

BZX884Cx-Q1 Automotive Zener Voltage Regulator Diodes in DFN1006

1 Features

- Total power dissipation: 250mW (max)
- Tolerance: $\pm 5\%$
- Temperature range: -55°C to $+150^{\circ}\text{C}$
- AEC-Q101 qualified
- Leaded package used for automatic optical inspection (AOI)

2 Applications

- Voltage regulation
- Over-voltage protection

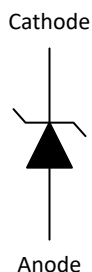
3 Description

The BZX884Cx-Q1 is a family of voltage regulating diodes in a DFN1006 package. The diodes are available in Zener voltages ranging from 5.6V to 39V.

Package Information

PART NUMBER	PACKAGE ⁽¹⁾	PACKAGE SIZE ⁽²⁾
BZX884Cx-Q1	DPY (DFN1006, 2)	1.0mm × 0.6mm

- (1) For more information, see [Section 8](#).
(2) The package size (length × width) is a nominal value and includes pins, where applicable.



Functional Block Diagram



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4 Pin Configuration and Functions

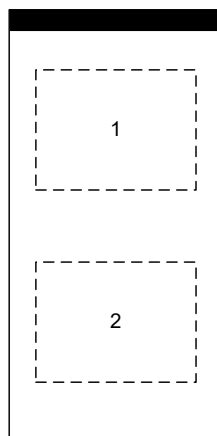


Figure 4-1. DPY Package, 2-Pin DFN1006 (Top View)

Pin Functions

PIN	DESCRIPTION
1	Anode
2	Cathode

5 Specifications

5.1 Absolute Maximum Ratings

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

		MIN	MAX	UNIT
P _D ^{(2) (3)}	Total Power Dissipation		250	mW
T _A	Ambient Operating Temperature	-55	150	°C
T _{stg}	Storage Temperature	-65	155	°C

- (1) Operation outside the *Absolute Maximum Ratings* may cause permanent device damage. Absolute maximum ratings do not imply functional operation of the device at these or any other conditions beyond those listed under *Recommended Operating Conditions*. If briefly operating outside the Recommended Operating Conditions but within the Absolute Maximum Ratings, the device may not sustain damage, but it may not be fully functional. Operating the device in this manner may affect device reliability, functionality, performance, and shorten the device lifetime.
- (2) FR-4 printed circuit board, single sided copper, standard footprint
- (3) Measured at 25°C

5.2 Recommended Operating Conditions

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

		MIN	NOM	MAX	UNIT
V _F	Forward Voltage I _F = 10mA			0.9	V
T _A	Operating free-air temperature	-55		150	°C

5.3 Thermal Information

THERMAL METRIC ⁽¹⁾		BZX884Cx-Q1	UNIT
		DPY (DFN1006)	
		2 PINS	
R _{θJA}	Junction-to-ambient thermal resistance	393.6	°C/W
R _{θJC(top)}	Junction-to-case (top) thermal resistance	235.4	°C/W
R _{θJB}	Junction-to-board thermal resistance	286.3	°C/W
Ψ _{JT}	Junction-to-top characterization parameter	103.3	°C/W
Ψ _{JB}	Junction-to-board characterization parameter	286.3	°C/W
R _{θJC(bot)}	Junction-to-case (bottom) thermal resistance	N/A	°C/W

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

5.4 Electrical Characteristics

At T_A = 25°C (unless otherwise noted)

Part Number	Zener Voltage V _Z (V) at I _Z				Zener Impedance Z _{ZT} (Ω) at I _Z		Reverse Leakage Current I _R (μA)		Temperature Coefficient S _Z (mV/°C) at I _Z		Capacitance C _D (pF) ⁽¹⁾
	MIN	TYP	MAX	I _Z (mA)	MAX	I _Z (mA)	MAX	V _R (V)	MAX	I _Z (mA)	MAX
BZX884C5V6-Q1	5.2	5.6	6	5	40	5	0.75	2	2.5	5	200
BZX884C6V8-Q1	6.4	6.8	7.2	5	15	5	0.1	4	4.5	5	120
BZX884C8V2-Q1	7.79	8.2	8.61	5	15	5	0.6	5.75	6.2	5	80
BZX884C9V1-Q1	8.5	9.1	9.6	5	15	5	0.2	6	8	5	90
BZX884C15V-Q1	14.25	15	15.75	5	30	5	0.03	10.5	13	5	50
BZX884C16V-Q1	15.3	16	17.1	5	40	5	0.03	11.2	15.5	5	50
BZX884C18V-Q1	16.8	18	19.1	5	45	5	0.03	12.6	19	5	45
BZX884C27V-Q1	25.65	27	28.35	2	80	2	0.03	18.9	25.3	2	35
BZX884C39V-Q1	37.05	39	40.95	2	130	2	0.03	27.3	41.2	2	25

(1) f = 1MHz, V_R = 0

5.5 Typical Characteristics

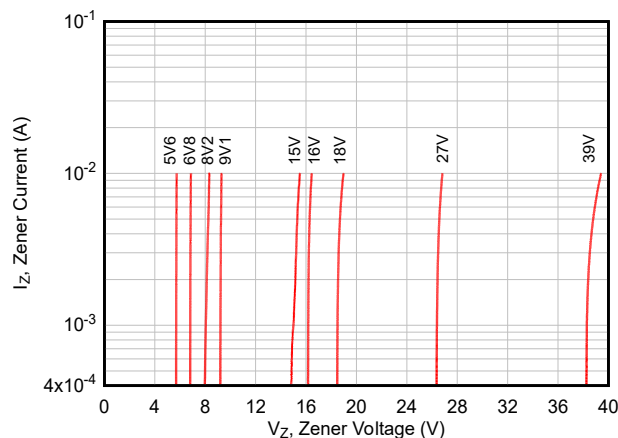


Figure 5-1. Zener Current vs Zener Voltage

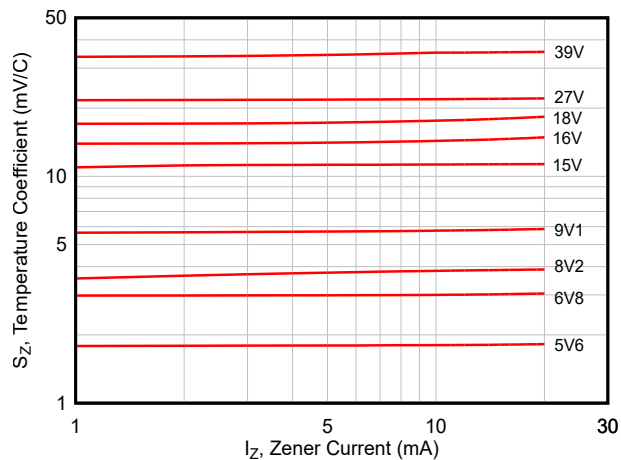


Figure 5-2. Temperature Coefficient

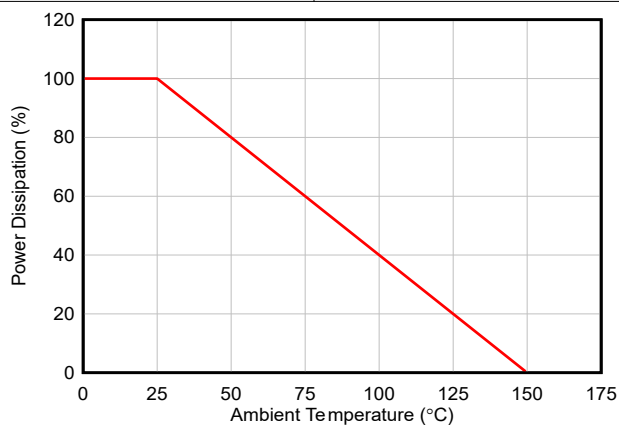


Figure 5-3. Power Derating Curve

6 Device and Documentation Support

6.1 Documentation Support

6.1.1 Related Documentation

For related documentation, see the following:

- Texas Instruments, [Diodes Packaging and Layout Guide](#)
- Texas Instruments, [Diodes Layout Guide User's Guide](#)
- Texas Instruments, [Generic Evaluation Module User's Guide](#)
- Texas Instruments, [Why Use TI Zener Diodes for High Power Applications](#)
- Texas Instruments, [Low Noise Zeners](#)

6.2 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on [ti.com](#). Click on *Notifications* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

6.3 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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6.4 Trademarks

TI E2E™ is a trademark of Texas Instruments.

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6.5 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.

6.6 Glossary

[TI Glossary](#) This glossary lists and explains terms, acronyms, and definitions.

7 Revision History

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

DATE	REVISION	NOTES
December 2025	*	Initial Release

8 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 part number	Status (1)	Material type (2)	Package Pins	Package qty Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
BZX884C15VDPYRQ1	Active	Production	X1SON (DPY) 2	10000 LARGE T&R	Yes	NIPDAUAG	Level-1-260C-UNLIM	-	SL
BZX884C5V6DPYRQ1	Active	Production	X1SON (DPY) 2	10000 LARGE T&R	Yes	NIPDAUAG	Level-1-260C-UNLIM	-	SI
BZX884C6V8DPYRQ1	Active	Production	X1SON (DPY) 2	10000 LARGE T&R	Yes	NIPDAUAG	Level-1-260C-UNLIM	-	SJ
BZX884C8V2DPYRQ1	Active	Production	X1SON (DPY) 2	10000 LARGE T&R	Yes	NIPDAUAG	Level-1-260C-UNLIM	-	SQ
BZX884C9V1DPYRQ1	Active	Production	X1SON (DPY) 2	10000 LARGE T&R	Yes	NIPDAUAG	Level-1-260C-UNLIM	-55 to 150	SK

⁽¹⁾ **Status:** For more details on status, see our [product life cycle](#).

⁽²⁾ **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

⁽³⁾ **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

⁽⁴⁾ **Lead finish/Ball material:** Parts 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.

⁽⁵⁾ **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

⁽⁶⁾ **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "-" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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OTHER QUALIFIED VERSIONS OF BZX884C15V-Q1, BZX884C5V6-Q1, BZX884C6V8-Q1, BZX884C8V2-Q1, BZX884C9V1-Q1 :

- Catalog : [BZX884C15V](#), [BZX884C5V6](#), [BZX884C6V8](#), [BZX884C8V2](#), [BZX884C9V1](#)

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product

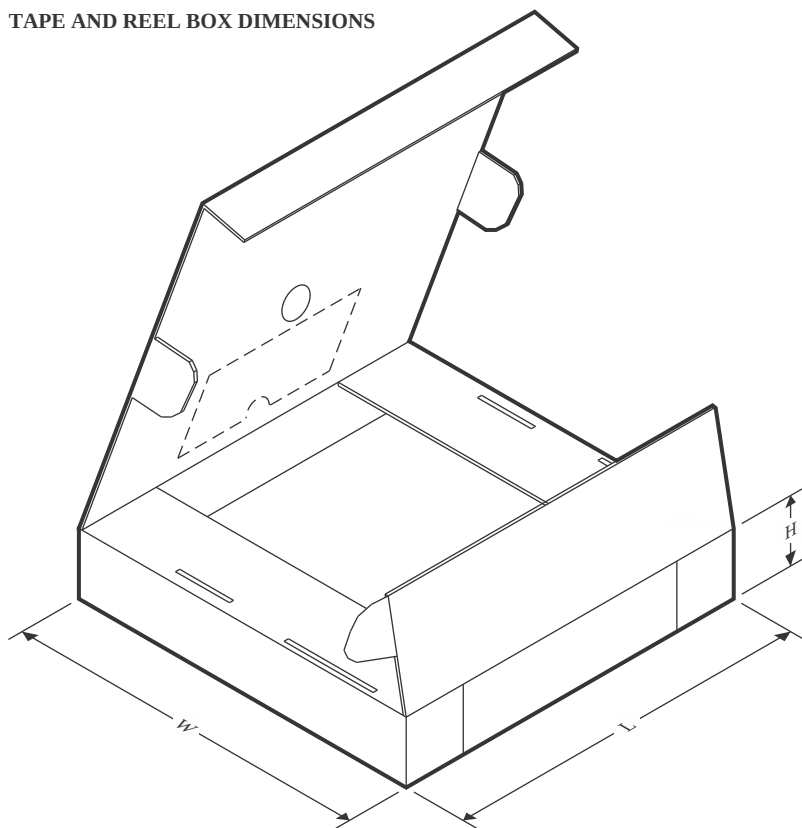
TAPE AND REEL INFORMATION



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
BZX884C15VDPYRQ1	X1SON	DPY	2	10000	178.0	8.4	0.7	1.15	0.47	2.0	8.0	Q1
BZX884C5V6DPYRQ1	X1SON	DPY	2	10000	178.0	8.4	0.7	1.15	0.47	2.0	8.0	Q1
BZX884C6V8DPYRQ1	X1SON	DPY	2	10000	178.0	8.4	0.7	1.15	0.47	2.0	8.0	Q1
BZX884C8V2DPYRQ1	X1SON	DPY	2	10000	178.0	8.4	0.7	1.15	0.47	2.0	8.0	Q1
BZX884C9V1DPYRQ1	X1SON	DPY	2	10000	178.0	8.4	0.7	1.15	0.47	2.0	8.0	Q1

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
BZX884C15VDPYRQ1	X1SON	DPY	2	10000	205.0	200.0	33.0
BZX884C5V6DPYRQ1	X1SON	DPY	2	10000	205.0	200.0	33.0
BZX884C6V8DPYRQ1	X1SON	DPY	2	10000	205.0	200.0	33.0
BZX884C8V2DPYRQ1	X1SON	DPY	2	10000	205.0	200.0	33.0
BZX884C9V1DPYRQ1	X1SON	DPY	2	10000	205.0	200.0	33.0

GENERIC PACKAGE VIEW

DPY 2

X1SON - 0.45 mm max height

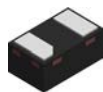
1 x 0.6 mm

PLASTIC SMALL OUTLINE - NO LEAD

This image is a representation of the package family, actual package may vary.
Refer to the product data sheet for package details.



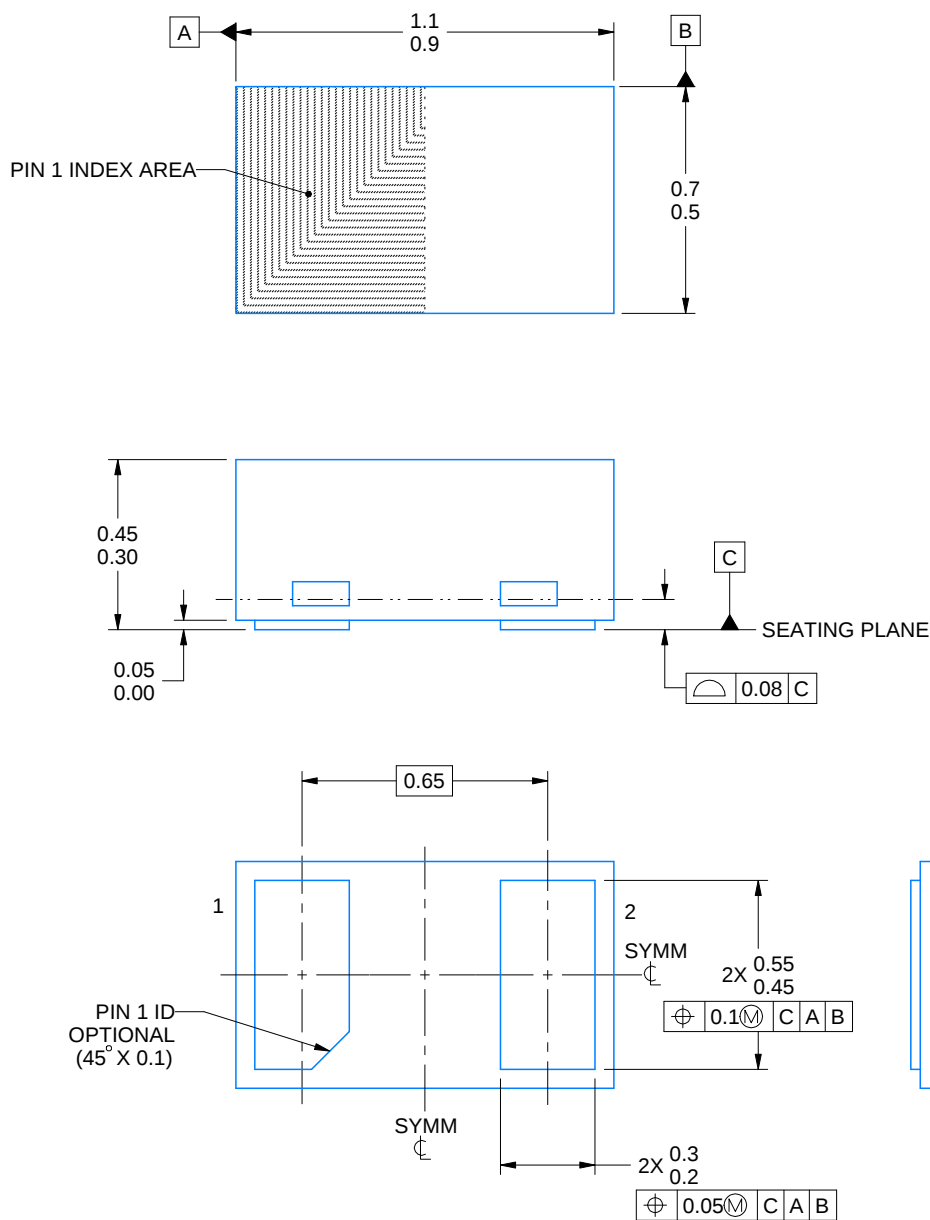
DPY0002A



PACKAGE OUTLINE

X1SON - 0.45 mm max height

PLASTIC SMALL OUTLINE - NO LEAD



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NOTES:

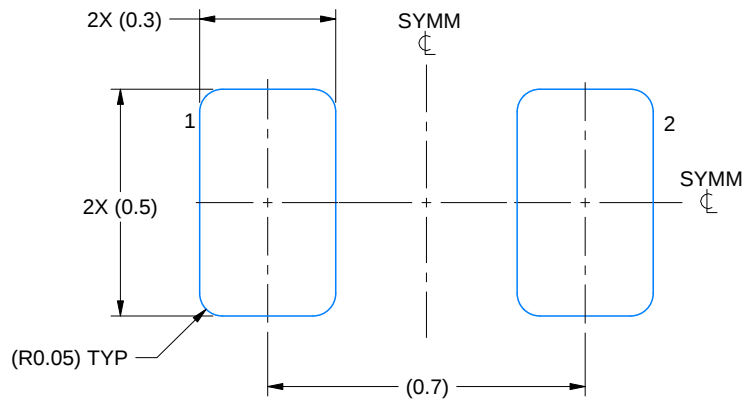
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M
2. This drawing is subject to change without notice.

EXAMPLE BOARD LAYOUT

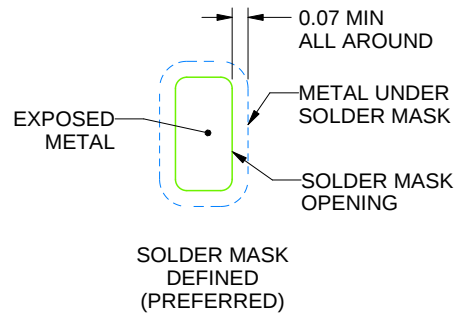
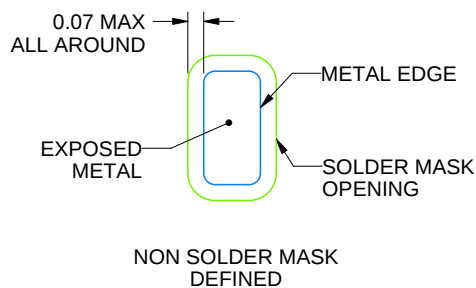
DPY0002A

X1SON - 0.45 mm max height

PLASTIC SMALL OUTLINE - NO LEAD



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE:60X



SOLDER MASK DETAILS

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NOTES: (continued)

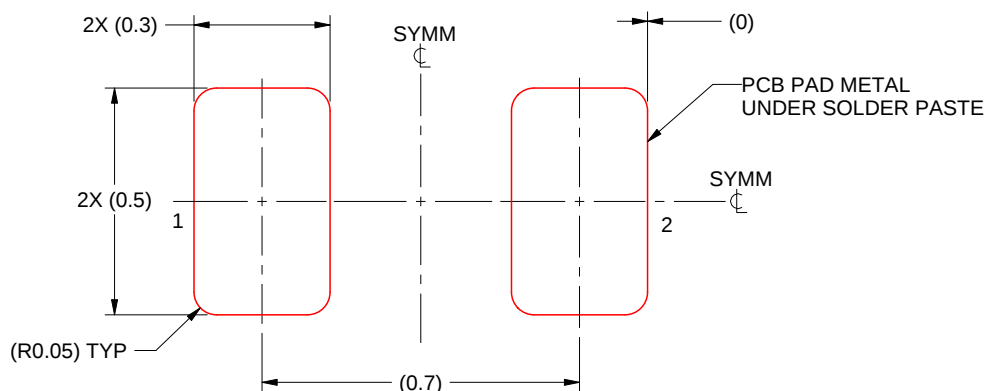
- For more information, see Texas Instruments literature number SLUA271 (www.ti.com/lit/sluea271).
- Vias are optional depending on application, refer to device data sheet. If any vias are implemented, refer to their locations shown on this view. It is recommended that vias under paste be filled, plugged or tented.

EXAMPLE STENCIL DESIGN

DPY0002A

X1SON - 0.45 mm max height

PLASTIC SMALL OUTLINE - NO LEAD



SOLDER PASTE EXAMPLE
BASED ON 0.1 mm THICK STENCIL
SCALE:60X

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NOTES: (continued)

5. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.

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