![TEXAS INSTRUMENTS logo]

TLV809
3 引脚电源电压监控器

1 特性

- 高精度电源电压监控器：
  2.5V、3V、3.3V、5V
- 具有 200ms 固定延时时间的
  上电复位发生器
- 电源电流：9μA（典型值）
- 温度范围：–40°C 至 +85°C
- 3 引脚 SOT-23 封装
- 与 MAX809 引脚对引脚兼容

2 应用

- 工厂自动化
- 便携式和电池供电类设备
- 机顶盒
- 服务器
- 电器
- 电表
- 楼宇自动化

3 说明

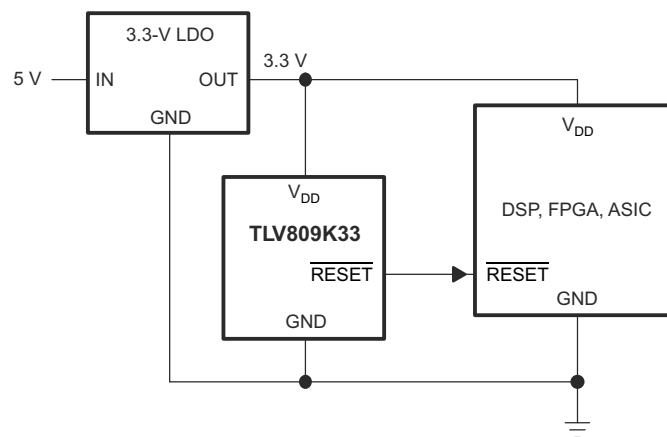TLV809 系列监控电路主要为数字信号处理器 (DSP) 以及基于处理器的系统提供电路初始化和时序监控。较新的 TLV809E 是引脚对引脚兼容的备选器件。

在启动期间，置位为 $\overline{\text{RESET}}$ ，前提是电源电压 (V_{DD}) 超过 1.1V。之后，监控电路就会监测 V_{DD}，并使 $\overline{\text{RESET}}$ 保持有效状态，前提是 V_{DD} 保持在阈值电压 V_{IT} 以下。内部计时器将会延迟输出恢复至无效状态（高电平）的时间，以确保系统正常复位。延时时间 ($t_{d(typ)}$ = 200ms) 从 V_{DD} 上升到高于阈值电压 V_{IT} 后开始。当电源电压降至 V_{IT} 阈值电压以下时，输出再次变为有效状态（低电平）。无需外部组件。该系列中的所有器件均具有一个通过内部分压器设定的固定感应阈值电压 (V_{IT})。

该产品系列专为 2.5V、3V、3.3V 以及 5V 电源电压而设计。电路采用 3 引脚 SOT-23 封装。TLV809 器件的额定工作温度范围为 -40°C 至 +85°C。

器件信息

器件型号	封装 [1]	封装尺寸（标称值）
TLV809	SOT-23 (3)、DBV	2.90mm × 1.60mm
	SOT-23 (3)、DBZ	2.92mm × 1.30mm

(1) 如需了解所有可用封装，请参阅数据表末尾的可订购产品附录。

典型应用

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4 Revision History

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Changes from Revision B (September 2010) to Revision C (February 2012)   **Page**

Changes from Revision A (July 2010) to Revision B (September 2010)   **Page**

Product Folder Links: *TLV809*

5 Device Comparison

表 5-1. Device Threshold Options

PRODUCT	THRESHOLD VOLTAGE
TLV809J25	2.25 V
TLV809L30	2.64 V
TLV809K33	2.93 V
TLV809I50	4.55 V

表 5-2. Device Family Comparison

DEVICE	FUNCTION
TLV803	Open-Drain, $\overline{\text{RESET}}$ Output
TLV809	Push-Pull, $\overline{\text{RESET}}$ Output
TLV810	Push-Pull, RESET Output

6 Pin Configuration and Functions
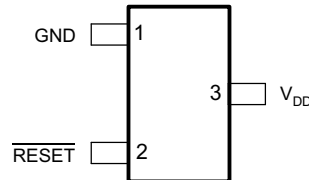
图 6-1. DBV, DBZ Packages
3-Pin SOT-23
Top View

Pin Functions

PIN		I/O	DESCRIPTION
NO.	NAME		
1	GND	—	Ground pin. This pin must be connected to ground with a low-impedance connection.
2	$\overline{\text{RESET}}$	O	$\overline{\text{RESET}}$ pin. $\overline{\text{RESET}}$ is an active low signal, asserting when V_{DD} is below the threshold voltage. When V_{DD} rises above V_{IT}, there is a delay time (t_d) until $\overline{\text{RESET}}$ deasserts. $\overline{\text{RESET}}$ is a push-pull output stage.
3	V_{DD}	I	Supply voltage pin. A 0.1-µF ceramic capacitor from this pin to ground is recommended to improve stability of the threshold voltage.

7 Specifications

7.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted)[1]

		MIN	MAX	UNIT
V_{DD}	Supply voltage[2]		6.5	V
	All other pins[2]	−0.3	7	
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	−40	85	°C
T_{stg}	Storage temperature	−65	150	°C

(1) Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, which do not imply functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions*. 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, do not operate the device at 7 V for more than t = 1000h continuously.

7.2 ESD Ratings

			VALUE	UNIT
$V_{(ESD)}$	Electrostatic discharge	Human-body model (HBM), per ANSI/ESDA/JEDEC JS-001[1]	±2000	V
		Charged-device model (CDM), per JEDEC specification JESD22-C101[2]	±500	

(1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.

(2) JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.

7.3 Recommended Operating Conditions

at specified temperature range (unless otherwise noted)

		MIN	NOM	MAX	UNIT
V_{DD}	Supply voltage	2		6	V
C_{IN}	V_{DD} bypass capacitor		0.1		µF
T_A	Operating free-air temperature range	−40		85	°C

7.4 Thermal Information

		TLV809		UNIT
	THERMAL METRIC[1]	DBV (SOT-23)	DBZ (SOT-23)	
		3 PINS	3 PINS	
$R_{\theta JA}$	Junction-to-ambient thermal resistance	242.1	286.9	°C/W
$R_{\theta JC(top)}$	Junction-to-case (top) thermal resistance	213.0	105.6	°C/W
$R_{\theta JB}$	Junction-to-board thermal resistance	123.4	124.4	°C/W
ψ_{JT}	Junction-to-top characterization parameter	45.7	25.8	°C/W
ψ_{JB}	Junction-to-board characterization parameter	130.9	107.9	°C/W
$R_{\theta JC(bot)}$	Junction-to-case (bottom) thermal resistance	—	—	°C/W

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

7.5 Electrical Characteristics

at T_A = – 40°C to +85°C (unless otherwise noted); typical values are at T_A = 25°C

PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT
V_{OH}	High-level output voltage	V_{DD} = 2.5 V to 6 V, I_{OH} = – 500 µA		V_{DD} – 0.2			V
		V_{DD} = 3.3 V, I_{OH} = – 2 mA		V_{DD} – 0.4			
		V_{DD} = 6 V, I_{OH} = – 4 mA		V_{DD} – 0.4			
V_{OL}	Low-level output voltage	V_{DD} = 2 V to 6 V, I_{OH} = 500 µA				0.3	V
		V_{DD} = 3.3 V, I_{OH} = 2 mA				0.4	
		V_{DD} = 6 V, I_{OH} = 4 mA				0.4	
	Power-up reset voltage[1]	$V_{DD} \geqslant$ 1.1 V, I_{OL} = 50 µA				0.2	V
V_{IT-}	Negative-going input threshold voltage[2]	TLV809J25	T_A = – 40°C to +85°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 V, RESET is unconnected			9	12	µA
		V_{DD} = 6 V, RESET is unconnected			20	25	
C_I	Input capacitance	V_I = 0 V to V_{DD}			5		pF

(1)   The lowest supply voltage at which $\overline{RESET}$ becomes active. $t_{r, VDD} \geqslant$ 15 ms/V.
(2)   To ensure best stability of the threshold voltage, place a bypass capacitor (0.1-µF ceramic) near the supply pins.

7.6 Timing Requirements

at T_A = 25°C, R_L = 1 M Ω, and C_L = 50 pF

			MIN	NOM	MAX	UNIT
t_w	Pulse duration at V_{DD}	V_{DD} = V_{IT-} + 0.2 V, V_{DD} = V_{IT-} – 0.2 V	10			µs

7.7 Switching Characteristics

at T_A = 25°C, R_L = 1 M Ω, and C_L = 50 pF

PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT
t_d	Delay time	$V_{DD} \geqslant V_{IT-}$ + 0.2 V; see 图 7-1		120	200	280	ms
t_{PHL}	Propagation (delay) time, high-to-low-level output	V_{DD} to $\overline{RESET}$ delay	V_{IL} = V_{IT-} – 0.2 V, V_{IH} = V_{IT-} + 0.2 V		10		µs

Product Folder Links: *TLV809*

7.8 Timing Diagrams

图 **7-1. Timing Diagram**

Product Folder Links: *TLV809*

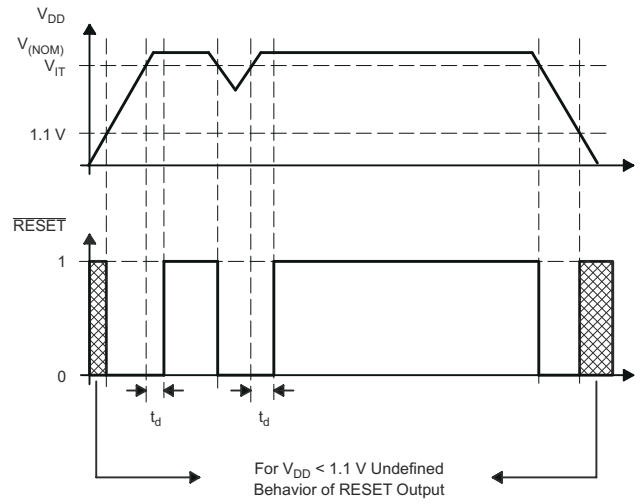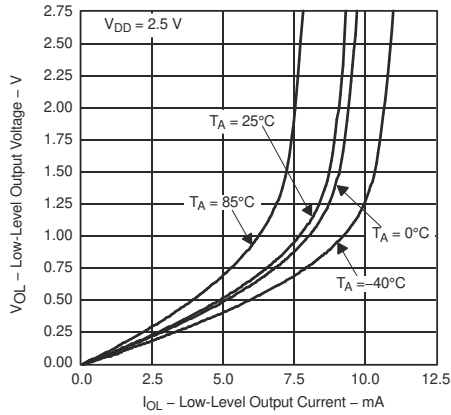## 7.9 Typical Characteristics

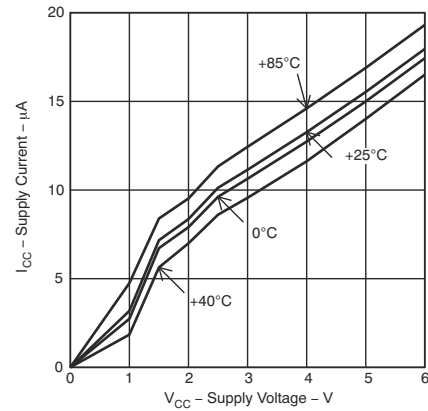图 7-2. **Low-Level Output Voltage vs Low-Level Output Current**
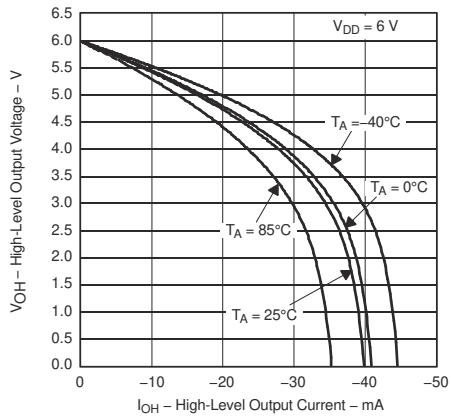

图 7-3. **Supply Current vs Supply Voltage**

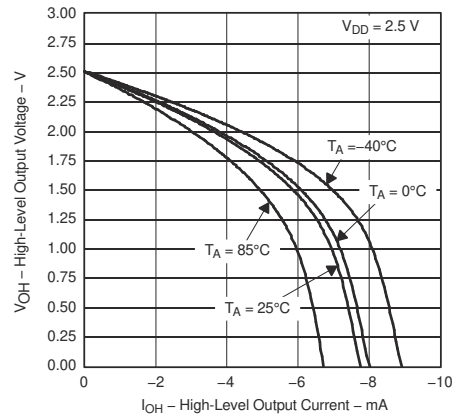图 7-4. **High-Level Output Voltage vs High-Level Output Current**

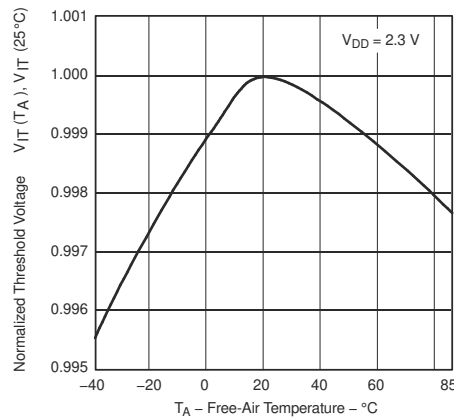图 7-5. **High-Level Output Voltage vs High-Level Output Current**

图 7-6. **Normalized Input Threshold Voltage vs Free-Air Temperature at V$_{DD}$**

Product Folder Links: *TLV809*

8 Detailed Description

8.1 Overview

The TLV809 is a 3-pin voltage detector with fixed detection thresholds, an active-low push-pull $\overline{\text{RESET}}$ output, and an internal timer to delay the $\overline{\text{RESET}}$ signal when V_{DD} rises above the threshold voltage.

8.2 Functional Block Diagram
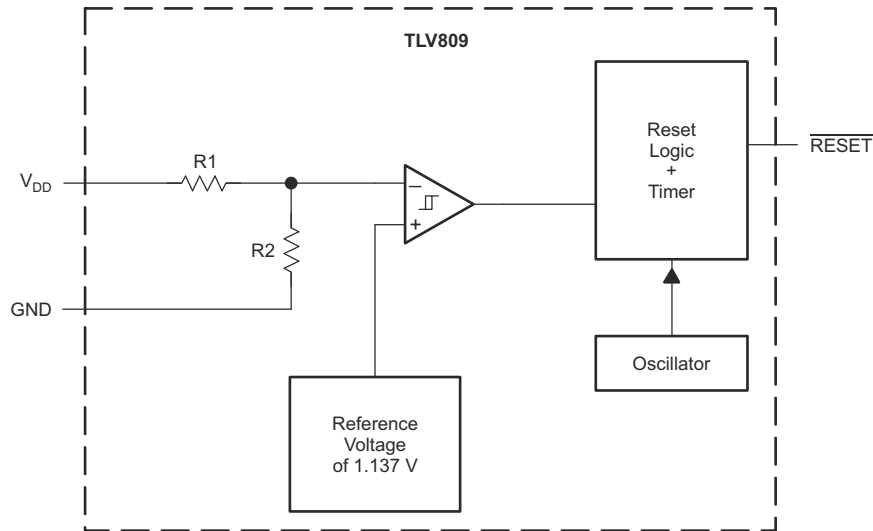
8.3 Feature Description

8.3.1 Supply Voltage Monitoring

The device actively monitors its supply voltage to ensure that the power supply is above a certain voltage threshold.

The device offers various fixed threshold options that are approximately 10% below several standard supply voltages (2.5 V, 3.0 V, 3.3 V, 5.0 V).

8.3.2 $\overline{\text{RESET}}$ Output

The device has a $\overline{\text{RESET}}$ output to indicate the status of the input power supply.

$\overline{\text{RESET}}$ is an active low signal, asserting when V_{DD} is below the threshold voltage. When V_{DD} rises above V_{IT}, there is a delay time (t_d) until $\overline{\text{RESET}}$ deasserts.

$\overline{\text{RESET}}$ is a push-pull output stage.

8.4 Device Functional Modes

When the input supply voltage is in its recommended operating range (2 V to 6 V), the device is in a normal operational mode. In normal operational mode the device monitors V_{DD} for undervoltage detection.

When the input supply is below its recommended operating range, the device is in shutdown mode and therefore tries to assert $\overline{\text{RESET}}$.

Product Folder Links: *TLV809*

9 Application and Implementation

Note

Information in the following applications sections is not part of the TI component specification, and TI does not warrant its accuracy or completeness. TI's customers are responsible for determining suitability of components for their purposes. Customers should validate and test their design implementation to confirm system functionality.

9.1 Application Information

9.1.1 V_{DD} Transient Rejection

The device has built-in rejection of fast transients on the V_{DD} pin. The rejection of transients depends on both the duration and the amplitude of the transient. The amplitude of the transient is measured from the bottom of the transient to the negative threshold voltage of the device, as shown in 图 9-1.
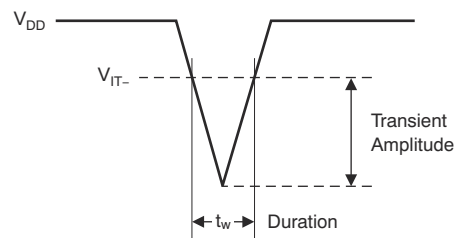
图 9-1. Voltage Transient Measurement

The device does not respond to transients that are fast duration and low amplitude or long duration and small amplitude. Transients meeting or longer than the t_w specified in the 节 7.6 section triggers a reset.

9.1.2 Reset During Power-Up and Power-Down

The device output is valid when V_{DD} is greater than 1.1 V. When V_{DD} is less than 1.1 V, the output transistor turns off and becomes high impedance. The voltage on the $\overline{\text{RESET}}$ pin rises to the voltage level connected to the pullup resistor. 图 9-2 shows a typical waveform for power-up.

图 9-2. Power-Up Response

Product Folder Links: *TLV809*
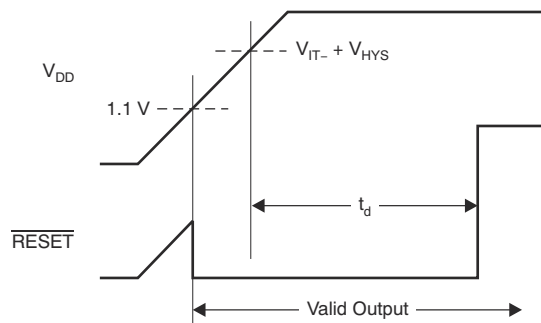
9.2 Typical Application
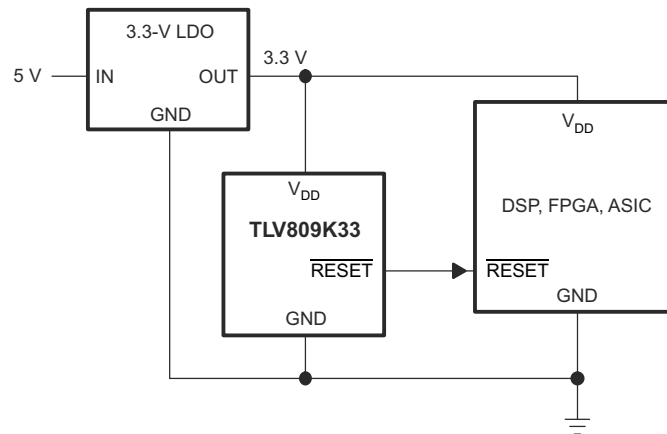
图 **9-3. Monitoring a 3.3-V Supply**

9.2.1 Design Requirements

The device must ensure that the supply voltage does not drop more than 15% below 3.3 V. If the supply voltage falls below 3.3 V – 15%, then the load must be disabled.

9.2.2 Detailed Design Procedure

The TLV809K33 is selected to ensure that V_{DD} is greater than 2.87 V when the load is enabled.

9.2.3 Application Curve
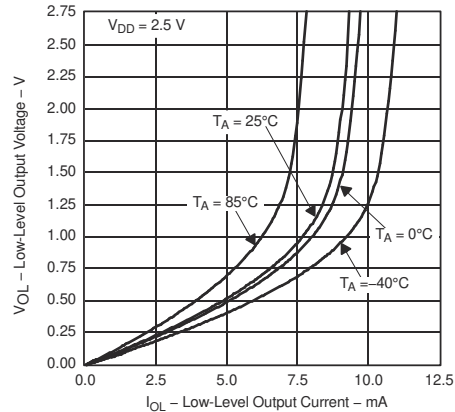
图 **9-4. Low-Level Output Voltage vs Low-Level Output Current**

10 Power Supply Recommendations

Power the device with a low-impedance supply. A 0.1-µF bypass capacitor from V_{DD} to ground is recommended.

11 Layout

11.1 Layout Guidelines

Place the device near the load for the input power supply, with a low-impedance connection to the power supply pins of the load to sense the supply voltage.

11.2 Layout Example

图 **11-1. Example Layout**

Product Folder Links: *TLV809*
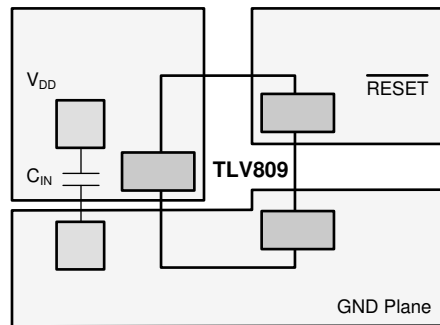
12 Device and Documentation Support

12.1 Documentation Support

12.1.1 Related Documentation

TLV803 Data Sheet, SBVS157

TLV810 Data Sheet, SBVS158

12.2 Support Resources

TI E2E™ support forums are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

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12.3 Trademarks

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12.4 Electrostatic Discharge Caution

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.

12.5 Glossary

TI Glossary   This glossary lists and explains terms, acronyms, and definitions.

13 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
TLV809I50DBVR	ACTIVE	SOT-23	DBV	3	3000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	VTBI	Samples
TLV809I50DBVT	ACTIVE	SOT-23	DBV	3	250	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	VTBI	Samples
TLV809I50DBZR	ACTIVE	SOT-23	DBZ	3	3000	RoHS & Green	NIPDAUAG | SN	Level-1-260C-UNLIM	-40 to 85	BCMV	Samples
TLV809I50DBZT	ACTIVE	SOT-23	DBZ	3	250	RoHS & Green	NIPDAUAG | SN	Level-1-260C-UNLIM	-40 to 85	BCMV	Samples
TLV809J25DBVR	ACTIVE	SOT-23	DBV	3	3000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	VTCI	Samples
TLV809J25DBVT	ACTIVE	SOT-23	DBV	3	250	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	VTCI	Samples
TLV809J25DBZR	ACTIVE	SOT-23	DBZ	3	3000	RoHS & Green	NIPDAUAG | SN	Level-1-260C-UNLIM	-40 to 85	BCMT	Samples
TLV809J25DBZT	ACTIVE	SOT-23	DBZ	3	250	RoHS & Green	NIPDAUAG | SN	Level-1-260C-UNLIM	-40 to 85	BCMT	Samples
TLV809K33DBVR	ACTIVE	SOT-23	DBV	3	3000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	VTRI	Samples
TLV809K33DBVT	ACTIVE	SOT-23	DBV	3	250	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	VTRI	Samples
TLV809K33DBZR	ACTIVE	SOT-23	DBZ	3	3000	RoHS & Green	NIPDAUAG | SN	Level-1-260C-UNLIM	-40 to 85	BCMX	Samples
TLV809K33DBZT	ACTIVE	SOT-23	DBZ	3	250	RoHS & Green	NIPDAUAG | SN	Level-1-260C-UNLIM	-40 to 85	BCMX	Samples
TLV809L30DBVR	ACTIVE	SOT-23	DBV	3	3000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	VTXI	Samples
TLV809L30DBVT	ACTIVE	SOT-23	DBV	3	250	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	VTXI	Samples
TLV809L30DBZR	ACTIVE	SOT-23	DBZ	3	3000	RoHS & Green	NIPDAUAG | SN	Level-1-260C-UNLIM	-40 to 85	BCMZ	Samples
TLV809L30DBZT	ACTIVE	SOT-23	DBZ	3	250	RoHS & Green	NIPDAUAG | SN	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.
OBSOLETE: TI has discontinued the production of the device.

(2) RoHS: TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".
RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.
Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

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

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.
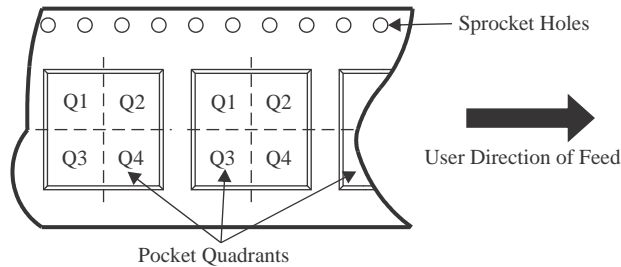
(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

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

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In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

TAPE AND REEL INFORMATION

REEL DIMENSIONS

TAPE DIMENSIONS

A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

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
TLV809I50DBZR	SOT-23	DBZ	3	3000	178.0	9.0	3.15	2.77	1.22	4.0	8.0	Q3
TLV809I50DBZT	SOT-23	DBZ	3	250	178.0	9.0	3.15	2.77	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
TLV809J25DBZR	SOT-23	DBZ	3	3000	178.0	9.0	3.15	2.77	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	178.0	9.0	3.15	2.77	1.22	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

PACKAGE MATERIALS INFORMATION

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
TLV809K33DBZT	SOT-23	DBZ	3	250	178.0	9.0	3.15	2.77	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	178.0	9.0	3.15	2.77	1.22	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

PACKAGE MATERIALS INFORMATION

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	200.0	183.0	25.0
TLV809I50DBZR	SOT-23	DBZ	3	3000	180.0	180.0	18.0
TLV809I50DBZT	SOT-23	DBZ	3	250	180.0	180.0	18.0
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	200.0	183.0	25.0
TLV809J25DBZR	SOT-23	DBZ	3	3000	180.0	180.0	18.0
TLV809J25DBZT	SOT-23	DBZ	3	250	200.0	183.0	25.0
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	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
TLV809K33DBZT	SOT-23	DBZ	3	250	180.0	180.0	18.0
TLV809L30DBVR	SOT-23	DBV	3	3000	182.0	182.0	20.0

PACKAGE MATERIALS INFORMATION

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
TLV809L30DBVT	SOT-23	DBV	3	250	182.0	182.0	20.0
TLV809L30DBZR	SOT-23	DBZ	3	3000	180.0	180.0	18.0
TLV809L30DBZR	SOT-23	DBZ	3	3000	200.0	183.0	25.0
TLV809L30DBZT	SOT-23	DBZ	3	250	203.0	203.0	35.0
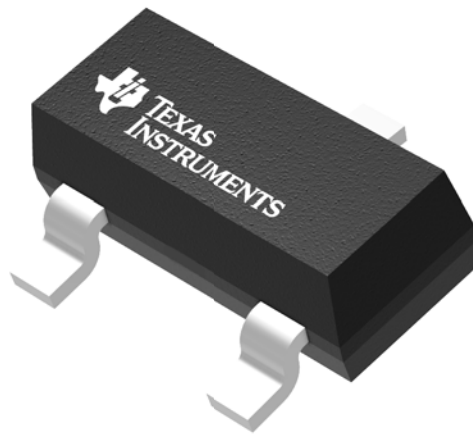
Images above are just a representation of the package family, actual package may vary.
Refer to the product data sheet for package details.

4203227/C

2.64
2.10

1.4
1.2

B

A

PIN 1
INDEX AREA

1

0.95

1.9

3

3.04
2.80

2

3X 0.5
0.3

⊕ 0.2Ⓜ C A B

C

1.12 MAX

⌒ 0.1 C

(0.95)

0.10 TYP
0.01

0.25

GAGE PLANE

0.20 TYP
0.08

0° -8° TYP

0.6 TYP
0.2

SEATING PLANE
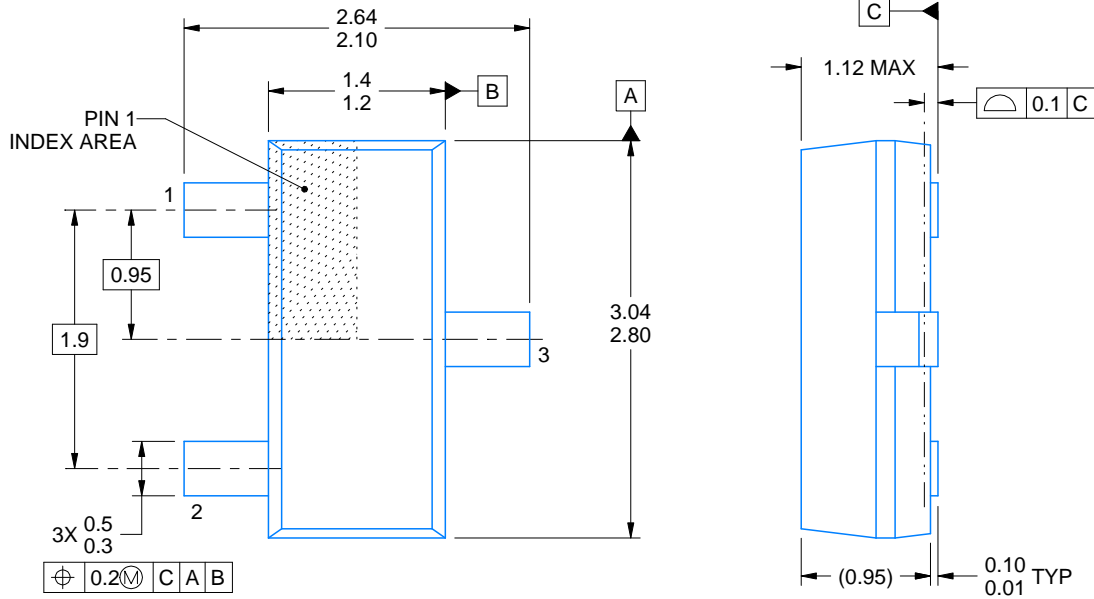
4214838/C   04/2017

NOTES:

1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing
   per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. Reference JEDEC registration TO-236, except minimum foot length.

PKG

3X (1.3)

1

3X (0.6)

SYMM

3

2X (0.95)

2

(R0.05) TYP

(2.1)
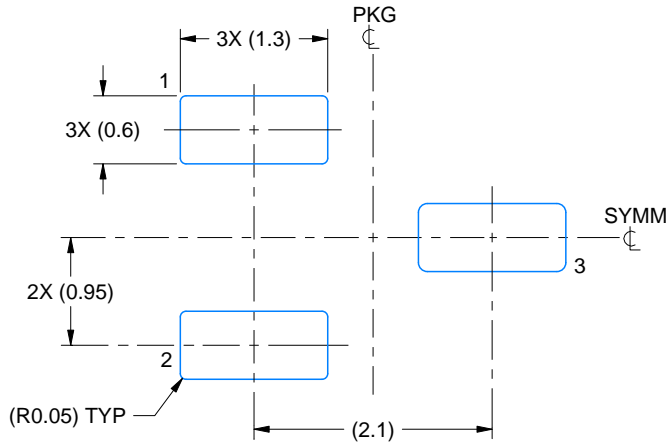
LAND PATTERN EXAMPLE
SCALE:15X

SOLDER MASK
OPENING

METAL

0.07 MAX
ALL AROUND

NON SOLDER MASK
DEFINED
(PREFERRED)

METAL UNDER
SOLDER MASK

SOLDER MASK
OPENING

0.07 MIN
ALL AROUND
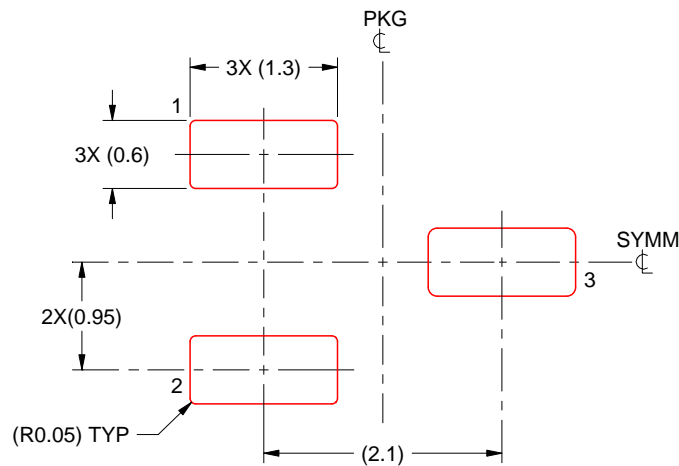
SOLDER MASK
DEFINED
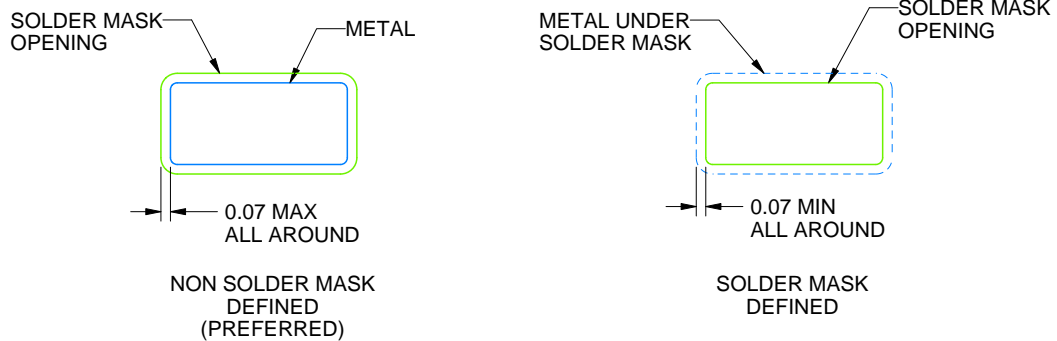
SOLDER MASK DETAILS

4214838/C   04/2017

NOTES: (continued)

4. Publication IPC-7351 may have alternate designs.
5. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

PKG ℄

3X (1.3)

1

3X (0.6)

SYMM ℄

3

2X(0.95)

2

(R0.05) TYP

(2.1)

SOLDER PASTE EXAMPLE
BASED ON 0.125 THICK STENCIL
SCALE:15X

4214838/C   04/2017

NOTES: (continued)

6. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
7. Board assembly site may have different recommendations for stencil design.
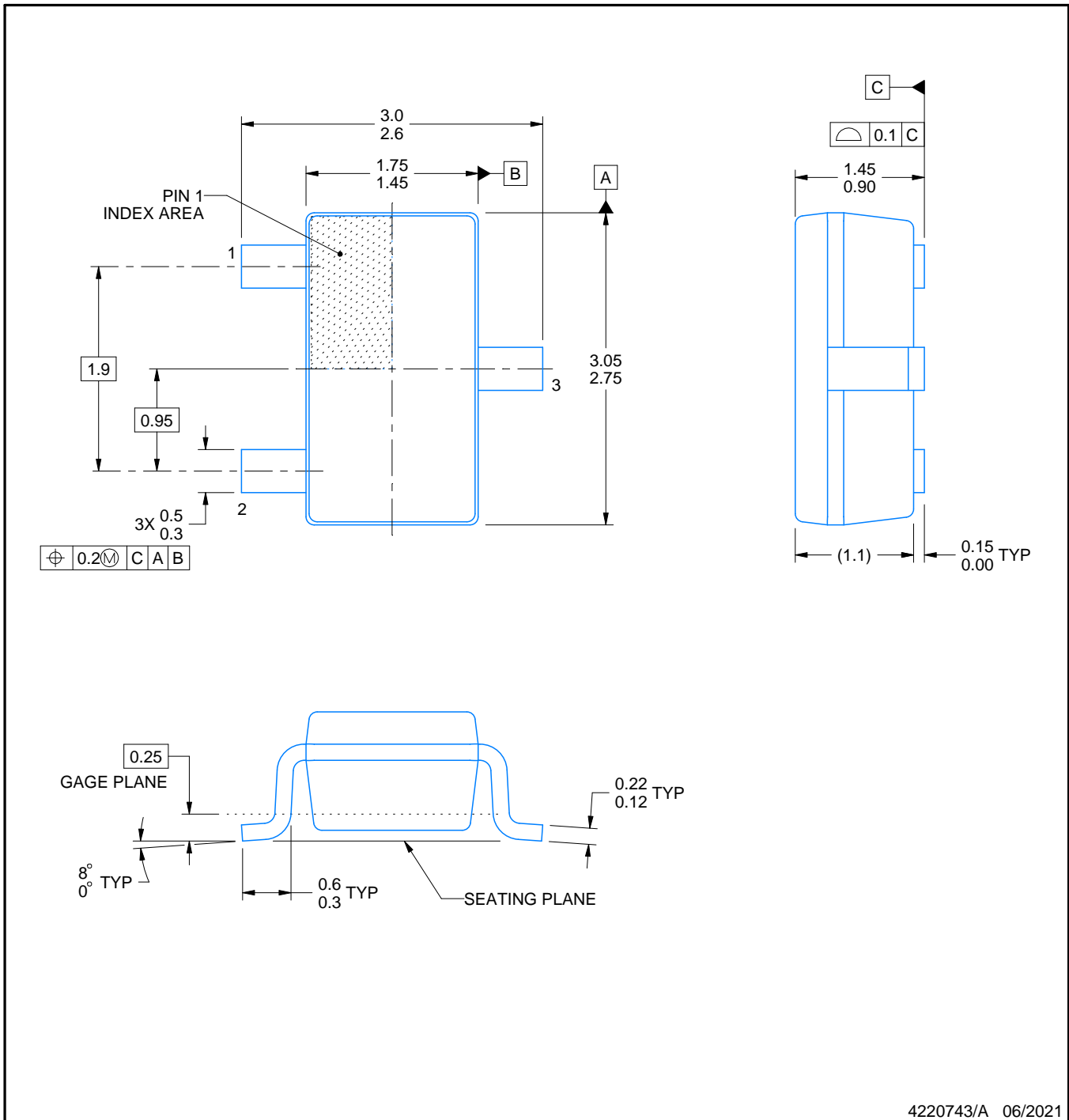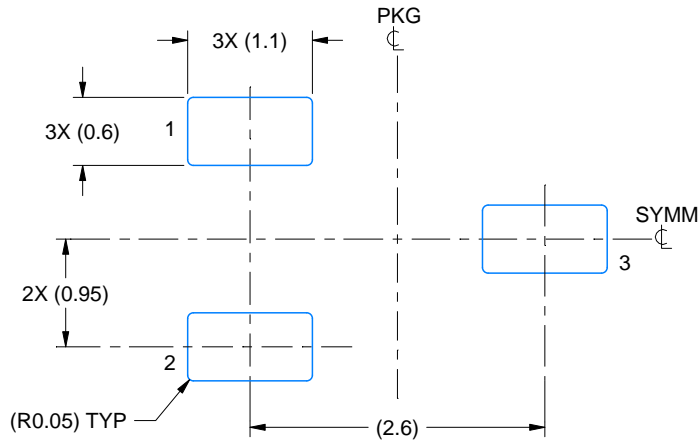
4220743/A   06/2021

NOTES:

1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. Refernce JEDEC MO-178.
4. Body dimensions do not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.25 mm per side.
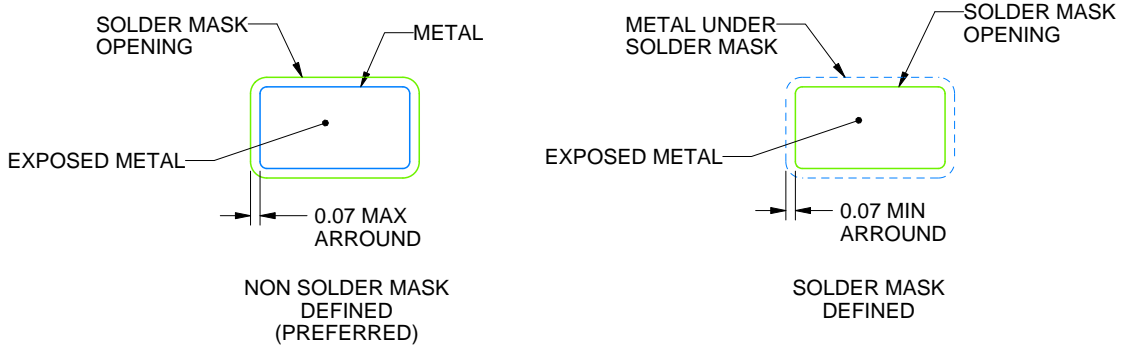
PKG

3X (1.1)

3X (0.6)   1

SYMM

3

2X (0.95)

2

(R0.05) TYP

(2.6)

LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE:15X

SOLDER MASK
OPENING

METAL

EXPOSED METAL

0.07 MAX
ARROUND

NON SOLDER MASK
DEFINED
(PREFERRED)

METAL UNDER
SOLDER MASK

SOLDER MASK
OPENING

EXPOSED METAL

0.07 MIN
ARROUND

SOLDER MASK
DEFINED
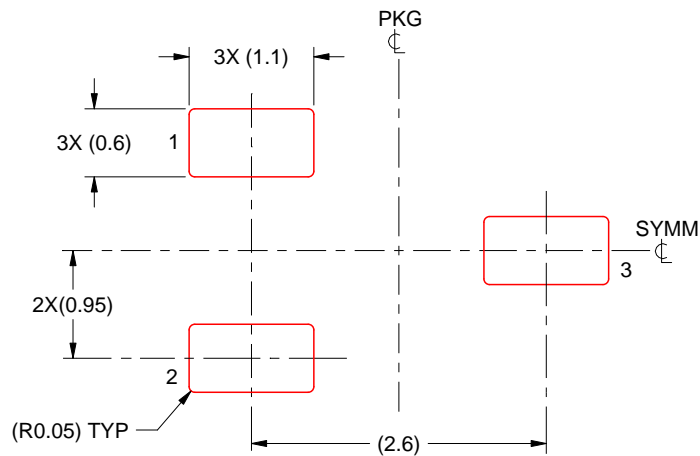
SOLDER MASK DETAILS

4220743/A   06/2021

NOTES: (continued)

5. Publication IPC-7351 may have alternate designs.
6. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

PKG

3X (1.1)

3X (0.6)   1

SYMM

3

2X(0.95)

2

(R0.05) TYP

(2.6)

SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL
SCALE:15X

4220743/A   06/2021

NOTES: (continued)

7. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate
   design recommendations.
8. Board assembly site may have different recommendations for stencil design.

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