA |
| I_{OK} Output clamp current ($V_O < 0$ or $V_O > V_{DD}$) | ±20 | mA |
| T_A Operating free-air temperature range | -40 to +85 | °C |
| T_{stg} Storage temperature range | -65 to +150 | °C |
| Soldering temperature | +260 | °C |

- (1) 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.
- (2) All voltage values are with respect to GND. For reliable operation the device should not be operated at 7 V for more than $t = 1000h$ continuously

THERMAL INFORMATION

| THERMAL METRIC ⁽¹⁾ | | TLV809 | TLV809 | UNITS |
|-------------------------------|--|--------|--------|-------|
| | | DBV | DBZ | |
| | | 3 PINS | 3 PINS | |
| θ_{JA} | Junction-to-ambient thermal resistance | 242.1 | 286.9 | °C/W |
| θ_{JCTop} | Junction-to-case (top) thermal resistance | 213.0 | 105.6 | |
| θ_{JB} | Junction-to-board thermal resistance | 123.4 | 124.4 | |
| ψ_{JT} | Junction-to-top characterization parameter | 45.7 | 25.8 | |
| ψ_{JB} | Junction-to-board characterization parameter | 130.9 | 107.9 | |
| θ_{JCbott} | Junction-to-case (bottom) thermal resistance | — | — | |

(1) For more information about traditional and new thermal metrics, see the *IC Package Thermal Metrics* application report, [SPRA953](#).

RECOMMENDED OPERATING CONDITIONS

At specified temperature range (unless otherwise noted).

| | | MIN | MAX | UNIT |
|----------|--------------------------------------|-----|-----|------|
| V_{DD} | Supply voltage | 2 | 6 | V |
| T_A | Operating free-air temperature range | -40 | +85 | °C |

ELECTRICAL CHARACTERISTICS

Over recommended operating free-air temperature range (unless otherwise noted).

| PARAMETER | | TEST CONDITIONS | | MIN | TYP | MAX | UNIT |
|---------------------------------------|---|---|---|----------------|------|------|---------------|
| V_{OH} | High-level output voltage | $V_{DD} = 2.5\text{ V to }6\text{ V}, I_{OH} = -500\ \mu\text{A}$ | | $V_{DD} - 0.2$ | | | V |
| | | $V_{DD} = 3.3\text{ V}, I_{OH} = -2\text{ mA}$ | | $V_{DD} - 0.4$ | | | |
| | | $V_{DD} = 6\text{ V}, I_{OH} = -4\text{ mA}$ | | $V_{DD} - 0.4$ | | | |
| V_{OL} | Low-level output voltage | $V_{DD} = 2\text{ V to }6\text{ V}, I_{OH} = 500\ \mu\text{A}$ | | 0.2 | | | V |
| | | $V_{DD} = 3.3\text{ V}, I_{OH} = 2\text{ mA}$ | | 0.4 | | | |
| | | $V_{DD} = 6\text{ V}, I_{OH} = 4\text{ mA}$ | | 0.4 | | | |
| Power-up reset voltage ⁽¹⁾ | | $V_{DD} \geq 1.1\text{ V}, I_{OL} = 50\ \mu\text{A}$ | | 0.2 | | | V |
| V_{IT-} | Negative-going input threshold voltage ⁽²⁾ | TLV809J25 | $T_A = -40^\circ\text{C to }85^\circ\text{C}$ | 2.20 | 2.25 | 2.30 | V |
| | | TLV809L30 | | 2.58 | 2.64 | 2.70 | |
| | | TLV809K33 | | 2.87 | 2.93 | 2.99 | |
| | | TLV809I50 | | 4.45 | 4.55 | 4.65 | |
| V_{hys} | Hysteresis | TLV809J25 | | 30 | | | mV |
| | | TLV809L30 | | 35 | | | |
| | | TLV809K33 | | 40 | | | |
| | | TLV809I50 | | 60 | | | |
| I_{DD} | Supply current | $V_{DD} = 2\text{ V}, \text{ Output unconnected}$ | | 9 | 12 | | μA |
| | | $V_{DD} = 6\text{ V}, \text{ Output unconnected}$ | | 20 | 25 | | |
| C_i | Input capacitance | $V_i = 0\text{ V to }V_{DD}$ | | 5 | | | pF |

(1) The lowest supply voltage at which $\overline{\text{RESET}}$ becomes active. $t_r, V_{DD} \geq 15\text{ ms/V}$.

(2) To ensure best stability of the threshold voltage, a bypass capacitor (0.1- μF ceramic) should be placed near the supply terminals.

TIMING REQUIREMENTS

At $R_L = 1\text{ M}\Omega$, $C_L = 50\text{ pF}$, $T_A = +25^\circ\text{C}$.

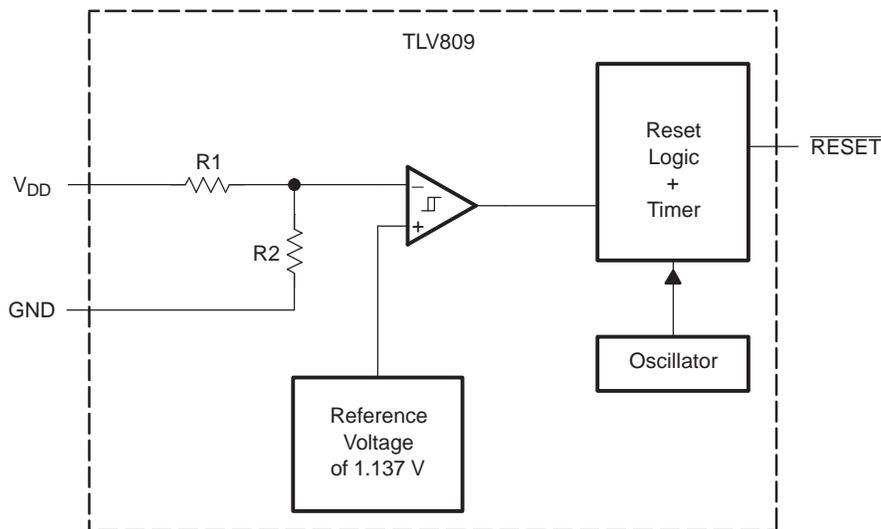
| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-------------------------------|---|-----|-----|-----|---------------|
| t_w Pulse width at V_{DD} | $V_{DD} = V_{IT-} + 0.2\text{ V}$, $V_{DD} = V_{IT-} - 0.2\text{ V}$ | 3 | | | μs |

SWITCHING CHARACTERISTICS

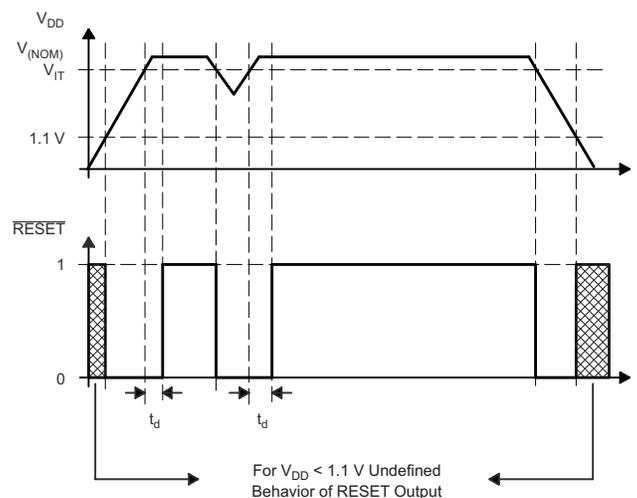
At $R_L = 1\text{ M}\Omega$, $C_L = 50\text{ pF}$, $T_A = +25^\circ\text{C}$.

| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|--|-----|-----|-----|---------------|
| t_d Delay time | $V_{DD} \geq V_{IT-} + 0.2\text{ V}$; see timing diagram | 120 | 200 | 280 | ms |
| t_{PHL} Propagation (delay) time, high-to-low-level output | V_{DD} to $\overline{\text{RESET}}$ delay $V_{IL} = V_{IT-} - 0.2\text{ V}$, $V_{IH} = V_{IT-} + 0.2\text{ V}$ | | 1 | | μs |

FUNCTIONAL BLOCK DIAGRAM



TIMING DIAGRAM



TYPICAL CHARACTERISTICS

LOW-LEVEL OUTPUT VOLTAGE
vs
LOW-LEVEL OUTPUT CURRENT

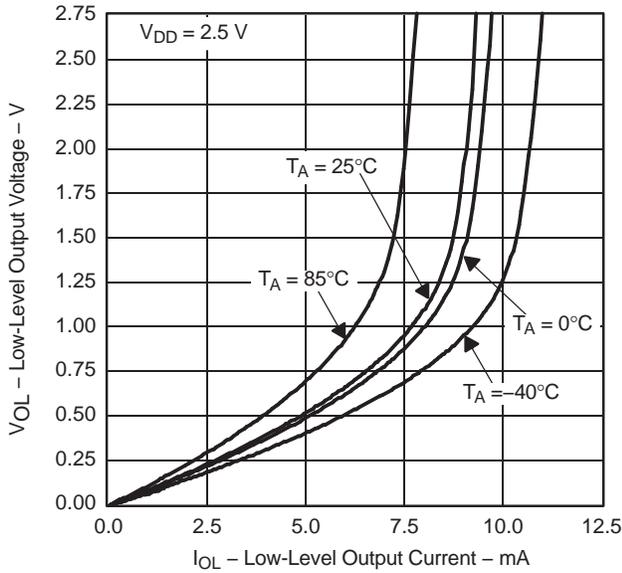


Figure 2.

SUPPLY CURRENT
vs
SUPPLY VOLTAGE

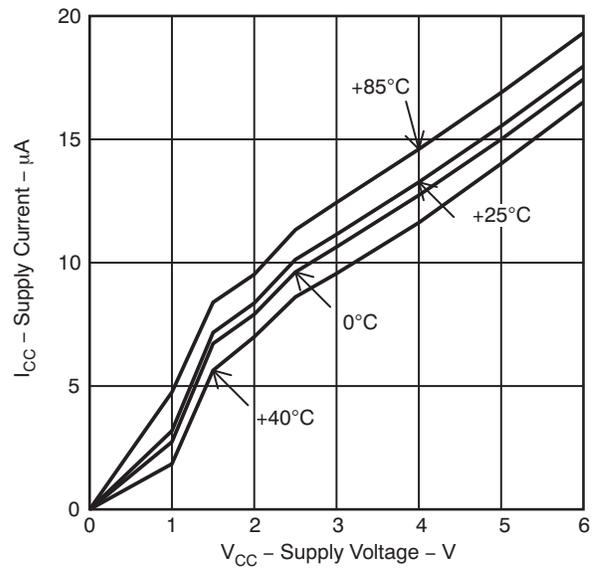


Figure 3.

HIGH-LEVEL OUTPUT VOLTAGE
vs
HIGH-LEVEL OUTPUT CURRENT

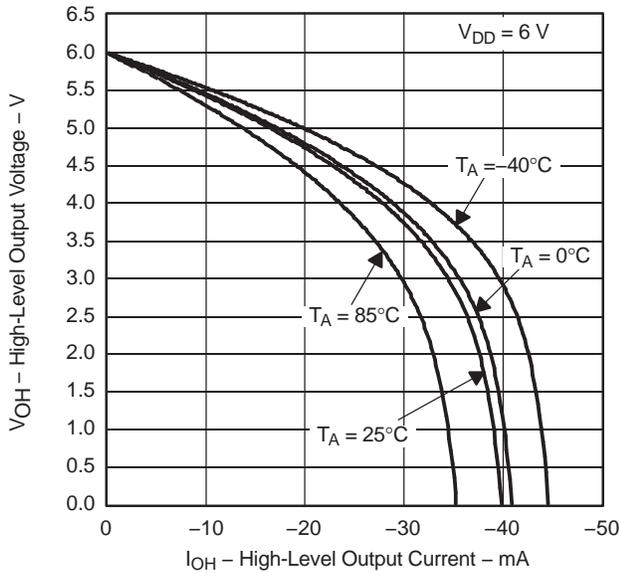


Figure 4.

HIGH-LEVEL OUTPUT VOLTAGE
vs
HIGH-LEVEL OUTPUT CURRENT

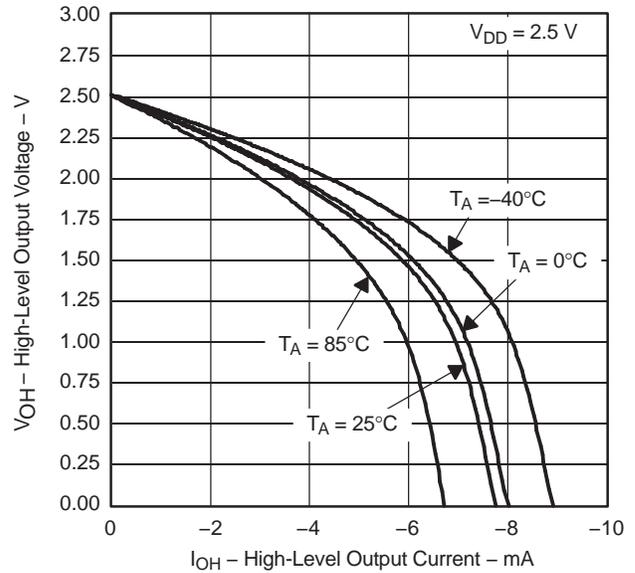


Figure 5.

TYPICAL CHARACTERISTICS (continued)

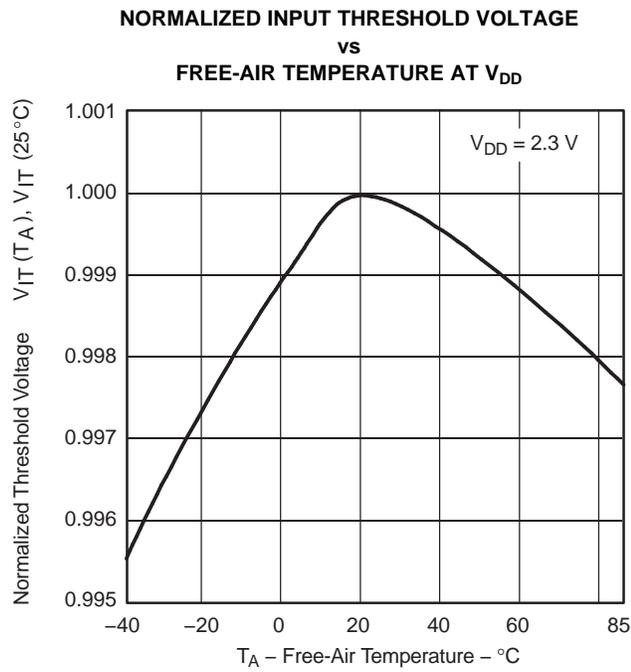


Figure 6.

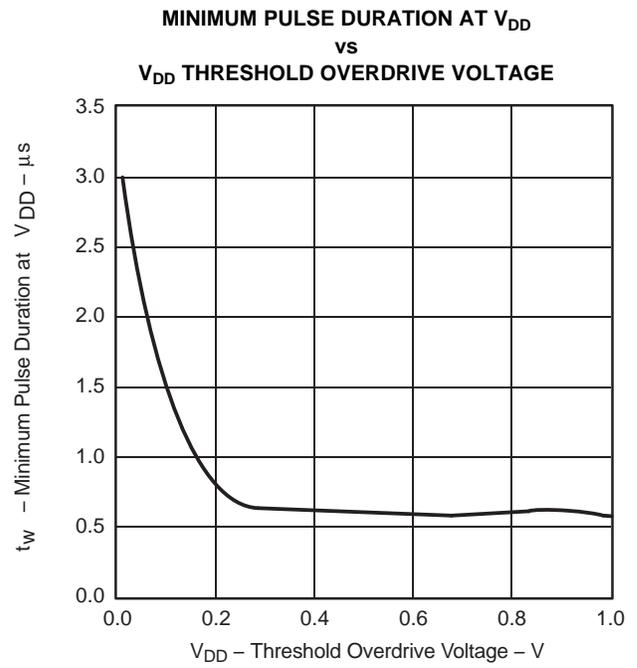


Figure 7.

REVISION HISTORY

NOTE: Page numbers from previous revisions may differ from page numbers in the current version.

| Changes from Revision B (September 2010) to Revision C | Page |
|--|-------------|
| • Changed TLV809L30 DBZ ordering information column in Package/Ordering Information table | 2 |
| • Changed TLV809K33 DBZ ordering information column in Package/Ordering Information table | 2 |
| • Changed first TLV809I50 DBZ ordering information entry in Package/Ordering Information table | 2 |

| Changes from Revision A (July 2010) to Revision B | Page |
|--|-------------|
| • Updated document format to current standards | 1 |
| • Added DBZ package to pinout figure | 1 |
| • Added DBZ package to <i>Package/Ordering Information</i> table | 2 |
| • Added <i>Thermal Information</i> table | 2 |
| • Changed Figure 3 | 5 |

PACKAGING INFORMATION

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish | MSL Peak Temp (3) | Op Temp (°C) | Top-Side Markings (4) | Samples |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|------------------|----------------------|--------------|--------------------------|-------------------------|
| TLV809I50DBVR | ACTIVE | SOT-23 | DBV | 3 | 3000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | VTBI | Samples |
| TLV809I50DBVT | ACTIVE | SOT-23 | DBV | 3 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | VTBI | Samples |
| TLV809I50DBZR | ACTIVE | SOT-23 | DBZ | 3 | 3000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | BCMV | Samples |
| TLV809I50DBZT | ACTIVE | SOT-23 | DBZ | 3 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | BCMV | Samples |
| TLV809J25DBVR | ACTIVE | SOT-23 | DBV | 3 | 3000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | VTCI | Samples |
| TLV809J25DBVT | ACTIVE | SOT-23 | DBV | 3 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | VTCI | Samples |
| TLV809J25DBZR | ACTIVE | SOT-23 | DBZ | 3 | 3000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | BCMT | Samples |
| TLV809J25DBZT | ACTIVE | SOT-23 | DBZ | 3 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | BCMT | Samples |
| TLV809K33DBVR | ACTIVE | SOT-23 | DBV | 3 | 3000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | VTRI | Samples |
| TLV809K33DBVT | ACTIVE | SOT-23 | DBV | 3 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | VTRI | Samples |
| TLV809K33DBZR | ACTIVE | SOT-23 | DBZ | 3 | 3000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | BCMX | Samples |
| TLV809K33DBZT | ACTIVE | SOT-23 | DBZ | 3 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | BCMX | Samples |
| TLV809L30DBVR | ACTIVE | SOT-23 | DBV | 3 | 3000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | VTXI | Samples |
| TLV809L30DBVT | ACTIVE | SOT-23 | DBV | 3 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | VTXI | Samples |
| TLV809L30DBZR | ACTIVE | SOT-23 | DBZ | 3 | 3000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | BCMZ | Samples |
| TLV809L30DBZT | ACTIVE | SOT-23 | DBZ | 3 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | BCMZ | Samples |

(1) 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.

OBSELETE: TI has discontinued the production of the device.

⁽²⁾ 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)

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

⁽⁴⁾ Multiple Top-Side Markings will be inside parentheses. Only one Top-Side 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 Top-Side Marking for that device.

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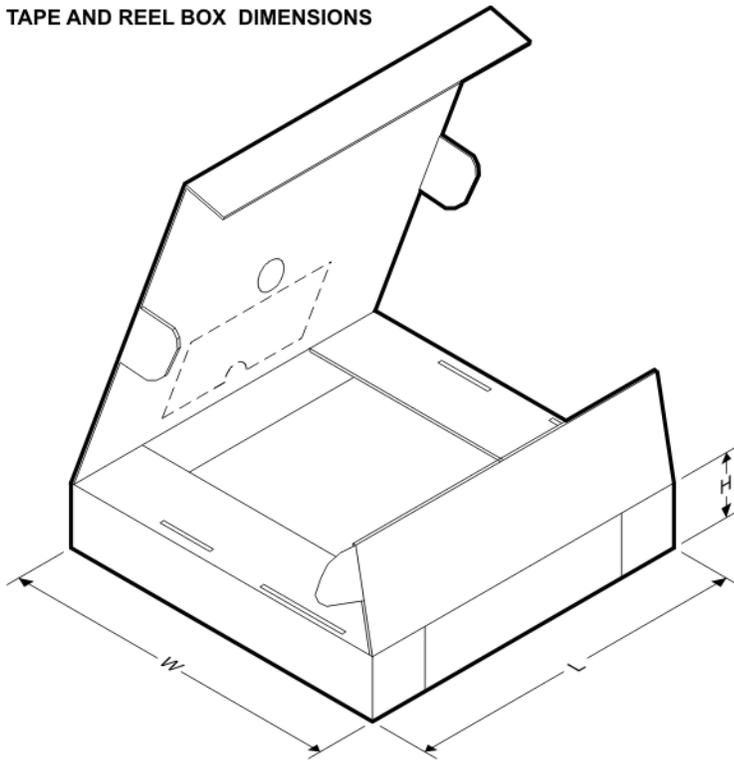
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TAPE AND REEL INFORMATION

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE


*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 |
|---------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| TLV809I50DBVR | SOT-23 | DBV | 3 | 3000 | 180.0 | 9.0 | 3.3 | 3.2 | 1.47 | 4.0 | 8.0 | Q3 |
| TLV809I50DBVT | SOT-23 | DBV | 3 | 250 | 180.0 | 9.0 | 3.3 | 3.2 | 1.47 | 4.0 | 8.0 | Q3 |
| TLV809I50DBZR | SOT-23 | DBZ | 3 | 3000 | 179.0 | 8.4 | 3.15 | 2.95 | 1.22 | 4.0 | 8.0 | Q3 |
| TLV809I50DBZT | SOT-23 | DBZ | 3 | 250 | 179.0 | 8.4 | 3.15 | 2.95 | 1.22 | 4.0 | 8.0 | Q3 |
| TLV809J25DBVR | SOT-23 | DBV | 3 | 3000 | 180.0 | 9.0 | 3.3 | 3.2 | 1.47 | 4.0 | 8.0 | Q3 |
| TLV809J25DBVT | SOT-23 | DBV | 3 | 250 | 180.0 | 9.0 | 3.3 | 3.2 | 1.47 | 4.0 | 8.0 | Q3 |
| TLV809J25DBZR | SOT-23 | DBZ | 3 | 3000 | 179.0 | 8.4 | 3.15 | 2.95 | 1.22 | 4.0 | 8.0 | Q3 |
| TLV809J25DBZT | SOT-23 | DBZ | 3 | 250 | 179.0 | 8.4 | 3.15 | 2.95 | 1.22 | 4.0 | 8.0 | Q3 |
| TLV809K33DBVR | SOT-23 | DBV | 3 | 3000 | 178.0 | 9.0 | 3.3 | 3.2 | 1.47 | 4.0 | 8.0 | Q3 |
| TLV809K33DBVT | SOT-23 | DBV | 3 | 250 | 178.0 | 8.4 | 3.3 | 3.2 | 1.47 | 4.0 | 8.0 | Q3 |
| TLV809K33DBZR | SOT-23 | DBZ | 3 | 3000 | 179.0 | 8.4 | 3.15 | 2.95 | 1.22 | 4.0 | 8.0 | Q3 |
| TLV809K33DBZT | SOT-23 | DBZ | 3 | 250 | 179.0 | 8.4 | 3.15 | 2.95 | 1.22 | 4.0 | 8.0 | Q3 |
| TLV809L30DBVR | SOT-23 | DBV | 3 | 3000 | 180.0 | 9.0 | 3.3 | 3.2 | 1.47 | 4.0 | 8.0 | Q3 |
| TLV809L30DBVT | SOT-23 | DBV | 3 | 250 | 180.0 | 9.0 | 3.3 | 3.2 | 1.47 | 4.0 | 8.0 | Q3 |
| TLV809L30DBZR | SOT-23 | DBZ | 3 | 3000 | 179.0 | 8.4 | 3.15 | 2.95 | 1.22 | 4.0 | 8.0 | Q3 |
| TLV809L30DBZT | SOT-23 | DBZ | 3 | 250 | 179.0 | 8.4 | 3.15 | 2.95 | 1.22 | 4.0 | 8.0 | Q3 |

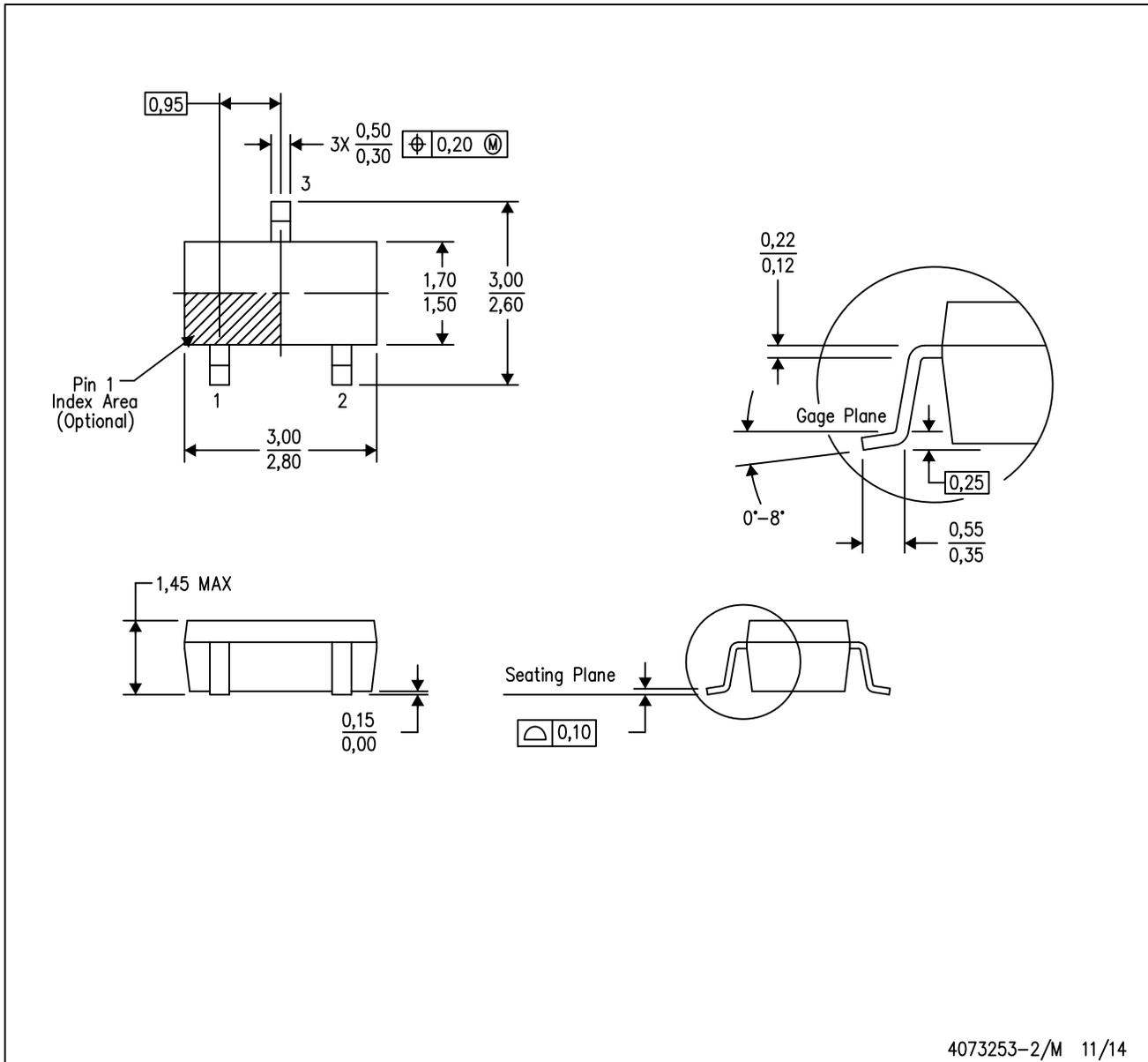
TAPE AND REEL BOX DIMENSIONS


*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Length (mm) | Width (mm) | Height (mm) |
|---------------|--------------|-----------------|------|------|-------------|------------|-------------|
| TLV809I50DBVR | SOT-23 | DBV | 3 | 3000 | 182.0 | 182.0 | 20.0 |
| TLV809I50DBVT | SOT-23 | DBV | 3 | 250 | 182.0 | 182.0 | 20.0 |
| TLV809I50DBZR | SOT-23 | DBZ | 3 | 3000 | 203.0 | 203.0 | 35.0 |
| TLV809I50DBZT | SOT-23 | DBZ | 3 | 250 | 203.0 | 203.0 | 35.0 |
| TLV809J25DBVR | SOT-23 | DBV | 3 | 3000 | 182.0 | 182.0 | 20.0 |
| TLV809J25DBVT | SOT-23 | DBV | 3 | 250 | 182.0 | 182.0 | 20.0 |
| TLV809J25DBZR | SOT-23 | DBZ | 3 | 3000 | 203.0 | 203.0 | 35.0 |
| TLV809J25DBZT | SOT-23 | DBZ | 3 | 250 | 203.0 | 203.0 | 35.0 |
| TLV809K33DBVR | SOT-23 | DBV | 3 | 3000 | 180.0 | 180.0 | 18.0 |
| TLV809K33DBVT | SOT-23 | DBV | 3 | 250 | 180.0 | 180.0 | 18.0 |
| TLV809K33DBZR | SOT-23 | DBZ | 3 | 3000 | 203.0 | 203.0 | 35.0 |
| TLV809K33DBZT | SOT-23 | DBZ | 3 | 250 | 203.0 | 203.0 | 35.0 |
| TLV809L30DBVR | SOT-23 | DBV | 3 | 3000 | 182.0 | 182.0 | 20.0 |
| TLV809L30DBVT | SOT-23 | DBV | 3 | 250 | 182.0 | 182.0 | 20.0 |
| TLV809L30DBZR | SOT-23 | DBZ | 3 | 3000 | 203.0 | 203.0 | 35.0 |
| TLV809L30DBZT | SOT-23 | DBZ | 3 | 250 | 203.0 | 203.0 | 35.0 |

DBV (R-PDSO-G3)

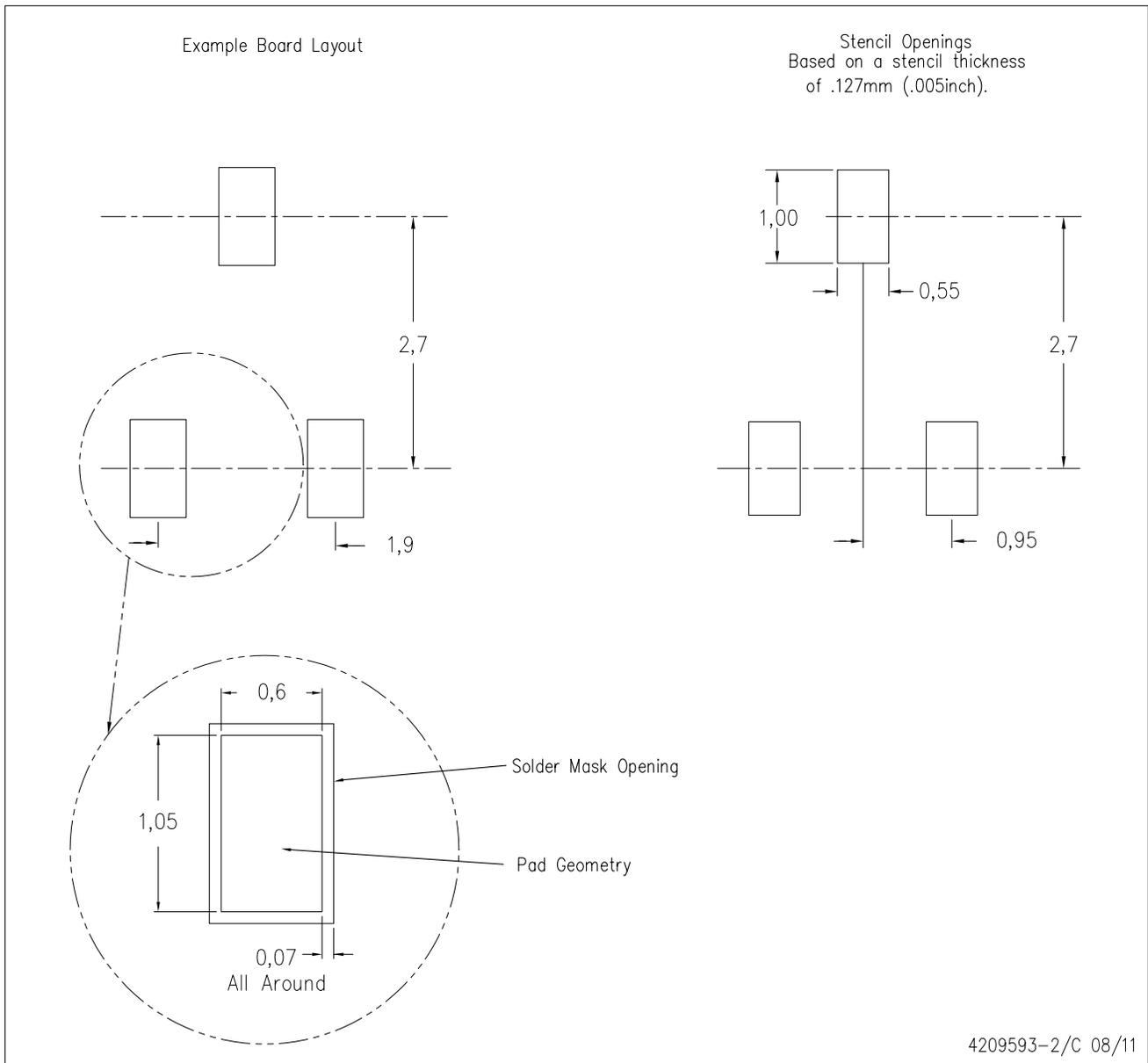
PLASTIC SMALL-OUTLINE PACKAGE



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion. Mold flash and protrusion shall not exceed 0.15 per side.

DBV (R-PDSO-G3)

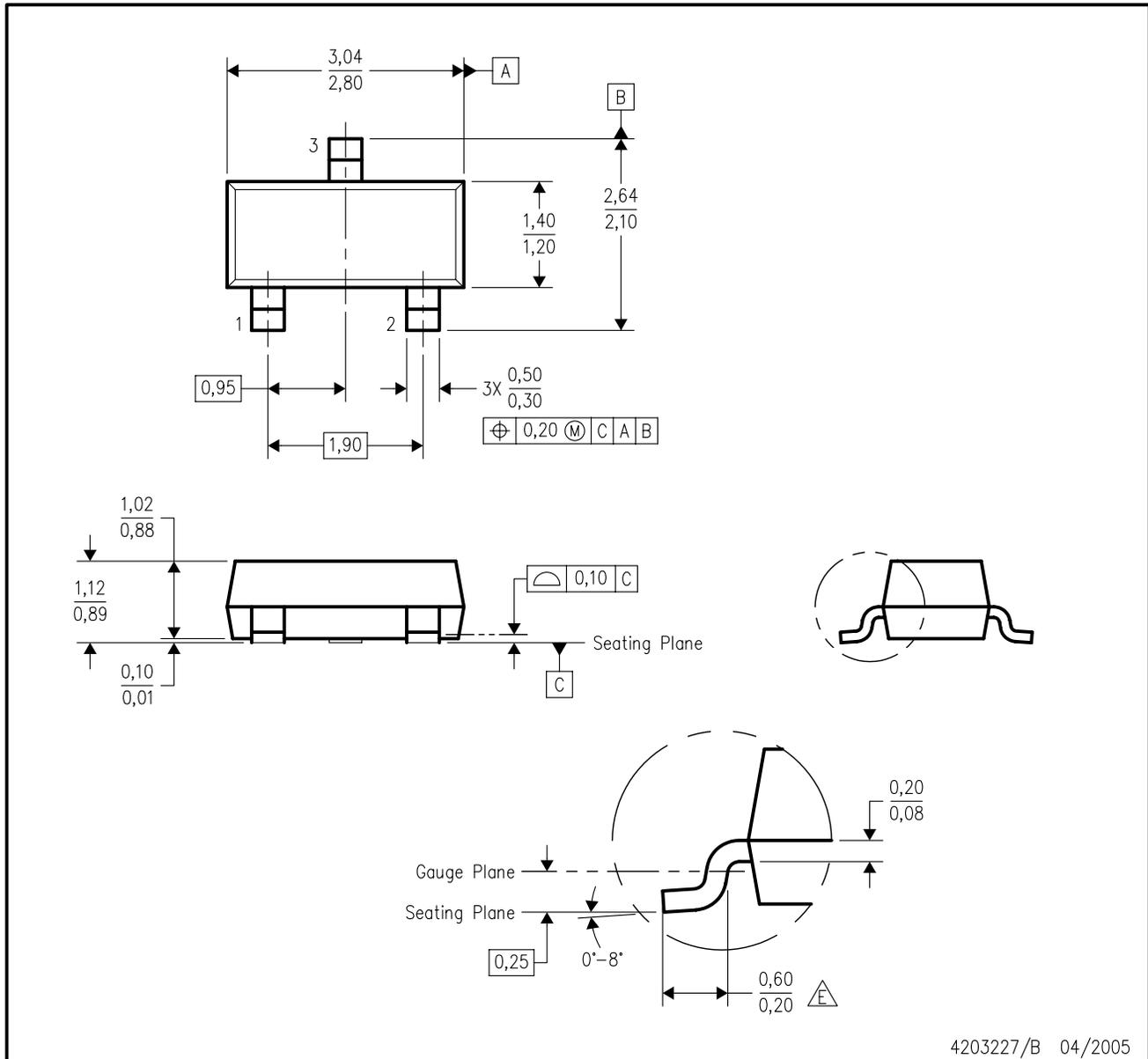
PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
 - D. Publication IPC-7351 is recommended for alternate designs.
 - E. 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. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC-7525 for other stencil recommendations.

DBZ (R-PDSO-G3)

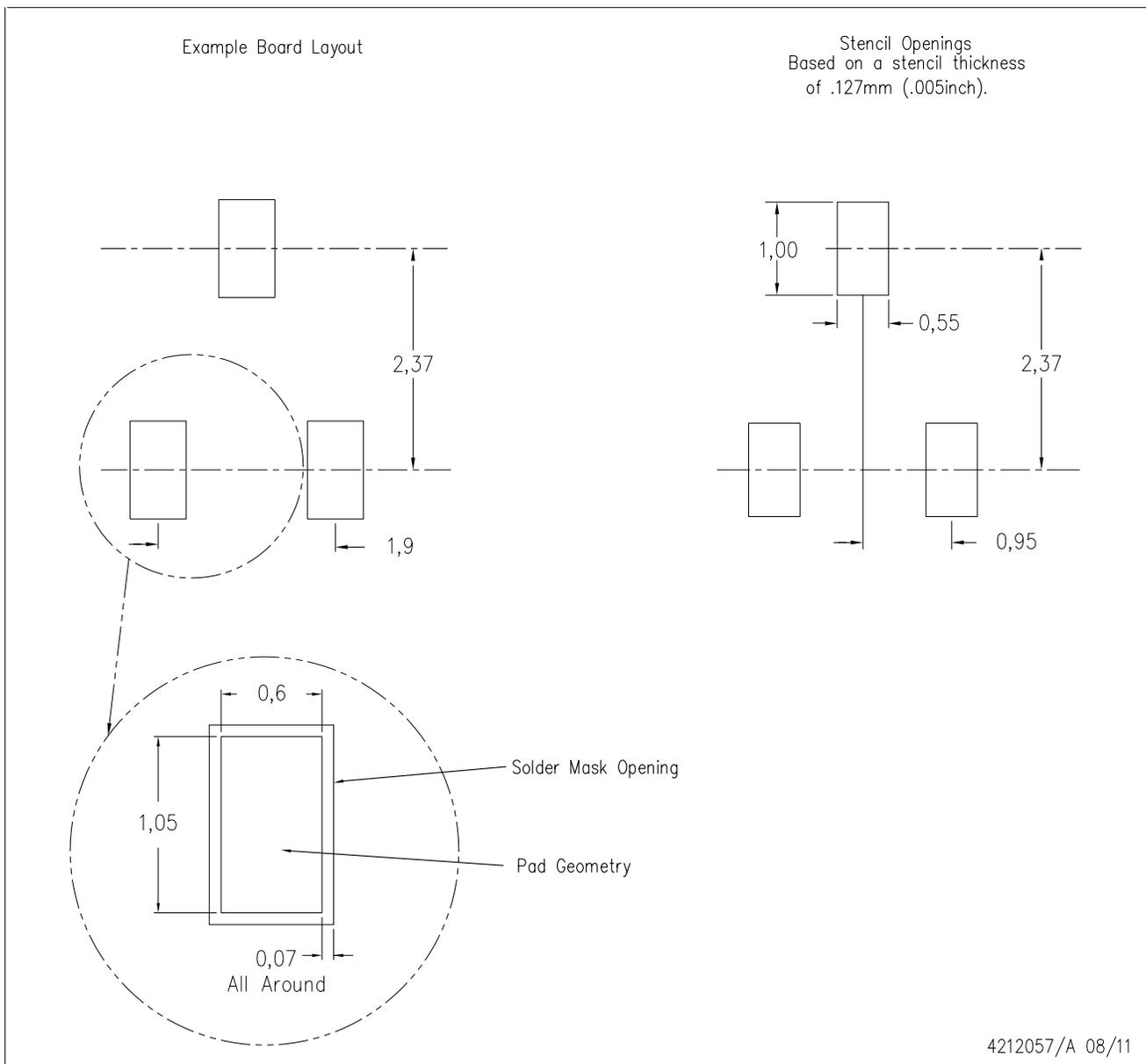
PLASTIC SMALL-OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
 - B. This drawing is subject to change without notice.
 - C. Lead dimensions are inclusive of plating.
 - D. Body dimensions are exclusive of mold flash and protrusion. Mold flash and protrusion not to exceed 0.25 per side.
 - E. Falls within JEDEC TO-236 variation AB, except minimum foot length.

DBZ (R-PDSO-G3)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Customers should place a note on the circuit board fabrication drawing not to alter the center solder mask defined pad.
 - D. Publication IPC-7351 is recommended for alternate designs.
 - E. 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. Example stencil design based on a 50% volumetric metal load solder paste. Refer to IPC-7525 for other stencil recommendations.

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