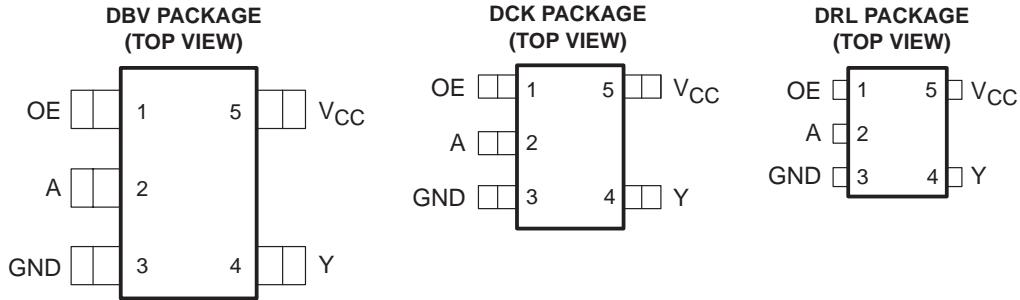


- Operating Range of 2 V to 5.5 V
- Max  $t_{pd}$  of 6 ns at 5 V
- Low Power Consumption, 10- $\mu$ A Max  $I_{CC}$
- $\pm 8$ -mA Output Drive at 5 V
- Latch-Up Performance Exceeds 250 mA Per JESD 17



See mechanical drawings for dimensions.

### description/ordering information

The SN74AHC1G126 is a single bus buffer gate/line driver with 3-state output. The output is disabled when the output-enable (OE) input is low. When OE is high, true data is passed from the A input to the Y output.

To ensure the high-impedance state during power up or power down, OE should be tied to GND through a pulldown resistor; the minimum value of the resistor is determined by the current-sourcing capability of the driver.

### ORDERING INFORMATION

TA	PACKAGE <sup>†</sup>	ORDERABLE PART NUMBER	TOP-SIDE MARKING <sup>‡</sup>
-40°C to 85°C	SOT (SOT-23) – DBV	Reel of 3000	SN74AHC1G126DBVR
		Reel of 250	SN74AHC1G126DBVT
	SOT (SC-70) – DCK	Reel of 3000	SN74AHC1G126DCKR
		Reel of 250	SN74AHC1G126DCKT
	SOT (SOT-553) – DRL	Reel of 4000	SN74AHC1G126DRLR

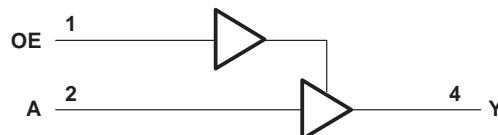
<sup>†</sup> Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at [www.ti.com/sc/package](http://www.ti.com/sc/package).

<sup>‡</sup> The actual top-side marking has one additional character that designates the assembly/test site.

### FUNCTION TABLE

INPUTS		OUTPUT Y
OE	A	
H	H	H
H	L	L
L	X	Z

### logic diagram (positive logic)



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.

**SN74AHC1G126  
SINGLE BUS BUFFER GATE  
WITH 3-STATE OUTPUT**

SCLS379J – AUGUST 1997 – REVISED JUNE 2005

**absolute maximum ratings over operating free-air temperature range (unless otherwise noted)**

† 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. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.  
2. The package thermal impedance is calculated in accordance with JESD 51-7.

recommended operating conditions (see Note 3)

			MIN	MAX	UNIT
V <sub>CC</sub>	Supply voltage		2	5.5	V
V <sub>IH</sub>	High-level input voltage	V <sub>CC</sub> = 2 V	1.5		V
		V <sub>CC</sub> = 3 V	2.1		
		V <sub>CC</sub> = 5.5 V	3.85		
V <sub>IL</sub>	Low-level input voltage	V <sub>CC</sub> = 2 V	0.5		V
		V <sub>CC</sub> = 3 V	0.9		
		V <sub>CC</sub> = 5.5 V	1.65		
V <sub>I</sub>	Input voltage		0	5.5	V
V <sub>O</sub>	Output voltage		0	V <sub>CC</sub>	V
I <sub>OH</sub>	High-level output current	V <sub>CC</sub> = 2 V	-50		µA
		V <sub>CC</sub> = 3.3 V ± 0.3 V	-4		mA
		V <sub>CC</sub> = 5 V ± 0.5 V	-8		
I <sub>OL</sub>	Low-level output current	V <sub>CC</sub> = 2 V	50		µA
		V <sub>CC</sub> = 3.3 V ± 0.3 V	4		mA
		V <sub>CC</sub> = 5 V ± 0.5 V	8		
Δt/Δv	Input transition rise or fall rate	V <sub>CC</sub> = 3.3 V ± 0.3 V	100		ns/V
		V <sub>CC</sub> = 5 V ± 0.5 V	20		
T <sub>A</sub>	Operating free-air temperature		-40	85	°C

NOTE 3: All unused inputs of the device must be held at V<sub>CC</sub> or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number SCBA004.

**SN74AHC1G126**  
**SINGLE BUS BUFFER GATE**  
**WITH 3-STATE OUTPUT**

SCLS379J – AUGUST 1997 – REVISED JUNE 2005

**electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)**

PARAMETER	TEST CONDITIONS	V <sub>CC</sub>	T <sub>A</sub> = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
V <sub>OH</sub>	I <sub>OH</sub> = -50 µA	2 V	1.9	2	1.9	1.9	2.9	V
		3 V	2.9	3	2.9			
		4.5 V	4.4	4.5	4.4			
	I <sub>OH</sub> = -4 mA	3 V	2.58		2.48			
V <sub>OL</sub>	I <sub>OL</sub> = 50 µA	4.5 V	3.94		3.8	3.8	4.4	V
		2 V		0.1	0.1			
		3 V		0.1	0.1			
	I <sub>OL</sub> = 4 mA	4.5 V		0.1	0.1			
I <sub>I</sub>	V <sub>I</sub> = 5.5 V or GND	3 V		0.36	0.44	0.44	0.44	µA
		4.5 V		0.36	0.44			
	I <sub>OZ</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	5.5 V		±0.25	±2.5	µA	
	I <sub>CC</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND, I <sub>O</sub> = 0	5.5 V		1	10	µA	
C <sub>i</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	5 V		4	10	10	pF	
C <sub>o</sub>	V <sub>O</sub> = V <sub>CC</sub> or GND	5 V		10			pF	

**switching characteristics over recommended operating free-air temperature range, V<sub>CC</sub> = 3.3 V ± 0.3 V (unless otherwise noted) (see Figure 1)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	T <sub>A</sub> = 25°C			MIN	MAX	UNIT
				MIN	TYP	MAX			
t <sub>PLH</sub>	A	Y	C <sub>L</sub> = 15 pF	5.6	8	1	9.5	ns	
t <sub>PHL</sub>				5.6	8	1	9.5		
t <sub>PZH</sub>	OE	Y	C <sub>L</sub> = 15 pF	5.4	8	1	9.5	ns	
t <sub>PZL</sub>				5.4	8	1	9.5		
t <sub>PHZ</sub>	OE	Y	C <sub>L</sub> = 15 pF	7	9.7	1	11.5	ns	
t <sub>PLZ</sub>				7	9.7	1	11.5		
t <sub>PLH</sub>	A	Y	C <sub>L</sub> = 50 pF	8.1	11.5	1	13	ns	
t <sub>PHL</sub>				8.1	11.5	1	13		
t <sub>PZH</sub>	OE	Y	C <sub>L</sub> = 50 pF	7.9	11.5	1	13	ns	
t <sub>PZL</sub>				7.9	11.5	1	13		
t <sub>PHZ</sub>	OE	Y	C <sub>L</sub> = 50 pF	9.5	13.2	1	15	ns	
t <sub>PLZ</sub>				9.5	13.2	1	15		

**SN74AHC1G126**  
**SINGLE BUS BUFFER GATE**  
**WITH 3-STATE OUTPUT**

SCLS379J – AUGUST 1997 – REVISED JUNE 2005

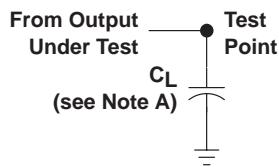
switching characteristics over recommended operating free-air temperature range,  
 $V_{CC} = 5 V \pm 0.5 V$  (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	TA = 25°C			MIN	MAX	UNIT
				MIN	TYP	MAX			
tPLH	A	Y	CL = 15 pF	3.8	5.5	1	6.5		ns
tPHL				3.8	5.5	1	6.5		
tPZH	OE	Y	CL = 15 pF	3.6	5.1	1	6		ns
tPZL				3.6	5.1	1	6		
tPHZ	OE	Y	CL = 15 pF	4.6	6.8	1	8		ns
tPLZ				4.6	6.8	1	8		
tPLH	A	Y	CL = 50 pF	5.3	7.5	1	8.5		ns
tPHL				5.3	7.5	1	8.5		
tPZH	OE	Y	CL = 50 pF	5.1	7.1	1	8		ns
tPZL				5.1	7.1	1	8		
tPHZ	OE	Y	CL = 50 pF	6.1	8.8	1	10		ns
tPLZ				6.1	8.8	1	10		

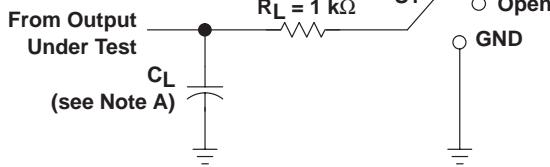
operating characteristics,  $V_{CC} = 5 V$ ,  $T_A = 25^\circ C$

PARAMETER	TEST CONDITIONS	TYP	UNIT
Cpd Power dissipation capacitance	No load, f = 1 MHz	14	pF

PARAMETER MEASUREMENT INFORMATION

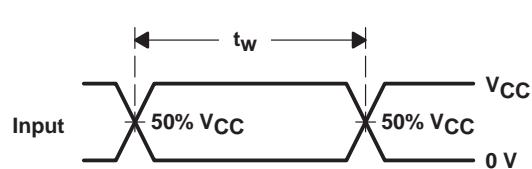


LOAD CIRCUIT FOR  
TOTEM-POLE OUTPUTS

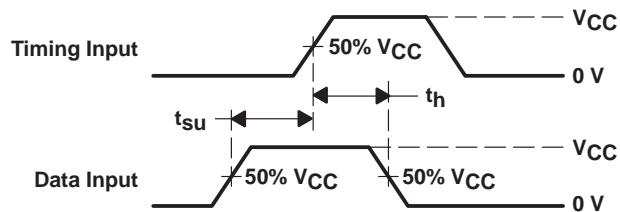


LOAD CIRCUIT FOR  
3-STATE AND OPEN-DRAIN OUTPUTS

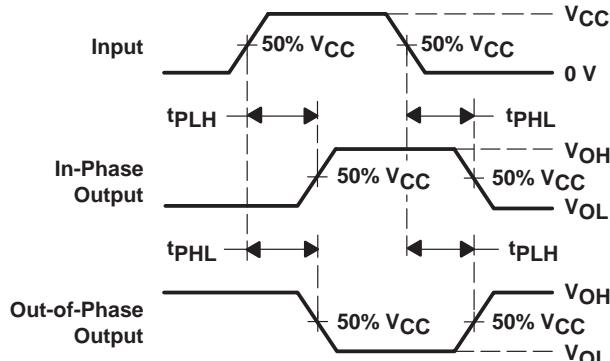
TEST	S1
$t_{PLH}/t_{PHL}$	Open
$t_{PZL}/t_{PZL}$	$V_{CC}$
$t_{PHZ}/t_{PZH}$	GND
Open Drain	$V_{CC}$



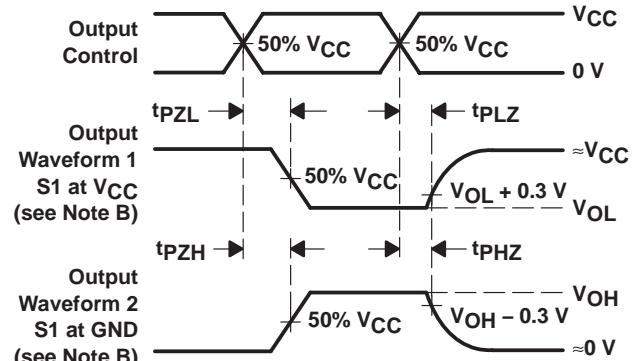
VOLTAGE WAVEFORMS  
PULSE DURATION



VOLTAGE WAVEFORMS  
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS  
PROPAGATION DELAY TIMES  
INVERTING AND NONINVERTING OUTPUTS



VOLTAGE WAVEFORMS  
ENABLE AND DISABLE TIMES  
LOW- AND HIGH-LEVEL ENABLING

NOTES:

- $C_L$  includes probe and jig capacitance.
- Waveform 1 is for an output with internal conditions such that the output is low, except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output control.
- All input pulses are supplied by generators having the following characteristics:  $PRR \leq 1 \text{ MHz}$ ,  $Z_O = 50 \Omega$ ,  $t_r \leq 3 \text{ ns}$ ,  $t_f \leq 3 \text{ ns}$ .
- The outputs are measured one at a time, with one input transition per measurement.
- All parameters and waveforms are not applicable to all devices.

Figure 1. Load Circuit and Voltage Waveforms

## PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
74AHC1G126DBVRE4	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	(A263 ~ A26G ~ A26J ~ A26S)	Samples
74AHC1G126DBVTG4	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	(A263 ~ A26G ~ A26S)	Samples
74AHC1G126DCKRE4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	(AN3 ~ ANG ~ ANJ ~ ANS)	Samples
74AHC1G126DCKRG4	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	(AN3 ~ ANG ~ ANJ ~ ANS)	Samples
74AHC1G126DCKTE4	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	(AN3 ~ ANG ~ ANS)	Samples
74AHC1G126DCKTG4	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	(AN3 ~ ANG ~ ANS)	Samples
SN74AHC1G126DBVR	ACTIVE	SOT-23	DBV	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	(A263 ~ A26G ~ A26J ~ A26S)	Samples
SN74AHC1G126DBVT	ACTIVE	SOT-23	DBV	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	(A263 ~ A26G ~ A26S)	Samples
SN74AHC1G126DCKR	ACTIVE	SC70	DCK	5	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	(AN3 ~ ANG ~ ANJ ~ ANS)	Samples
SN74AHC1G126DCKT	ACTIVE	SC70	DCK	5	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	(AN3 ~ ANG ~ ANS)	Samples
SN74AHC1G126DRLR	ACTIVE	SOT	DRL	5	4000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 85	ANS	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) 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) 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/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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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.

**OTHER QUALIFIED VERSIONS OF SN74AHC1G126 :**

- Enhanced Product: [SN74AHC1G126-EP](#)

NOTE: Qualified Version Definitions:

- Enhanced Product - Supports Defense, Aerospace and Medical Applications

**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
SN74AHC1G126DBVR	SOT-23	DBV	5	3000	180.0	8.4	3.23	3.17	1.37	4.0	8.0	Q3
SN74AHC1G126DBVR	SOT-23	DBV	5	3000	178.0	9.2	3.3	3.2	1.55	4.0	8.0	Q3
SN74AHC1G126DBVT	SOT-23	DBV	5	250	178.0	9.2	3.3	3.2	1.55	4.0	8.0	Q3
SN74AHC1G126DBVT	SOT-23	DBV	5	250	178.0	9.0	3.3	3.2	1.4	4.0	8.0	Q3
SN74AHC1G126DCKR	SC70	DCK	5	3000	178.0	9.2	2.4	2.4	1.22	4.0	8.0	Q3
SN74AHC1G126DCKR	SC70	DCK	5	3000	178.0	9.0	2.4	2.5	1.2	4.0	8.0	Q3
SN74AHC1G126DCKT	SC70	DCK	5	250	178.0	9.0	2.4	2.5	1.2	4.0	8.0	Q3
SN74AHC1G126DCKT	SC70	DCK	5	250	178.0	9.2	2.4	2.4	1.22	4.0	8.0	Q3
SN74AHC1G126DRLR	SOT	DRL	5	4000	180.0	8.4	1.98	1.78	0.69	4.0	8.0	Q3

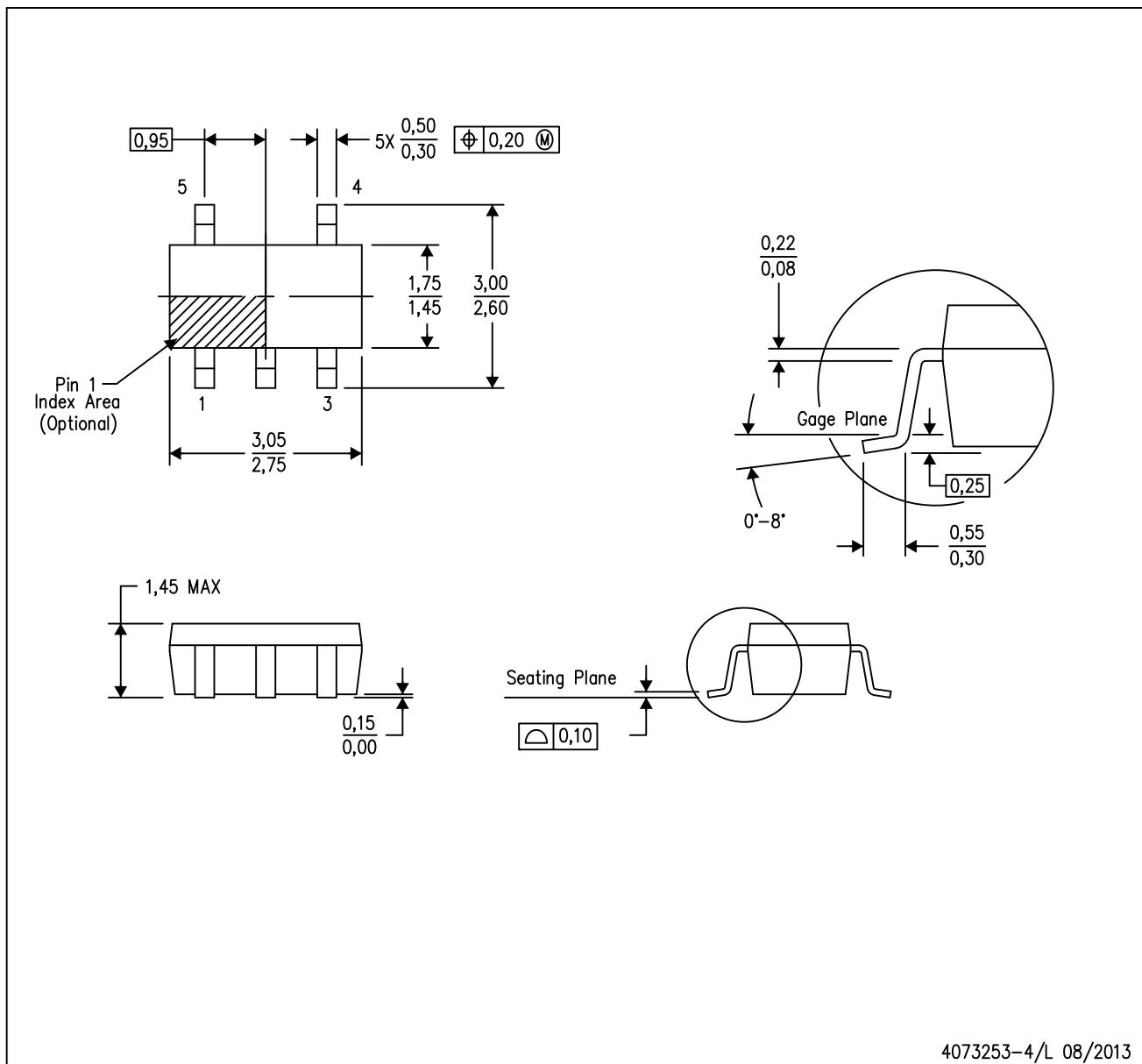
**TAPE AND REEL BOX DIMENSIONS**


\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74AHC1G126DBVR	SOT-23	DBV	5	3000	202.0	201.0	28.0
SN74AHC1G126DBVR	SOT-23	DBV	5	3000	180.0	180.0	18.0
SN74AHC1G126DBVT	SOT-23	DBV	5	250	180.0	180.0	18.0
SN74AHC1G126DBVT	SOT-23	DBV	5	250	180.0	180.0	18.0
SN74AHC1G126DCKR	SC70	DCK	5	3000	180.0	180.0	18.0
SN74AHC1G126DCKR	SC70	DCK	5	3000	180.0	180.0	18.0
SN74AHC1G126DCKT	SC70	DCK	5	250	180.0	180.0	18.0
SN74AHC1G126DCKT	SC70	DCK	5	250	180.0	180.0	18.0
SN74AHC1G126DRLR	SOT	DRL	5	4000	202.0	201.0	28.0

DBV (R-PDSO-G5)

PLASTIC SMALL-OUTLINE PACKAGE



4073253-4/L 08/2013

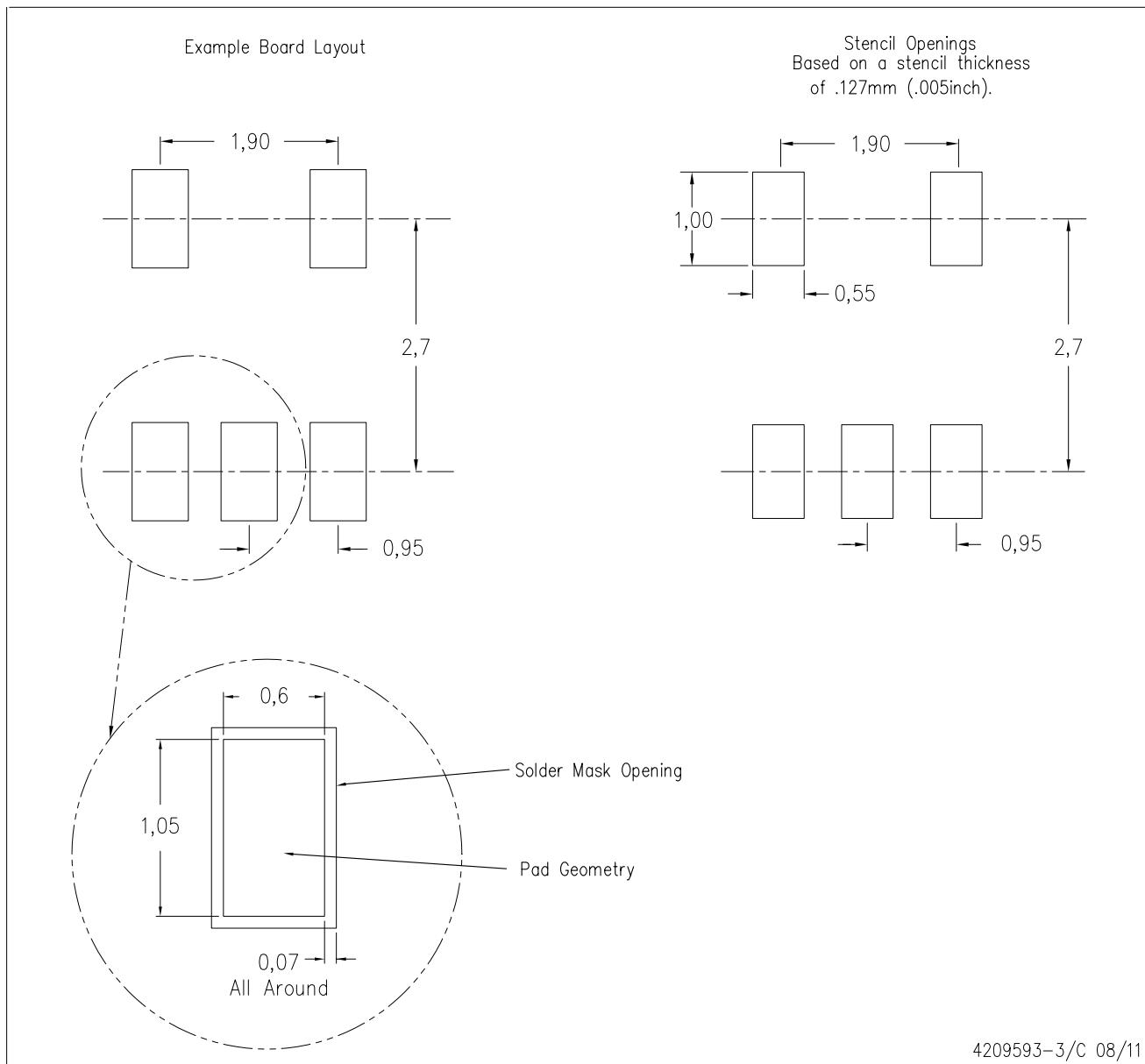
NOTES:

- All linear dimensions are in millimeters.
- This drawing is subject to change without notice.
- Body dimensions do not include mold flash or protrusion. Mold flash and protrusion shall not exceed 0,15 per side.
- Falls within JEDEC MO-178 Variation AA.

# LAND PATTERN DATA

DBV (R-PDSO-G5)

PLASTIC SMALL OUTLINE

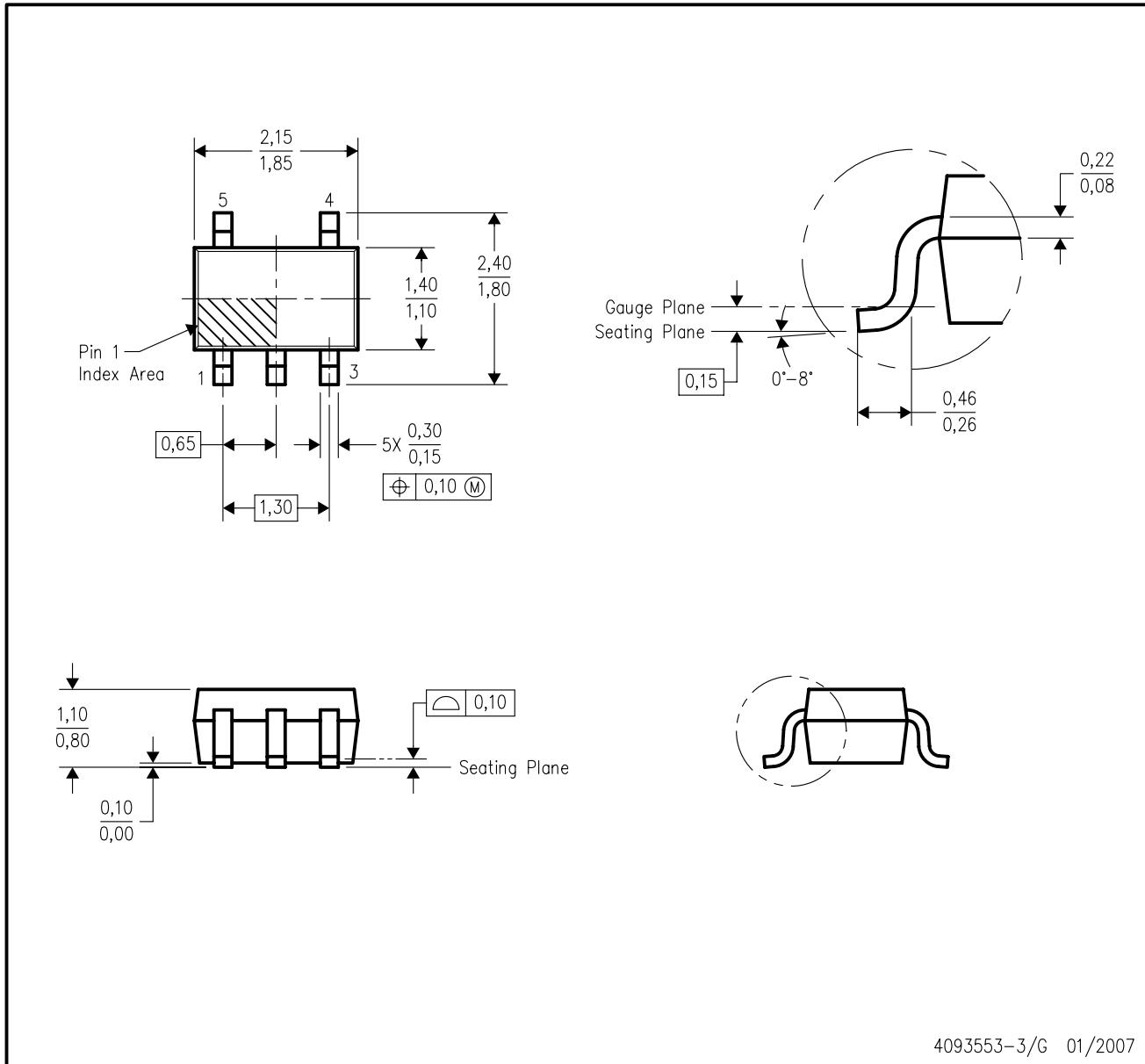


NOTES:

- 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.

## DCK (R-PDSO-G5)

## PLASTIC SMALL-OUTLINE PACKAGE



4093553-3/G 01/2007

NOTES:

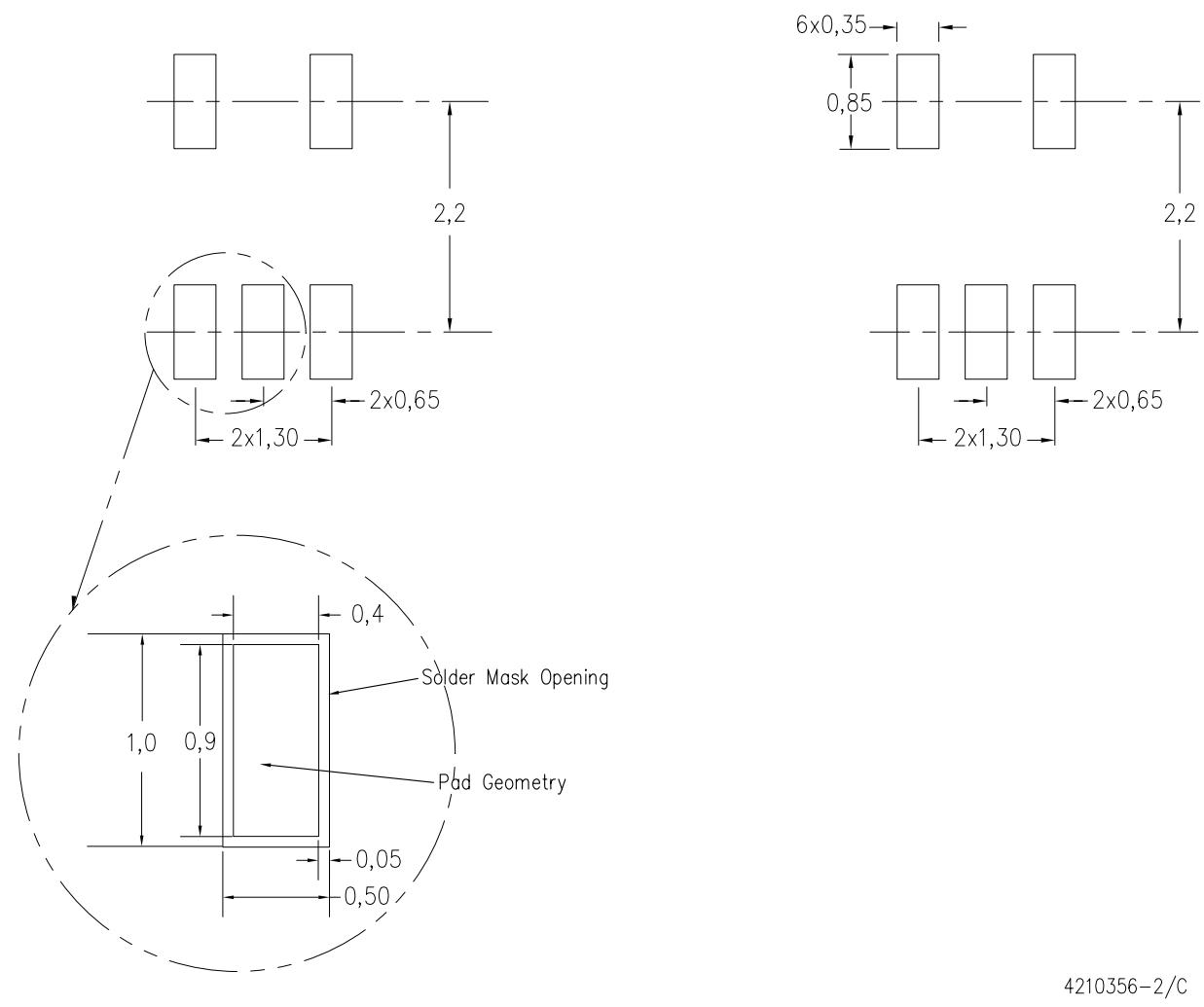
- All linear dimensions are in millimeters.
- This drawing is subject to change without notice.
- Body dimensions do not include mold flash or protrusion. Mold flash and protrusion shall not exceed 0.15 per side.
- Falls within JEDEC MO-203 variation AA.

DCK (R-PDSO-G5)

PLASTIC SMALL OUTLINE

Example Board Layout

Stencil Openings  
Based on a stencil thickness  
of .127mm (.005inch).

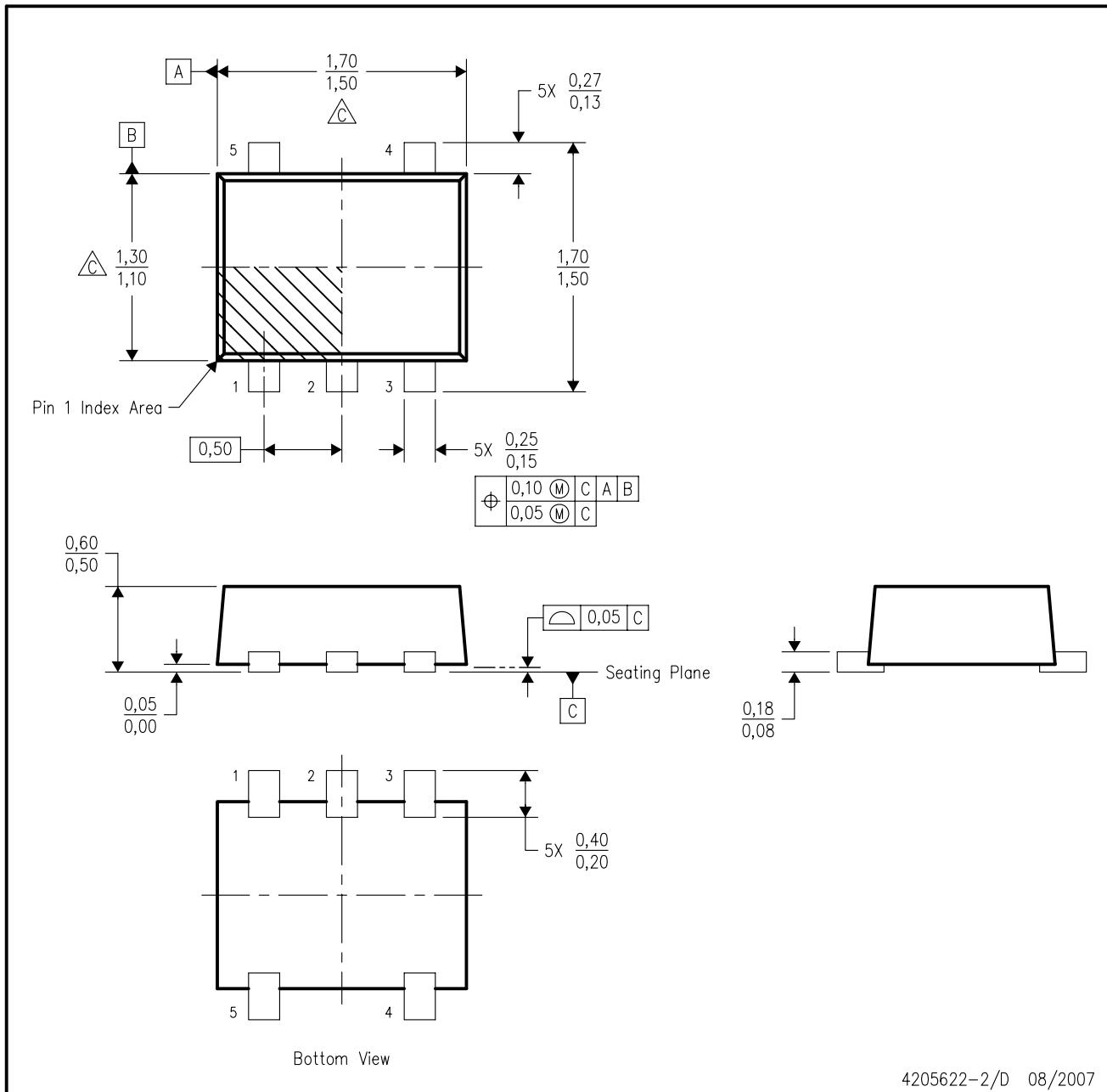


NOTES:

- 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.

## DRL (R-PDSO-N5)

## 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.

 THIS DRAWING IS SUBJECT TO CHANGE WITHOUT NOTICE.

 Body dimensions do not include mold flash, interlead flash, protrusions, or gate burrs. Mold flash, interlead flash, protrusions, or gate burrs shall not exceed 0,15 per end or side.

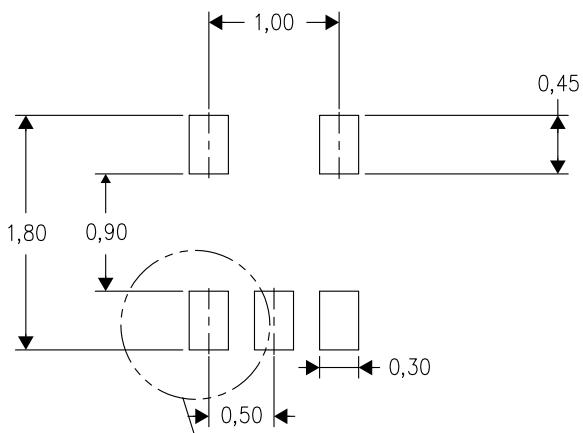
D. JEDEC package registration is pending.

D. JEDEC package registration is pending.

DRL (R-PDSO-N5)

PLASTIC SMALL OUTLINE

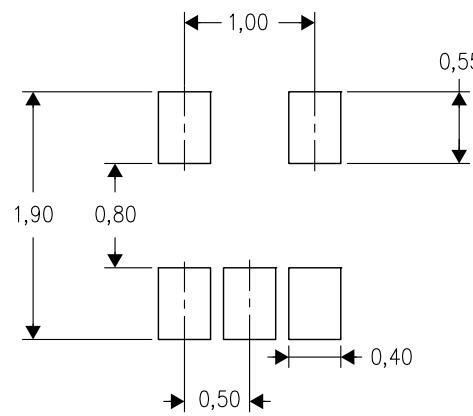
Example Board Layout



Example Non-Soldermask Defined Pad

Example Pad Geometry

Example Non-Soldermask Opening

Example Stencil Design  
(Note E)

4208207-2/E 06/12

NOTES:

- All linear dimensions are in millimeters.
- This drawing is subject to change without notice.
- Publication IPC-7351 is recommended for alternate designs.
- Customers should contact their board fabrication site for minimum solder mask web tolerances between signal pads.
- Maximum stencil thickness 0,127 mm (5 mils). All linear dimensions are in millimeters.
- 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 stencil design considerations.
- Side aperture dimensions over-print land for acceptable area ratio  $> 0.66$ . Customer may reduce side aperture dimensions if stencil manufacturing process allows for sufficient release at smaller opening.

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