



**THE DATASHEET OF  
LMV711IDCKRE4**



## FEATURES

- 2.7-V and 5-V Performance
- Low Offset Voltage . . . 0.4 mV Typ, 3 mV Max
- Input Common-Mode Range . . . 200 mV Beyond the Rails
- Rail-to-Rail Swing Into 600  $\Omega$
- Gain Bandwidth . . . 5 MHz Typ
- Slew Rate . . . 5 V/ $\mu$ s Typ
- Turn-On Time From Shutdown . . . <10  $\mu$ s
- Shutdown Current . . . 0.2  $\mu$ A Typ
- Space-Saving Packages
  - SOT-23-5/6
  - SC-70

## APPLICATIONS

- Wireless Phones, Mobile Phones, PDAs
- GSM/TDMA/CDMA Power Amp Control
- AGC, RF Power Detectors
- Temperature Compensation
- Wireless LANs
- Bluetooth
- HomeRF

## DESCRIPTION/ORDERING INFORMATION

The LMV710, LMV711, and LMV715 are single BiCMOS operational amplifiers designed to meet the demands of low power, low cost, and small size required by battery-powered portable electronics. These devices have an input common-mode voltage range that exceeds the rails, rail-to-rail output, and high output-current drive. The devices offer a bandwidth of 5 MHz and a slew rate of 5 V/ $\mu$ s.

On the LMV711 and LMV715, a separate shutdown pin can be used to disable the device and reduce the supply current to 0.2  $\mu$ A typical. The device features a turn-on time of less than 10  $\mu$ s. It is an ideal solution for power-sensitive applications, such as cellular phones, pagers, palm computers, etc.

The LMV710I, LMV711I, and LMV715I are characterized for operation from  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$ .

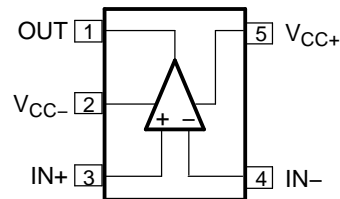
### ORDERING INFORMATION

T <sub>A</sub>	PACKAGE <sup>(1)</sup>		ORDERABLE PART NUMBER	TOP-SIDE MARKING <sup>(2)</sup>
$-40^{\circ}\text{C}$ to $85^{\circ}\text{C}$	SOT-23-5 – DBV	Reel of 3000	LMV710IDBVR	RB4_
	SC-70 – DCK	Reel of 3000	LMV710IDCKR	RE_
	SOT-23-6 – DBV	Reel of 3000	LMV711IDBVR	RB5_
	SC-70 – DCK	Reel of 3000	LMV711IDCKR	RF_
	SOT-23-6 – DBV	Reel of 3000	LMV715IDBVR	4B9_
	SC-70 – DCK	Reel of 3000	LMV715IDCKR	RL_

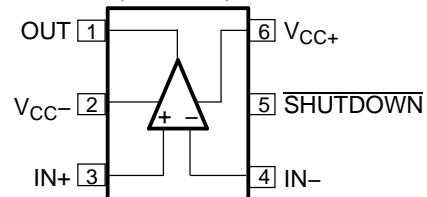
(1) Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).

(2) DBV/DCK: The actual top-side marking has one additional character that designates the assembly/test site.

**LMV710**  
DBV (SOT-23-5) OR DCK (SC-70) PACKAGE  
(TOP VIEW)



**LMV711/LMV715**  
DBV (SOT-23-6) OR DCK (SC-70) PACKAGE  
(TOP VIEW)

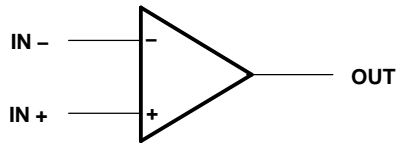


Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

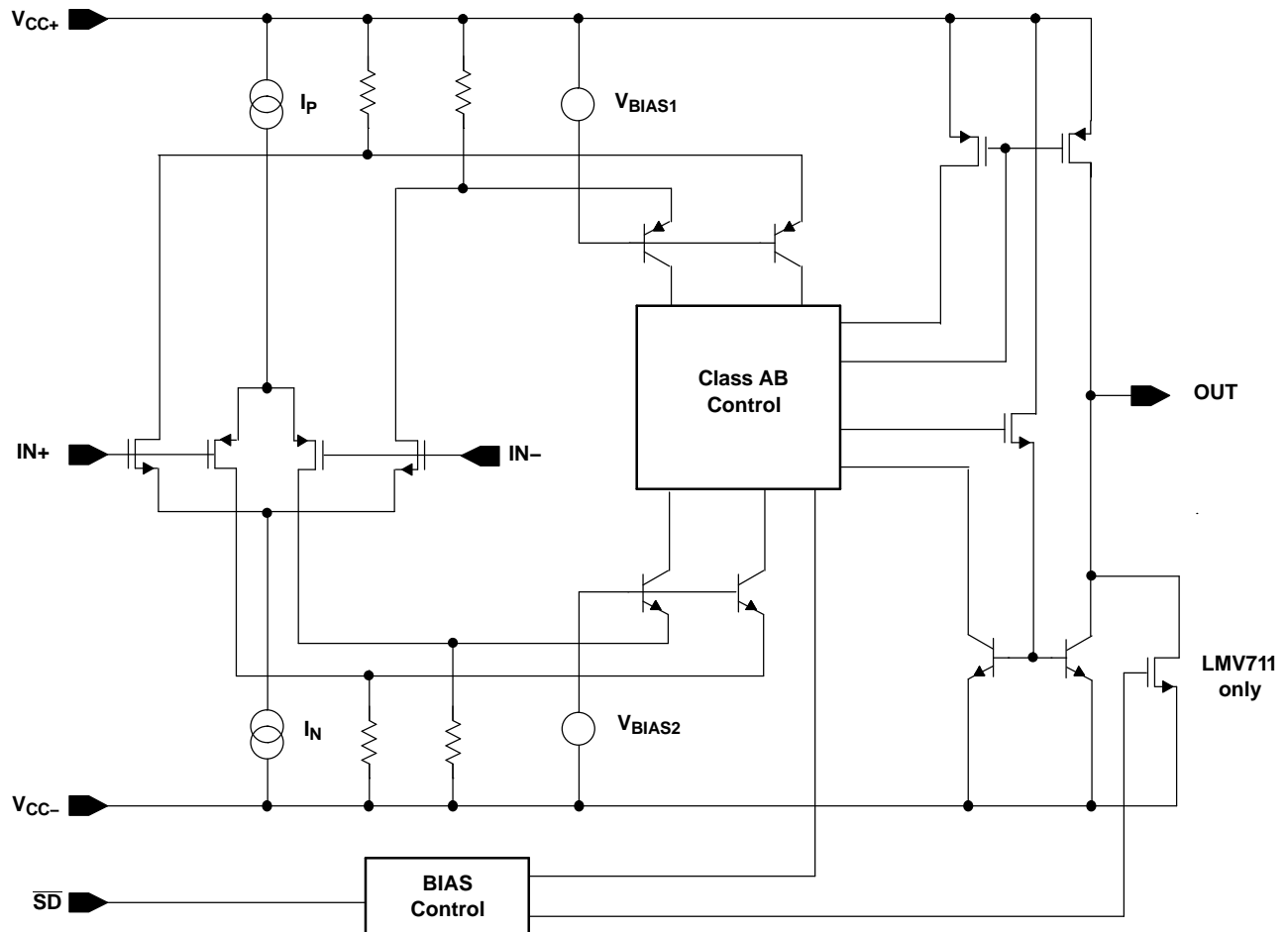
**LMV710, LMV711, LMV715**  
**SINGLE LOW-POWER RRIO OPERATIONAL AMPLIFIERS**  
**WITH HIGH OUTPUT CURRENT DRIVE AND SHUTDOWN**

SLOS463A—APRIL 2005—REVISED JULY 2005

**SYMBOL (EACH AMPLIFIER)**



**SIMPLIFIED SCHEMATIC**



## Absolute Maximum Ratings<sup>(1)</sup>

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

		MIN	MAX	UNIT	
$V_{CC+} - V_{CC-}$	Supply voltage <sup>(2)</sup>		6	V	
$V_{ID}$	Differential input voltage <sup>(3)</sup>		±Supply voltage	V	
$V_I$	Input voltage (either input)	$V_{CC-} - 0.4$	$V_{CC+} + 0.4$	V	
$V_O$	Output voltage	$V_{CC-} - 0.4$	$V_{CC+} + 0.4$	V	
$I_I$	Input current <sup>(4)</sup>		±10	mA	
$\theta_{JA}$	Package thermal impedance <sup>(5)(6)</sup>	DBV package	5 pin	206	°C/W
			6 pin	165	
		DCK package	5 pin	252	
			6 pin	259	
$T_J$	Operating virtual junction temperature		150	°C	
$T_{stg}$	Storage temperature range	-65	150	°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 (except differential voltages and  $V_{CC}$  specified for the measurement of  $I_{OS}$ ) are with respect to the network GND.
- (3) Differential voltages are at IN+ with respect to IN-.
- (4) Excessive input current will flow if a differential input voltage in excess of approximately 0.6 V is applied between the inputs unless some limiting resistance is used.
- (5) Maximum power dissipation is a function of  $T_J(\text{max})$ ,  $\theta_{JA}$ , and  $T_A$ . The maximum allowable power dissipation at any allowable ambient temperature is  $P_D = (T_J(\text{max}) - T_A)/\theta_{JA}$ . Operating at the absolute maximum  $T_J$  of 150°C can affect reliability.
- (6) The package thermal impedance is calculated in accordance with JESD 51-7.

## Recommended Operating Conditions

		MIN	MAX	UNIT
$V_{CC+} - V_{CC-}$	Supply voltage	2.7	5	V
$T_A$	Operating free-air temperature	-40	85	°C

## ESD Protection

	TYP	UNIT
Human-Body Model	TBD	V
Machine Model	TBD	V

# LMV710, LMV711, LMV715

## SINGLE LOW-POWER RRIO OPERATIONAL AMPLIFIERS

### WITH HIGH OUTPUT CURRENT DRIVE AND SHUTDOWN

SLOS463A–APRIL 2005–REVISED JULY 2005

### Electrical Characteristics

$V_{CC+} = 2.7\text{ V}$ ,  $V_{CC-} = \text{GND}$ ,  $V_{IC} = 1.35\text{ V}$ , and  $R_L > 1\text{ M}\Omega$  (unless otherwise noted)

PARAMETER	TEST CONDITIONS	$T_A$	MIN	TYP	MAX	UNIT		
$V_{IO}$	Input offset voltage	$V_{IC} = 0.85\text{ V}$ and $1.85\text{ V}$	25°C	0.4	3	mV		
			–40°C to 85°C		3.2			
$I_{IB}$	Input bias current		25°C	4		pA		
CMRR	Common-mode rejection ratio	$0 \leq V_{IC} \leq 2.7\text{ V}$	25°C	50	75	dB		
			–40°C to 85°C	45				
$k_{SVR}$	Supply-voltage rejection ratio	$2.7\text{ V} \leq V_{CC+} \leq 5\text{ V}$ , $V_{IC} = 0.85\text{ V}$	25°C	70	110	dB		
			–40°C to 85°C	68				
			25°C	70	95			
			–40°C to 85°C	68				
$V_{ICR}$	Common-mode input voltage range	CMRR $\geq 50\text{ dB}$	25°C	–0.2 to 2.9	–0.3 to 3	V		
$I_{OS}$	Output short circuit current <sup>(1)</sup>	Sourcing $V_O = 0$	25°C	15	28	mA		
			–40°C to 85°C	12				
			25°C	25	40			
			–40°C to 85°C	22				
$V_O$	Output voltage	$R_L = 10\text{ k}\Omega$ to $1.35\text{ V}$	$V_{OH}$	25°C	2.62	2.68	V	
				–40°C to 85°C	2.6			
			$V_{OL}$	25°C		0.01		0.12
				–40°C to 85°C				0.15
		$R_L = 600\ \Omega$ to $1.35\text{ V}$	$V_{OH}$	25°C	2.52	2.55		
				–40°C to 85°C	2.5			
			$V_{OL}$	25°C		0.05		0.23
				–40°C to 85°C				0.3
$V_{O(SD)}$	Output voltage level in shutdown mode	LMV711 only	25°C		50	200	mV	
$I_{O(SD)}$	Output leakage current in shutdown mode	LMV715 only	25°C		1		pA	
$C_{O(SD)}$	Output capacitance in shutdown mode	LMV715 only	25°C		32		pF	
$I_{CC}$	Supply current	ON mode	25°C	1.22	1.7	mA		
		–40°C to 85°C			1.9			
$A_V$	Large-signal voltage gain	Sourcing $R_L = 10\text{ k}\Omega$ , $V_O = 1.35\text{ V}$ to $2.3\text{ V}$	25°C	80	115	dB		
			–40°C to 85°C	76				
		Sinking $R_L = 10\text{ k}\Omega$ , $V_O = 0.4\text{ V}$ to $1.35\text{ V}$	25°C	80	113			
			–40°C to 85°C	76				
		Sourcing $R_L = 600\ \Omega$ , $V_O = 1.35\text{ V}$ to $2.2\text{ V}$	25°C	80	110			
			–40°C to 85°C	76				
		Sinking $R_L = 600\ \Omega$ , $V_O = 0.5\text{ V}$ to $1.35\text{ V}$	25°C	80	100			
			–40°C to 85°C	76				
SR <sup>(2)</sup>	Slew rate		25°C	5		V/ $\mu\text{s}$		
GBWP	Gain bandwidth product		25°C	5		MHz		
$\Phi_m$	Phase margin		25°C	60		deg		
$T_{(on)}$	Amplifier turn-on time		25°C	<10		$\mu\text{s}$		

(1) Shorting the output to either supply rails will adversely affect reliability.

(2) Number specified is the slower of the positive and negative slew rates.

**Electrical Characteristics (continued)**
 $V_{CC+} = 2.7\text{ V}$ ,  $V_{CC-} = \text{GND}$ ,  $V_{IC} = 1.35\text{ V}$ , and  $R_L > 1\text{ M}\Omega$  (unless otherwise noted)

PARAMETER	TEST CONDITIONS	$T_A$	MIN	TYP	MAX	UNIT
$\overline{\text{SHDN}}$ Shutdown pin voltage range	$V_{(\text{ON})}$	25°C	2.4 to 2.7	1.5 to 2.7		V
	$V_{(\text{OFF})}$			0 to 1	0 to 0.8	
$V_n$ Input referred voltage noise	$f = 1\text{ kHz}$	25°C		20		$\text{nV}/\sqrt{\text{Hz}}$

**Electrical Characteristics**
 $V_{CC+} = 3.2\text{ V}$ ,  $V_{CC-} = \text{GND}$ , and  $V_{IC} = 1.6\text{ V}$  (unless otherwise noted)

PARAMETER	TEST CONDITIONS	$T_A$	MIN	TYP	MAX	UNIT	
$V_O$ Output voltage	$I_O = 6.5\text{ mA}$	$V_{\text{OH}}$	25°C	2.95	3	V	
			–40°C to 85°C	2.92			
		$V_{\text{OL}}$	25°C		0.01		0.18
			–40°C to 85°C				0.25

# LMV710, LMV711, LMV715

## SINGLE LOW-POWER RRIO OPERATIONAL AMPLIFIERS

### WITH HIGH OUTPUT CURRENT DRIVE AND SHUTDOWN

SLOS463A–APRIL 2005–REVISED JULY 2005

### Electrical Characteristics

$V_{CC+} = 5\text{ V}$ ,  $V_{CC-} = \text{GND}$ ,  $V_{IC} = 2.5\text{ V}$ , and  $R_L > 1\text{ M}\Omega$  (unless otherwise noted)

PARAMETER	TEST CONDITIONS	$T_A$	MIN	TYP	MAX	UNIT		
$V_{IO}$	Input offset voltage	$V_{IC} = 0.85\text{ V}$ and $1.85\text{ V}$	25°C	0.4	3	mV		
			–40°C to 85°C		3.2			
$I_{IB}$	Input bias current		25°C	4		pA		
CMRR	Common-mode rejection ratio	$0 \leq V_{IC} \leq 2.7\text{ V}$	25°C	50	75	dB		
			–40°C to 85°C	48				
$k_{SVR}$	Supply-voltage rejection ratio	$2.7\text{ V} \leq V_{CC+} \leq 5\text{ V}$ , $V_{IC} = 0.85\text{ V}$	25°C	70	110	dB		
			–40°C to 85°C	68				
			25°C	70	95			
			–40°C to 85°C	68				
$V_{ICR}$	Common-mode input voltage range	CMRR $\geq 50\text{ dB}$	25°C	–0.2 to 5.2	–0.3 to 5.3	V		
$I_{OS}$	Output short circuit current <sup>(1)</sup>	Sourcing $V_O = 0$	25°C	25	35	mA		
			–40°C to 85°C	21				
			25°C	25	40			
			–40°C to 85°C	21				
$V_O$	Output voltage	$R_L = 10\text{ k}\Omega$ to $1.35\text{ V}$	$V_{OH}$	25°C	4.92	4.98	V	
				–40°C to 85°C	4.9			
			$V_{OL}$	25°C		0.01		0.12
				–40°C to 85°C				0.15
		$R_L = 600\ \Omega$ to $1.35\text{ V}$	$V_{OH}$	25°C	4.82	4.85		
				–40°C to 85°C	4.8			
			$V_{OL}$	25°C		0.05		0.23
				–40°C to 85°C				0.3
$V_{O(SD)}$	Output voltage level in shutdown mode	LMV711 only	25°C	50	200	mV		
$I_{O(SD)}$	Output leakage current in shutdown mode	LMV715 only	25°C	1		pA		
$C_{O(SD)}$	Output capacitance in shutdown mode	LMV715 only	25°C	32		pF		
$I_{CC}$	Supply current	ON mode	25°C	1.17	1.7	mA		
		–40°C to 85°C		1.9				
$A_V$	Large-signal voltage gain	Sourcing $R_L = 10\text{ k}\Omega$ , $V_O = 1.35\text{ V}$ to $2.3\text{ V}$	25°C	80	123	dB		
			–40°C to 85°C	76				
		Sinking $R_L = 10\text{ k}\Omega$ , $V_O = 0.4\text{ V}$ to $1.35\text{ V}$	25°C	80	120			
			–40°C to 85°C	76				
		Sourcing $R_L = 600\ \Omega$ , $V_O = 1.35\text{ V}$ to $2.2\text{ V}$	25°C	80	110			
			–40°C to 85°C	76				
		Sinking $R_L = 600\ \Omega$ , $V_O = 0.5\text{ V}$ to $1.35\text{ V}$	25°C	80	118			
			–40°C to 85°C	76				
SR <sup>(2)</sup>	Slew rate		25°C	5		V/ $\mu\text{s}$		
GBWP	Gain bandwidth product		25°C	5		MHz		
$\Phi_m$	Phase margin		25°C	60		deg		
$T_{(on)}$	Amplifier turn-on time		25°C	<10		$\mu\text{s}$		

(1) Shorting the output to either supply rails will adversely affect reliability.

(2) Number specified is the slower of the positive and negative slew rates.

**Electrical Characteristics (continued)**
 $V_{CC+} = 5\text{ V}$ ,  $V_{CC-} = \text{GND}$ ,  $V_{IC} = 2.5\text{ V}$ , and  $R_L > 1\text{ M}\Omega$  (unless otherwise noted)

PARAMETER	TEST CONDITIONS	$T_A$	MIN	TYP	MAX	UNIT
$\overline{\text{SHDN}}$ Shutdown pin voltage range	$V_{(\text{ON})}$	25°C	2.4 to 5	2 to 5		V
	$V_{(\text{OFF})}$			0 to 1.5	0 to 0.8	
$V_n$ Input referred voltage noise	$f = 1\text{ kHz}$	25°C		20		$\text{nV}/\sqrt{\text{Hz}}$

## TYPICAL PERFORMANCE CHARACTERISTICS

### GRAPH PREVIEWS

- Figure 1. Supply Current vs Supply Voltage (ON Mode)
- Figure 2. LMV711/LMV715 Supply Current vs Supply Voltage (Shutdown Mode)
- Figure 3. Output Positive Swing vs Supply Voltage  $R_L = 600 \Omega$
- Figure 4. Output Negative Swing vs Supply Voltage  $R_L = 600 \Omega$
- Figure 5. Output Positive Swing vs Supply Voltage  $R_L = 10 \text{ k}\Omega$
- Figure 6. Output Negative Swing vs Supply Voltage  $R_L = 10 \text{ k}\Omega$
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**PACKAGING INFORMATION**

Orderable Device	Status <sup>(1)</sup>	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/ Ball Finish	MSL Peak Temp <sup>(3)</sup>	Samples (Requires Login)
LMV710IDBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV710IDBVR E4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV710IDBVR G4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV710IDCKR	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV710IDCKR E4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV710IDCKR G4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV711IDBVR	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV711IDBVR E4	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV711IDBVR G4	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV711IDCKR	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV711IDCKR E4	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV711IDCKR G4	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV715IDBVR	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV715IDBVR E4	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV715IDBVR G4	ACTIVE	SOT-23	DBV	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV715IDCKR	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
LMV715IDCKR E4	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	

Orderable Device	Status <sup>(1)</sup>	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/ Ball Finish	MSL Peak Temp <sup>(3)</sup>	Samples (Requires Login)
LMV715IDCKRG4	ACTIVE	SC70	DCK	6	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	

<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.

**OBSELETE:** 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.

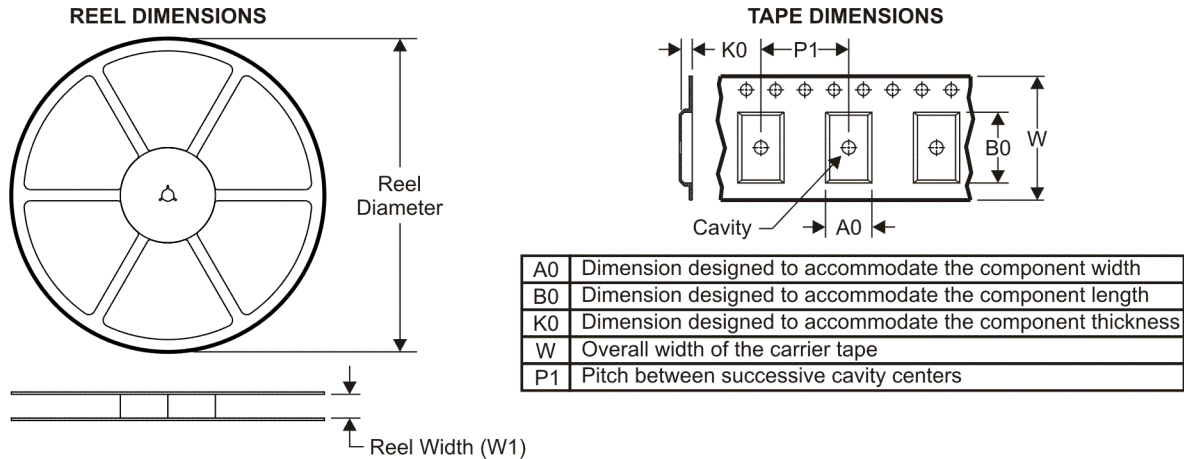
**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**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.

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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
LMV710IDBVR	SOT-23	DBV	5	3000	179.0	8.4	3.2	3.2	1.4	4.0	8.0	Q3
LMV710IDCKR	SC70	DCK	5	3000	179.0	8.4	2.2	2.5	1.2	4.0	8.0	Q3
LMV711IDBVR	SOT-23	DBV	6	3000	179.0	8.4	3.2	3.2	1.4	4.0	8.0	Q3
LMV711IDCKR	SC70	DCK	6	3000	179.0	8.4	2.2	2.5	1.2	4.0	8.0	Q3
LMV715IDBVR	SOT-23	DBV	6	3000	179.0	8.4	3.2	3.2	1.4	4.0	8.0	Q3
LMV715IDCKR	SC70	DCK	6	3000	179.0	8.4	2.2	2.5	1.2	4.0	8.0	Q3

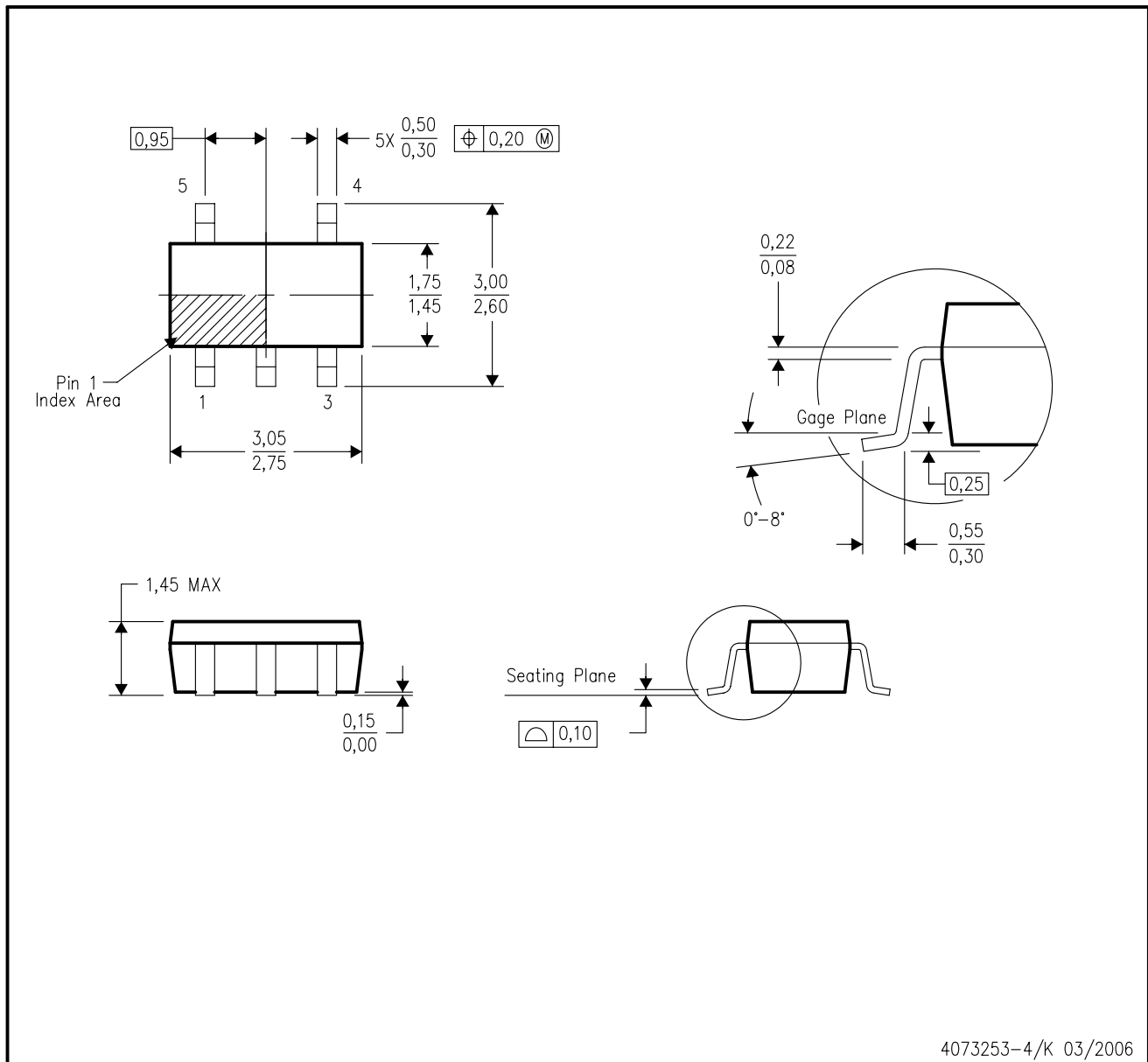
**TAPE AND REEL BOX DIMENSIONS**


\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
LMV710IDBVR	SOT-23	DBV	5	3000	203.0	203.0	35.0
LMV710IDCKR	SC70	DCK	5	3000	203.0	203.0	35.0
LMV711IDBVR	SOT-23	DBV	6	3000	203.0	203.0	35.0
LMV711IDCKR	SC70	DCK	6	3000	203.0	203.0	35.0
LMV715IDBVR	SOT-23	DBV	6	3000	203.0	203.0	35.0
LMV715IDCKR	SC70	DCK	6	3000	203.0	203.0	35.0

DBV (R-PDSO-G5)

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.
  - D. Falls within JEDEC MO-178 Variation AA.

DCK (R-PDSO-G5)

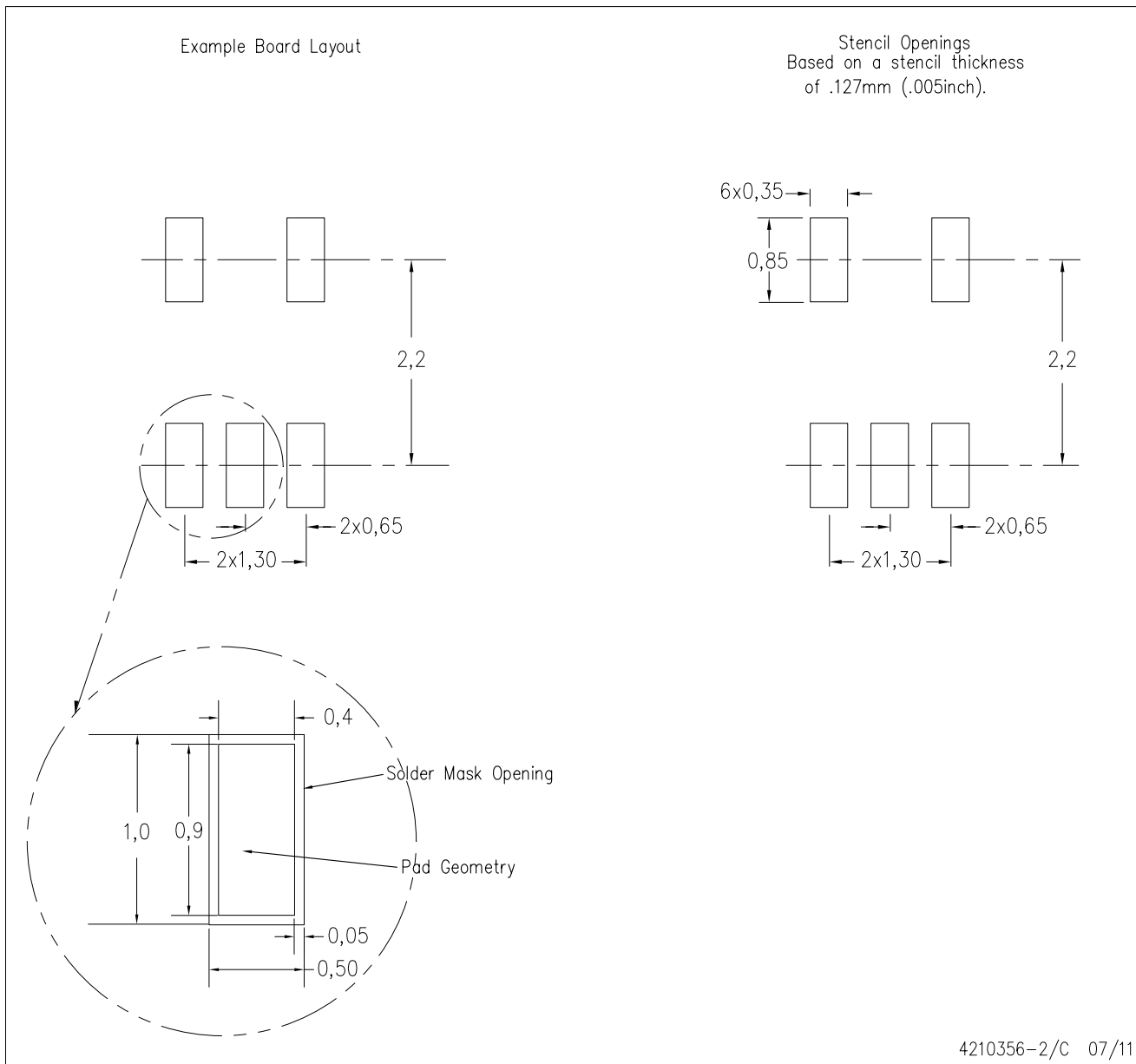
PLASTIC SMALL-OUTLINE PACKAGE



- 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.
  - D. Falls within JEDEC MO-203 variation AA.

DCK (R-PDSO-G5)

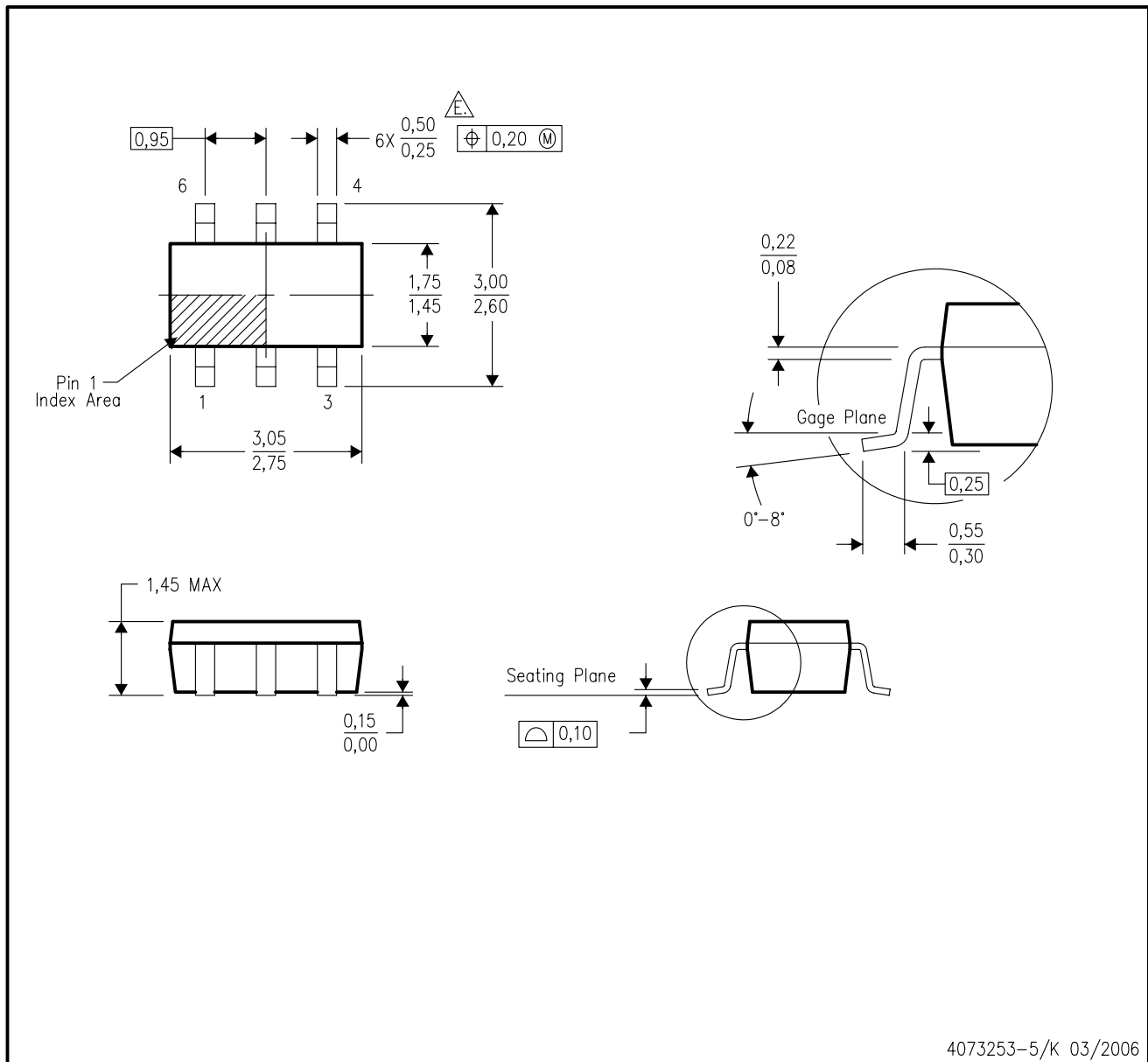
PLASTIC SMALL OUTLINE



- 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.

DBV (R-PDSO-G6)

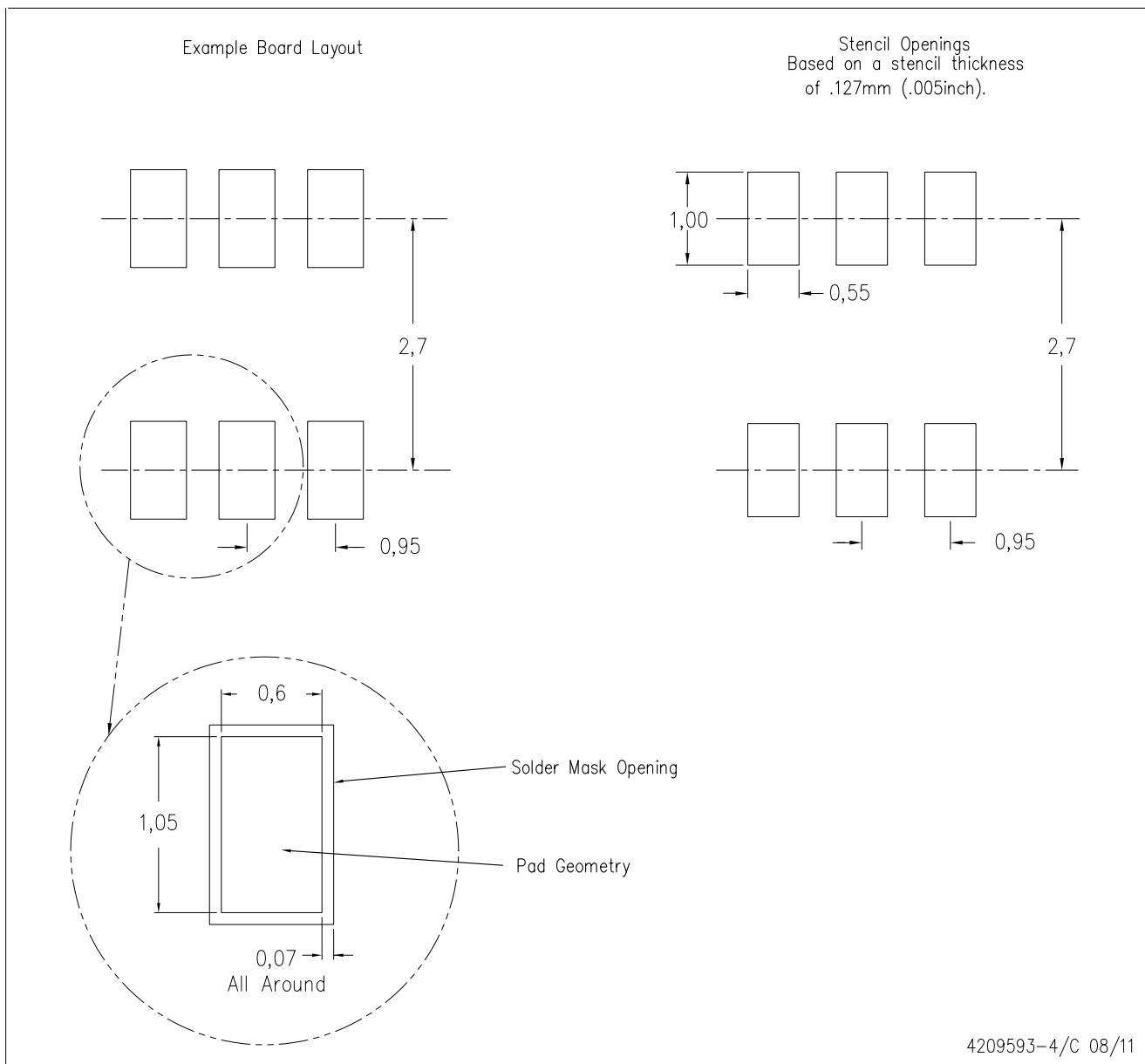
PLASTIC SMALL-OUTLINE PACKAGE



- 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.
  - D. Leads 1,2,3 may be wider than leads 4,5,6 for package orientation.
- $\triangle E$  Falls within JEDEC MO-178 Variation AB, except minimum lead width.

DBV (R-PDSO-G6)

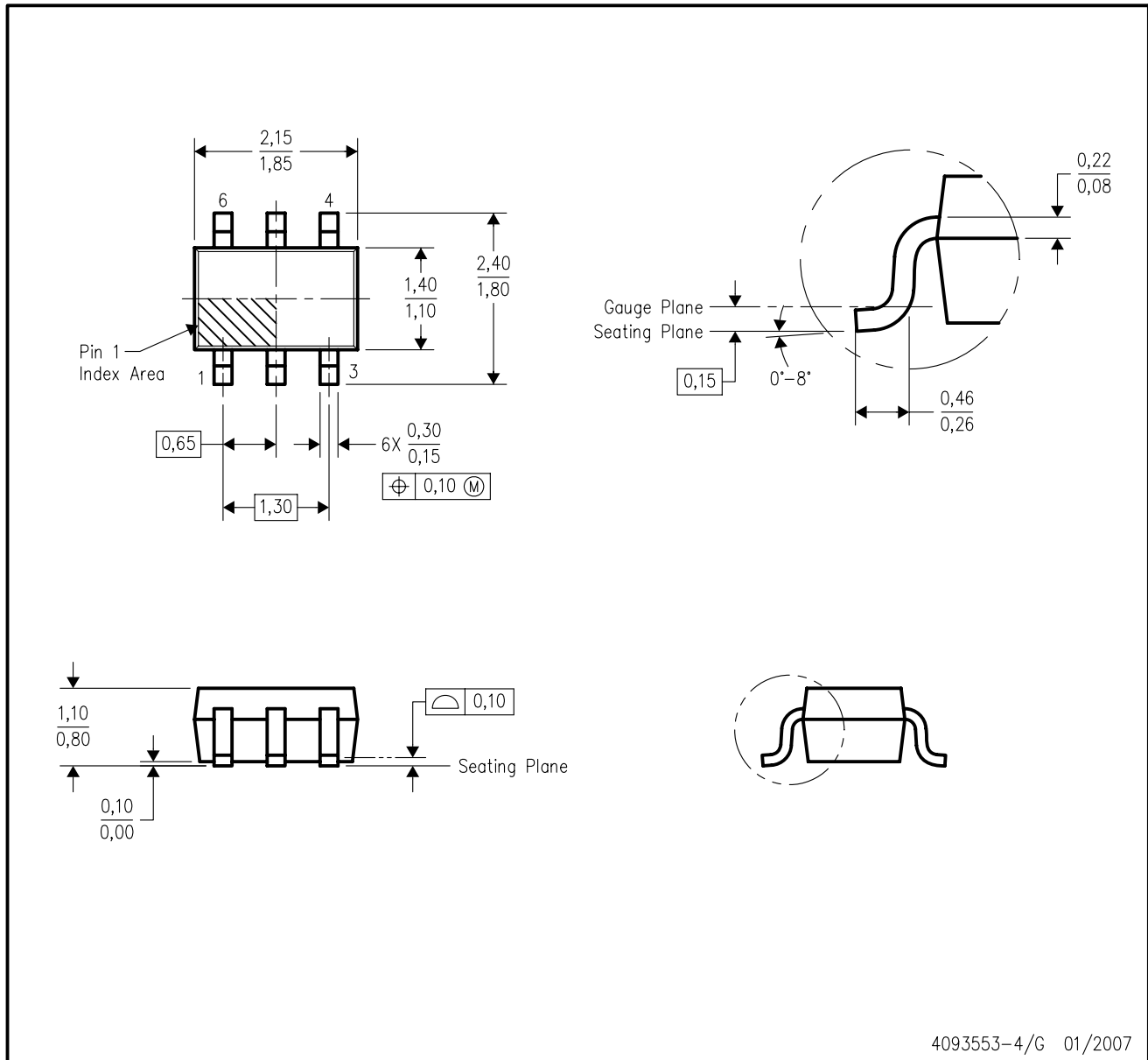
PLASTIC SMALL OUTLINE



- 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.

DCK (R-PDSO-G6)

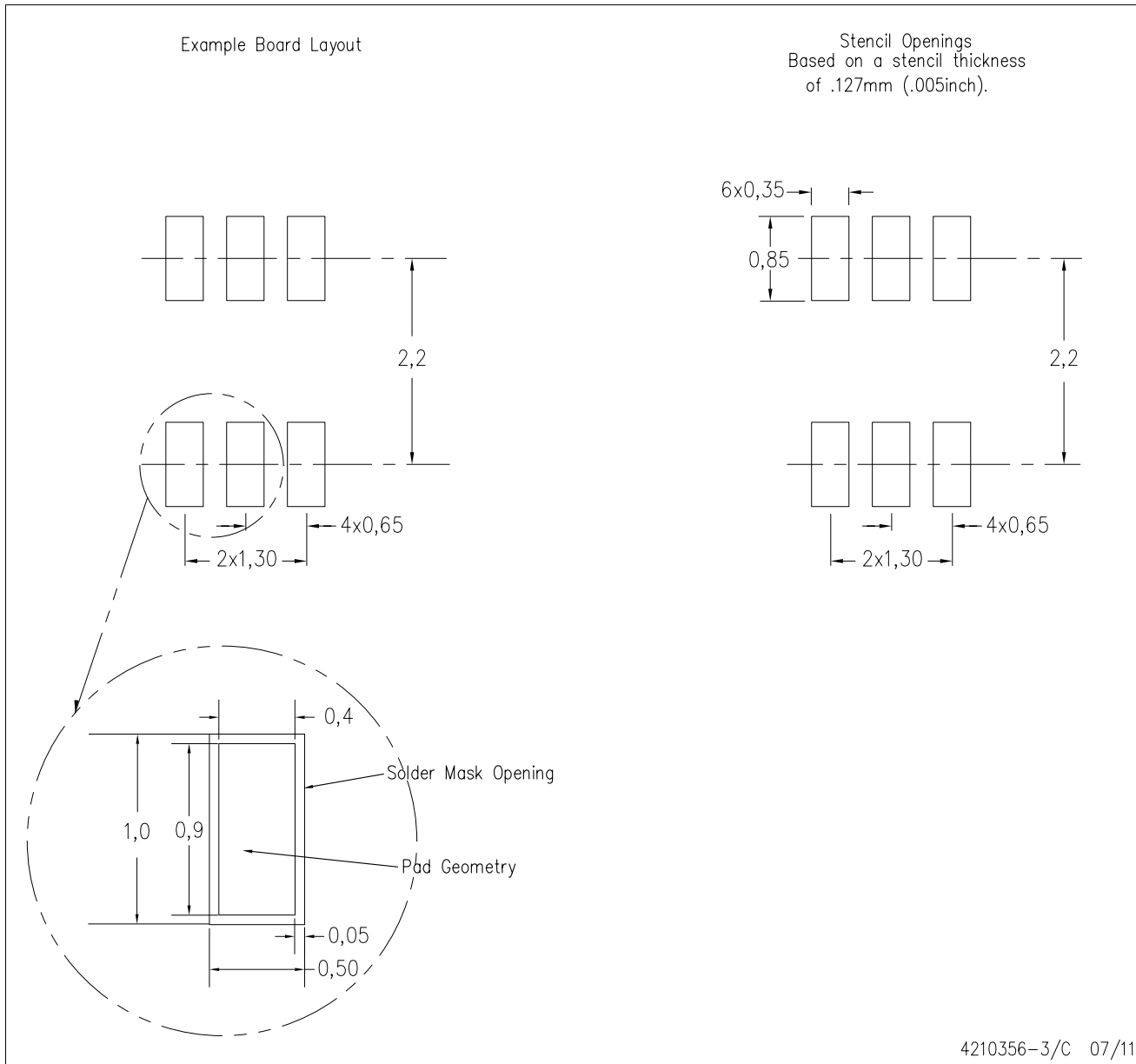
PLASTIC SMALL-OUTLINE PACKAGE



- 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.
  - D. Falls within JEDEC MO-203 variation AB.

DCK (R-PDSO-G6)

PLASTIC SMALL OUTLINE



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

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