

## SNx4AHCT240 トライステート出力付きの 8 進反転バッファ/ドライバ

### 1 特長

- 入力は TTL 電圧互換
- JESD 17 準拠で 250mA 超のラッチアップ性能
- MIL-PRF-38535 準拠の製品については、特に記述のない限り、すべてのパラメータはテスト済みです。その他のすべての製品については、量産プロセスにすべてのパラメータのテストが含まれているとは限りません。

### 2 アプリケーション

- ネットワークスイッチ
- 健康管理およびフィットネス
- テレビ
- 電源インフラストラクチャ

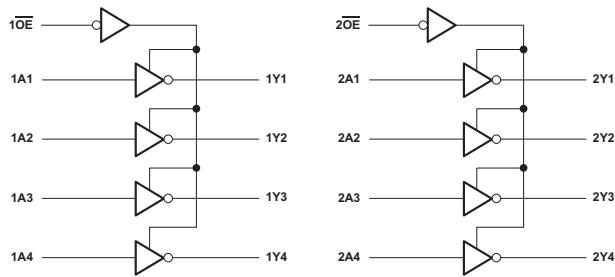
### 3 概要

SNx4AHCT240 8 進バッファ/ドライバは、トライステートメモリアドレスドライバ、クロックドライバ、およびバス指向のレシーバとトランスマッタの性能および密度を向上させることを目的に設計されています。

#### 製品情報

部品番号	パッケージ <sup>(1)</sup>	パッケージ サイズ <sup>(2)</sup>	本体サイズ <sup>(3)</sup>
SN74AHCT240	DB (SSOP, 20)	7.2mm × 7.8mm	7.50mm × 5.30mm
	NS (SOP, 20)	12.60mm × 7.8mm	12.6mm × 5.30mm
	PW (TSSOP, 20)	6.50mm × 6.4mm	6.50mm × 4.40mm
	DW (SOIC, 20)	12.80mm × 10.3mm	12.8mm × 7.5mm
	N (PDIP, 20)	24.33mm × 9.4mm	25.40mm × 6.35mm

- 詳細については、[セクション 10](#) を参照してください。
- パッケージ サイズ(長さ × 幅)は公称値であり、該当する場合はピンも含まれます。
- 本体サイズ(長さ × 幅)は公称値であり、ピンは含まれません。



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### 概略回路図



このリソースの元の言語は英語です。翻訳は概要を便宜的に提供するもので、自動化ツール(機械翻訳)を使用していることがあります。TIでは翻訳の正確性および妥当性につきましては一切保証いたしません。実際の設計などの前には、ti.com で必ず最新の英語版をご参照くださいますようお願いいたします。

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## 4 Pin Configuration and Functions

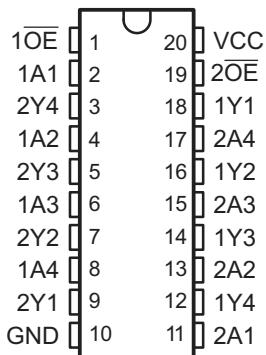


図 4-1. SN54AHCT240, J or W Package  
SN74AHCT240, DB, DGV, DW, N, NS, or PW  
Package (20) Pin Top View

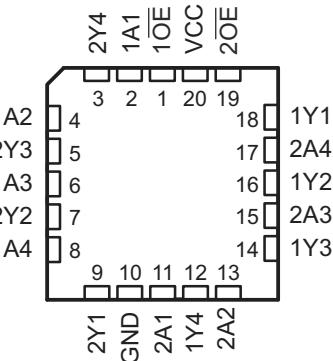


図 4-2. SN54AHCT240 FK Package (20) Pin Top  
View

PIN		I/O	DESCRIPTION
NAME	NO.		
1 $\overline{OE}$	1	I	Output Enable 1
1A1	2	I	1A1 Input
2Y4	3	O	2Y4 Output
1A2	4	I	1A2 Input
2Y3	5	O	2Y3 Output
1A3	6	I	1A3 Input
2Y2	7	O	2Y2 Output
1A4	8	I	1A4 Input
2Y1	9	O	2Y1 Output
GND	10	—	Ground Pin
2A1	11	I	2A1 Input
1Y4	12	O	1Y4 Output
2A2	13	I	2A2 Input
1Y3	14	O	1Y3 Output
2A3	15	I	2A3 Input
1Y2	16	O	1Y2 Output
2A4	17	I	2A4 Input
1Y1	18	O	1Y1 Output
2 $\overline{OE}$	19	I	Output Enable 2
V <sub>CC</sub>	20	—	Power Pin

## 5 Specifications

### 5.1 Absolute Maximum Ratings

over operating free-air temperature range (unless otherwise noted)<sup>(1)</sup>

			MIN	MAX	UNIT
$V_{CC}$	Supply voltage		-0.5	7	V
$V_I$ <sup>(2)</sup>	Input voltage		-0.5	7	V
$V_O$ <sup>(2)</sup>	Output voltage		-0.5	$V_{CC} + 0.5$	V
$I_{IK}$	Input clamp current	$V_I < 0$		-20	mA
$I_{OK}$	Output clamp current	$V_O < 0$ or $V_O > V_{CC}$		$\pm 20$	mA
$I_O$	Continuous output current	$V_O = 0$ to $V_{CC}$		$\pm 25$	mA
	Continuous current through $V_{CC}$ or GND			$\pm 75$	mA
$T_J$	Junction temperature			150	°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) The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

### 5.2 ESD Ratings

		Value	UNIT
$V_{(ESD)}$	Human body model (HBM), per ANSI/ESDA/JEDEC JS-001, all pins <sup>(1)</sup>	$\pm 2000$	V
	Charged device model (CDM), per JEDEC specification JESD22-C101, all pins <sup>(2)</sup>	$\pm 1000$	

(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.

## 5.3 Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted)<sup>(1)</sup>

		SN54AHCT240		SN74AHCT240		UNIT
		MIN	MAX	MIN	MAX	
V <sub>CC</sub>	Supply voltage	4.5	5.5	4.5	5.5	V
V <sub>IH</sub>	High-level input voltage	2		2		V
V <sub>IL</sub>	Low-level Input voltage		0.8		0.8	V
V <sub>I</sub>	Input voltage	0	5.5	0	5.5	V
V <sub>O</sub>	Output voltage	0	V <sub>CC</sub>	0	V <sub>CC</sub>	V
I <sub>OH</sub>	High-level output current		-8		-8	mA
I <sub>OL</sub>	Low-level output current		8		8	mA
T <sub>A</sub>	Operating free-air temperature	-55	125	-40	125	°C

(1) All unused inputs of the device must be held at V<sub>CC</sub> or GND to ensure proper device operation. See the *Implications of Slow or Floating CMOS Inputs* application report.

## 5.4 Thermal Information

THERMAL METRIC <sup>(1)</sup>	SN74AHCT240					UNIT	
	DW (SOIC)	DB (SSOP)	N (PDIP)	NS (SOP)	PW (TSSOP)		
	20 PINS	20 PINS	20 PINS	20 PINS	20 PINS		
R <sub>θJA</sub>	Junction-to-ambient thermal resistance	81.1	99.9	54.9	80.4	116.8	°C/W
R <sub>θJC(top)</sub>	Junction-to-case (top) thermal resistance	48.9	61.7	41.7	46.9	58.5	
R <sub>θJB</sub>	Junction-to-board thermal resistance	53.8	55.2	35.8	47.9	78.7	
Ψ <sub>JT</sub>	Junction-to-top characterization parameter	19.5	22.6	27.9	19.9	12.6	
Ψ <sub>JB</sub>	Junction-to-board characterization parameter	53.1	54.8	35.7	47.5	77.9	

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

## 5.5 Electrical Characteristics

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

PARAMETER	TEST CONDITIONS	T <sub>A</sub> = 25°C		SN54AHCT240		-40°C to 85°C SN74AHCT240		-40°C to 125°C SN74AHCT240		UNIT
		MIN	TYP	MAX	MIN	MAX	MIN	MAX	MIN	
V <sub>OH</sub>	High-level output voltage I <sub>OH</sub> = -50 µA, V <sub>CC</sub> = 4.5 V	4.4	4.5		4.4		4.4		4.4	V
	I <sub>OH</sub> = -8 mA, V <sub>CC</sub> = 4.5 V	3.94			3.8		3.8		3.8	
V <sub>OL</sub>	Low-level output voltage I <sub>OL</sub> = 50 µA, V <sub>CC</sub> = 4.5 V		0.1		0.1		0.1		0.1	V
	I <sub>OL</sub> = 8 mA, V <sub>CC</sub> = 4.5 V		0.36		0.44		0.44		0.44	
I <sub>OZ</sub>	High-impedance-state output current V <sub>O</sub> = V <sub>CC</sub> or GND V <sub>CC</sub> = 5.5 V		±0.25		±2.5		±2.5		±2.5	µA
I <sub>I</sub>	Inflection-point current V <sub>I</sub> = 5.5 V or GND V <sub>CC</sub> = 0 V to 5.5 V		±0.1		±1 <sup>(1)</sup>		±1		±1	µA
I <sub>CC</sub>	Supply current V <sub>I</sub> = V <sub>CC</sub> or GND I <sub>O</sub> = 0, V <sub>CC</sub> = 5.5 V		4		40		40		40	µA
ΔI <sub>CC</sub> <sup>(2)</sup>	Supply current change One input at 3.4 V other inputs at V <sub>CC</sub> or GND V <sub>CC</sub> = 5.5 V		1.35		1.5		1.5		1.5	mA
C <sub>i</sub>	Input capacitance V <sub>I</sub> = V <sub>CC</sub> or GND V <sub>CC</sub> = 5.5 V	2.5	10				10		10	pF

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

PARAMETER	TEST CONDITIONS	TA = 25°C			SN54AHCT240		-40°C to 85°C SN74AHCT240		-40°C to 125°C SN74AHCT240		UNIT
		MIN	TYP	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
Co	Output capacitance V <sub>O</sub> = V <sub>CC</sub> or GND V <sub>CC</sub> = 5.5 V		3								pF

(1) On products compliant to MIL-PRF-38535, this parameter is not production tested at V<sub>CC</sub> = 0 V.  
 (2) This is the increase in supply current for each input at one of the specified TTL voltage levels, rather than 0 V or V<sub>CC</sub>.

## 5.6 Switching Characteristics

over recommended operating free-air temperature range,  $V_{CC} = 5 \text{ V} \pm 0.5 \text{ V}$  (unless otherwise noted) (see [セクション Parameter Measurement Information](#) section)

PARAMETER	TEST CONDITIONS		$T_A = 25^\circ\text{C}$		SN54AHCT240		$-40^\circ\text{C} \text{ to } 85^\circ\text{C}$ SN74AHCT240		$-40^\circ\text{C} \text{ to } 125^\circ\text{C}$ SN74AHCT240		UNIT	
			TYP	MAX	MIN	MAX	MIN	MAX	MIN	MAX		
$t_{PLH}$	Propagation delay time (low-to-high output)	A-to-Y	$C_L = 15 \text{ pF}$	5.4 <sup>(1)</sup>	7.4 <sup>(1)</sup>	1 <sup>(1)</sup>	8.5 <sup>(1)</sup>	1	8.5	1	9.5	ns
$t_{PHL}$				5.4 <sup>(1)</sup>	7.4 <sup>(1)</sup>	1 <sup>(1)</sup>	8.5 <sup>(1)</sup>	1	8.5	1	9.5	
$t_{PZH}$	Enable time (to the high level)	$\overline{OE}$ -to-Y	$C_L = 15 \text{ pF}$	7.7 <sup>(1)</sup>	10.4 <sup>(1)</sup>	1 <sup>(1)</sup>	12 <sup>(1)</sup>	1	12	1	13	ns
$t_{PZL}$	Enable time (to the low level)			7.7 <sup>(1)</sup>	10.4 <sup>(1)</sup>	1 <sup>(1)</sup>	12 <sup>(1)</sup>	1	12	1	13	
$t_{PHZ}$	Disable time (from high level)	$\overline{OE}$ -to-Y	$C_L = 15 \text{ pF}$	8.3 <sup>(1)</sup>	10.4 <sup>(1)</sup>	1 <sup>(1)</sup>	12 <sup>(1)</sup>	1	12	1	13	ns
$t_{PLZ}$	Disable time (from low level)			8.3 <sup>(1)</sup>	10.4 <sup>(1)</sup>	1 <sup>(1)</sup>	12 <sup>(1)</sup>	1	12	1	13	
$t_{PLH}$	Propagation delay time (low-to-high output)	A-to-Y	$C_L = 50 \text{ pF}$	5.9	8.4	1	9.5	1	9.5	1	10.5	ns
$t_{PHL}$	Propagation delay time (high-to-low output)			5.9	8.4	1	9.5	1	9.5	1	10.5	
$t_{PZH}$	Enable time (to the high level)	$\overline{OE}$ -to-Y	$C_L = 50 \text{ pF}$	8.2	11.4	1	13	1	13	1	14	ns
$t_{PZL}$	Enable time (to the low level)			8.2	11.4	1	13	1	13	1	14	
$t_{PHZ}$	Disable time (from high level)	$\overline{OE}$ -to-Y	$C_L = 50 \text{ pF}$	8.8	11.4	1	13	1	13	1	14	ns
$t_{PLZ}$	Disable time (from low level)			8.8	11.4	1	13	1	13	1	14	
$t_{sk(o)}$	Skew (time), output		$C_L = 50 \text{ pF}$		1 <sup>(2)</sup>		1		1		1	ns

(1) On products compliant to MIL-PRF-38535, this parameter is not production tested.

(2) On products compliant to MIL-PRF-38535, this parameter does not apply.

## 5.7 Noise Characteristics

$V_{CC} = 5 \text{ V}$ ,  $C_L = 50 \text{ pF}$ ,  $T_A = 25^\circ\text{C}$ <sup>(1)</sup>

PARAMETER	SN74AHCT240			UNIT
	MIN	TYP	MAX	
$V_{OH(V)}$	Quiet output, minimum dynamic $V_{OH}$		4.1	V
$V_{IH(D)}$	High-level dynamic input voltage	2		V
$V_{IL(D)}$	Low-level dynamic input voltage		0.8	V

(1) Characteristics are for surface-mount packages only.

## 5.8 Operating Characteristics

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

PARAMETER	TEST CONDITIONS	TYP	UNIT
$C_{pd}$	Power dissipation capacitance	No load, $f = 1 \text{ MHz}$	10 pF

## 5.9 Typical Characteristics

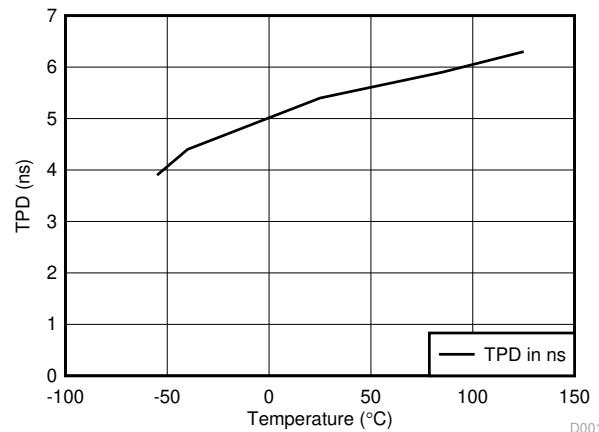


図 5-1. TPD vs Temperature

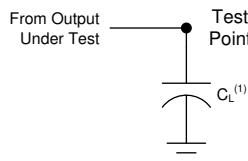
## Parameter Measurement Information

Unless otherwise noted, all input pulses are supplied by generators having the following characteristics:

- PRR  $\leq$  1 MHz
- $Z_O = 50 \Omega$
- $t_r \leq 3 \text{ ns}$
- $t_f \leq 3 \text{ ns}$

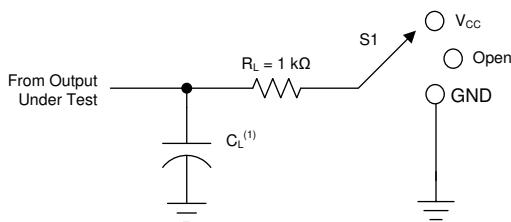
### 注

All parameters and waveforms are not applicable to all devices.



A.  $C_L$  includes probe and jig capacitance.  
B. The outputs are measured one at a time, with one transition per measurement.

**図 6-1. Load Circuit For Totem-Pole Outputs**



A.  $C_L$  includes probe and jig capacitance.  
B. The outputs are measured one at a time, with one transition per measurement.

**図 6-2. Load Circuit For Tri-State And Open-Drain Outputs**

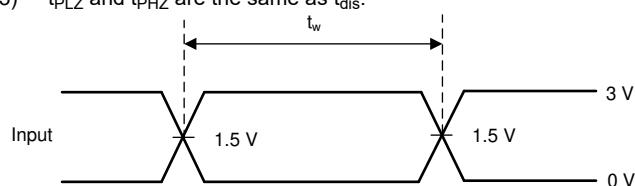
**表 6-1. Loading Conditions For Parameter**

TEST	S1
$t_{PLH}$ (1), $t_{PHL}$ (1)	Open
$t_{PLZ}$ (3), $t_{PZL}$ (2)	$V_{CC}$
$t_{PHZ}$ (3), $t_{PZH}$ (2)	GND
Open drain	$V_{CC}$

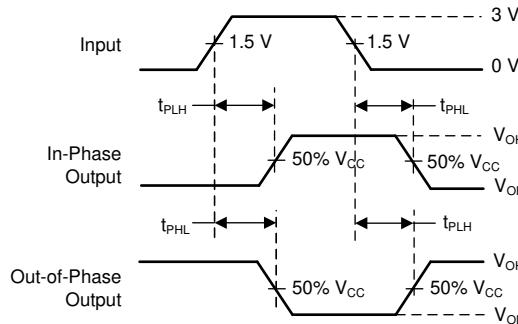
(1)  $t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{pd}$ .

(2)  $t_{PZL}$  and  $t_{PZH}$  are the same as  $t_{en}$ .

(3)  $t_{PLZ}$  and  $t_{PHZ}$  are the same as  $t_{dis}$ .



**図 6-3. Voltage Waveforms Pulse Durations**



A. The outputs are measured one at a time, with one transition per measurement.

図 6-4. Voltage Waveforms Propagation Delay Times Inverting and Noninverting Outputs

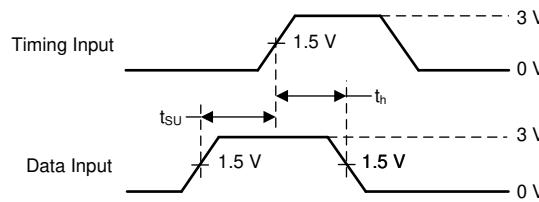
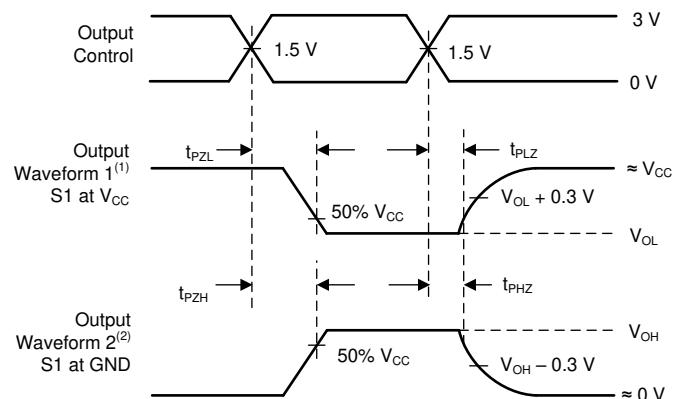


図 6-5. Voltage Waveforms Setup And Hold Times



A. Waveform 1 is for an output with internal conditions such that the output is low, except when disabled by the output control.  
B. Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output control.  
C. The outputs are measured one at a time, with one transition per measurement.

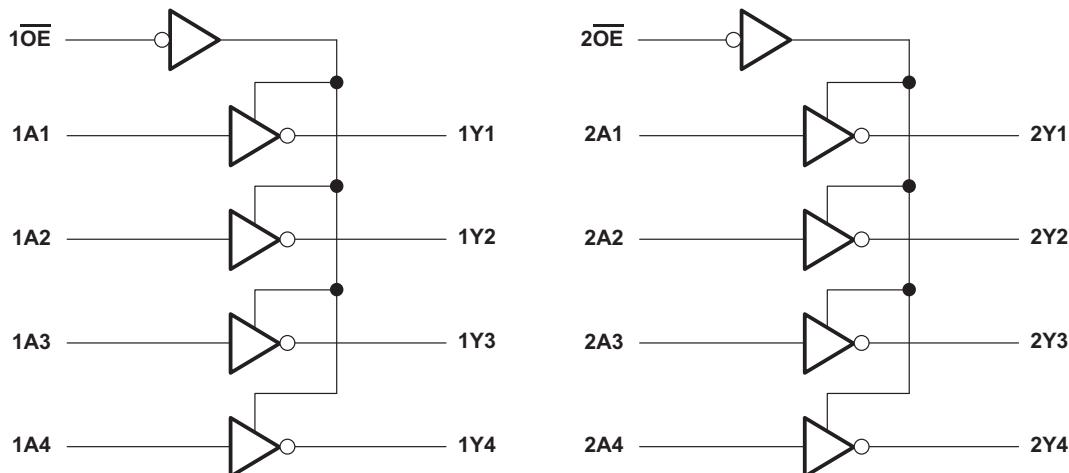
図 6-6. Voltage Waveforms Enable And Disable Times Low- and High-Level Enabling

## 6 Detailed Description

### 6.1 Overview

The SN74AHCT240 devices are organized as two 4-bit buffers/line drivers with separate output-enable (  $\overline{OE}$  ) inputs. When  $\overline{OE}$  is low, the device passes inverted data from the A inputs to the Y outputs. When  $\overline{OE}$  is high, the outputs are in the high-impedance state. To ensure the high-impedance state during power up or power down,  $\overline{OE}$  should be tied to  $V_{CC}$  through a pull-up resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

### 6.2 Functional Block Diagram



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### 6.3 Feature Description

- $V_{CC}$  is optimized at 5 V
- Allows up-voltage translation from 3.3 V to 5 V
  - Inputs accept  $V_{IH}$  levels of 2 V
- Slow edge rates minimize output ringing
- Inputs are TTL-voltage compatible

### 6.4 Device Functional Modes

**表 6-1. Function Table  
(Each 4-bit Inverting Buffer/Driver)**

INPUTS		OUTPUT Y
$\overline{OE}$	A	
L	H	L
L	L	H
H	X	Z

## 7 Application and Implementation

### 注

以下のアプリケーション情報は、TI の製品仕様に含まれるものではなく、TI ではその正確性または完全性を保証いたしません。個々の目的に対する製品の適合性については、お客様の責任で判断していただくことになります。お客様は自身の設計実装を検証しテストすることで、システムの機能を確認する必要があります。

### 7.1 Application Information

The SNx4AHCT240 device is a low-drive CMOS device that may be used for a multitude of bus interface type applications where output ringing is a concern. The low drive and slow edge rates will minimize overshoot and undershoot on the outputs. The input switching levels have been lowered to accommodate TTL inputs of 0.8-V  $V_{IL}$  and 2-V  $V_{IH}$ . This feature makes the SNx4AHCT240 device ideal for translating up from 3.3 V to 5 V. 図 7-1 shows this type of translation.

### 7.2 Typical Application

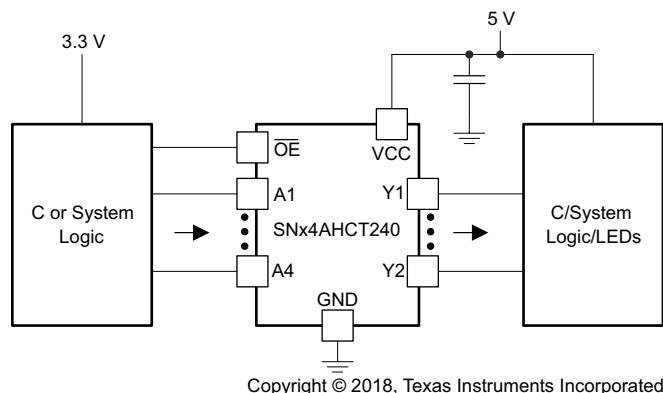


図 7-1. Application Diagram

#### 7.2.1 Design Requirements

This device uses CMOS technology and has balanced output drive. Care should be taken to avoid bus contention because it can drive currents that would exceed maximum limits. The high drive will also create fast edges into light loads; therefore, routing and load conditions should be considered to prevent ringing.

#### 7.2.2 Detailed Design Procedure

1. Recommended Input Conditions:
  - For rise time and fall time specifications, see  $\Delta t/\Delta V$  in the セクション 5.3 table.
  - For specified high and low levels, see  $V_{IH}$  and  $V_{IL}$  in the セクション 5.3 table.
  - Inputs are overvoltage tolerant, allowing them to go as high as 5.5 V at any valid  $V_{CC}$ .
2. Recommend Output Conditions:
  - Load currents should not exceed 25 mA per output and 75 mA total for the part.
  - Outputs should not be pulled above  $V_{CC}$ .

### 7.2.3 Application Curves

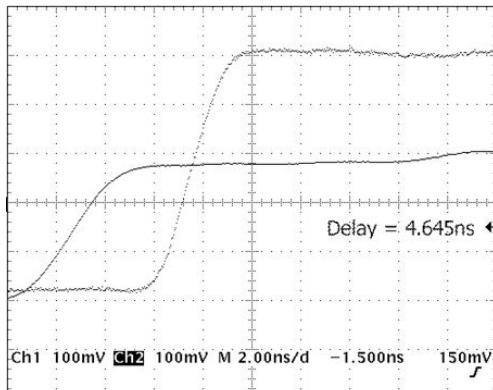


図 7-2. Application Scope Capture

## 7.3 Power Supply Recommendations

The power supply can be any voltage between the MIN and MAX supply voltage rating located in the [セクション 5.3](#).

Each  $V_{CC}$  terminal should have a good bypass capacitor to prevent power disturbance. For devices with a single supply, a 0.1  $\mu F$  capacitor is recommended. If there are multiple  $V_{CC}$  terminals then 0.01  $\mu F$  or 0.022  $\mu F$  capacitors are recommended for each power terminal. It is ok to parallel multiple bypass capacitors to reject different frequencies of noise. 0.1  $\mu F$  and 1.0  $\mu F$  capacitors are commonly used in parallel. The bypass capacitor should be installed as close to the power terminal as possible for the best results.

## 7.4 Layout

### 7.4.1 Layout Guidelines

When using multiple bit logic devices, inputs should not float. In many cases, functions or parts of functions of digital logic devices are unused. Such examples are when only two inputs of a triple-input AND gate are used, or only 3 of the 4-buffer gates are used. Such input pins should not be left unconnected because the undefined voltages at the outside connections result in undefined operational states.

Specified in [図 7-3](#) are rules that must be observed under all circumstances. All unused inputs of digital logic devices must be connected to a high or low bias to prevent them from floating. The logic level that should be applied to any particular unused input depends on the function of the device. Generally they will be tied to GND or  $V_{CC}$ , whichever makes more sense or is more convenient. It is acceptable to float outputs unless the part is a transceiver. If the transceiver has an output enable pin, it will disable the outputs section of the part when asserted. This will not disable the input section of the I/Os so they also cannot float when disabled.

### 7.4.2 Layout Example

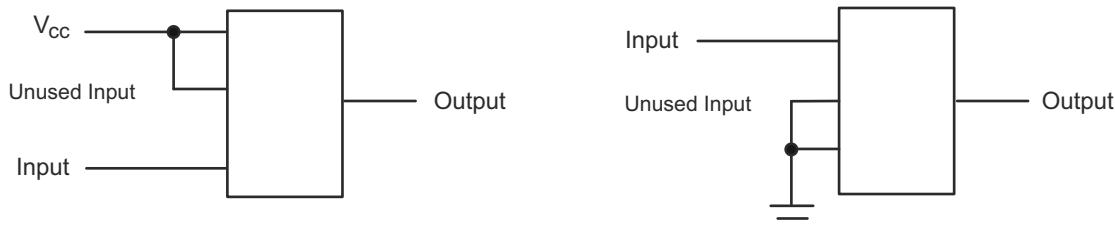


図 7-3. Layout Diagram

## 8 Device and Documentation Support

### 8.1 Documentation Support (Analog)

#### 8.1.1 Related Links

The table below lists quick access links. Categories include technical documents, support and community resources, tools and software, and quick access to sample or buy.

表 8-1. Related Links

PARTS	PRODUCT FOLDER	SAMPLE & BUY	TECHNICAL DOCUMENTS	TOOLS & SOFTWARE	SUPPORT & COMMUNITY
SN54AHCT240	<a href="#">Click here</a>				
SN74AHCT240	<a href="#">Click here</a>				

#### 8.2 ドキュメントの更新通知を受け取る方法

ドキュメントの更新についての通知を受け取るには、[www.tij.co.jp](http://www.tij.co.jp) のデバイス製品フォルダを開いてください。[通知] をクリックして登録すると、変更されたすべての製品情報に関するダイジェストを毎週受け取ることができます。変更の詳細については、改訂されたドキュメントに含まれている改訂履歴をご覧ください。

#### 8.3 サポート・リソース

[テキサス・インスツルメンツ E2E™ サポート・フォーラム](#)は、エンジニアが検証済みの回答と設計に関するヒントをエキスパートから迅速かつ直接得ることができる場所です。既存の回答を検索したり、独自の質問をしたりすることで、設計で必要な支援を迅速に得ることができます。

リンクされているコンテンツは、各寄稿者により「現状のまま」提供されるものです。これらはテキサス・インスツルメンツの仕様を構成するものではなく、必ずしもテキサス・インスツルメンツの見解を反映したものではありません。テキサス・インスツルメンツの[使用条件](#)を参照してください。

#### 8.4 Trademarks

テキサス・インスツルメンツ E2E™ is a trademark of Texas Instruments.

すべての商標は、それぞれの所有者に帰属します。

#### 8.5 静電気放電に関する注意事項



この IC は、ESD によって破損する可能性があります。テキサス・インスツルメンツは、IC を取り扱う際には常に適切な注意を払うことを推奨します。正しい取り扱いおよび設置手順に従わない場合、デバイスを破損するおそれがあります。

ESD による破損は、わずかな性能低下からデバイスの完全な故障まで多岐にわたります。精密な IC の場合、パラメータがわずかに変化するだけで公表されている仕様から外れる可能性があるため、破損が発生しやすくなっています。

#### 8.6 用語集

[テキサス・インスツルメンツ用語集](#) この用語集には、用語や略語の一覧および定義が記載されています。

## 9 Revision History

Changes from Revision O (July 2024) to Revision P (January 2025)	Page
• Updated HBM and CDM values in <i>ESD Ratings</i> table.....	<a href="#">4</a>

Changes from Revision N (January 2018) to Revision O (July 2024)	Page
• 製品情報の表にパッケージ サイズを追加.....	<a href="#">1</a>
• Updated R <sub>θJA</sub> values: PW = 105.4 to 116.8, DW = 83.0 to 81.1; Updated PW and DW packages for R <sub>θJC</sub> (top), R <sub>θJB</sub> , Ψ <sub>JT</sub> , Ψ <sub>JB</sub> , and R <sub>θJC</sub> (bot), all values in °C/W .....	<a href="#">5</a>

## 10 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)
5962-9680601Q2A	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-9680601Q2A SNJ54AHCT240FK
5962-9680601QRA	Active	Production	CDIP (J)   20	20   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-9680601QR A SNJ54AHCT240J
5962-9680601QSA	Active	Production	CFP (W)   20	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-9680601QS A SNJ54AHCT240W
SN74AHCT240DBR	Active	Production	SSOP (DB)   20	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	HB240
SN74AHCT240DBR.A	Active	Production	SSOP (DB)   20	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	HB240
SN74AHCT240DGSR	Active	Production	VSSOP (DGS)   20	5000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	HB240
SN74AHCT240DW	Obsolete	Production	SOIC (DW)   20	-	-	Call TI	Call TI	-40 to 125	AHCT240
SN74AHCT240DWR	Active	Production	SOIC (DW)   20	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	AHCT240
SN74AHCT240DWR.A	Active	Production	SOIC (DW)   20	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	AHCT240
SN74AHCT240N	Active	Production	PDIP (N)   20	20   TUBE	Yes	NIPDAU	N/A for Pkg Type	-40 to 125	SN74AHCT240N
SN74AHCT240N.A	Active	Production	PDIP (N)   20	20   TUBE	Yes	NIPDAU	N/A for Pkg Type	-40 to 125	SN74AHCT240N
SN74AHCT240NSR	Active	Production	SOP (NS)   20	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	AHCT240
SN74AHCT240NSR.A	Active	Production	SOP (NS)   20	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	AHCT240
SN74AHCT240PW	Obsolete	Production	TSSOP (PW)   20	-	-	Call TI	Call TI	-40 to 125	HB240
SN74AHCT240PWR	Active	Production	TSSOP (PW)   20	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	HB240
SN74AHCT240PWR.A	Active	Production	TSSOP (PW)   20	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	HB240
SN74AHCT240PWRG4	Active	Production	TSSOP (PW)   20	2000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	HB240
SN74AHCT240RKS	Active	Production	VQFN (RKS)   20	3000   LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	AHCT240
SNJ54AHCT240FK	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-9680601Q2A SNJ54AHCT240FK

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)
SNJ54AHCT240FK.A	Active	Production	LCCC (FK)   20	55   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-9680601Q2A SNJ54AHCT240FK
SNJ54AHCT240J	Active	Production	CDIP (J)   20	20   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-9680601QR A SNJ54AHCT240J
SNJ54AHCT240J.A	Active	Production	CDIP (J)   20	20   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-9680601QR A SNJ54AHCT240J
SNJ54AHCT240W	Active	Production	CFP (W)   20	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-9680601QS A SNJ54AHCT240W
SNJ54AHCT240W.A	Active	Production	CFP (W)   20	25   TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-9680601QS A SNJ54AHCT240W

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

<sup>(2)</sup> **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.

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

<sup>(4)</sup> **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.

<sup>(5)</sup> **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.

<sup>(6)</sup> **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.

**Important Information and Disclaimer:** The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

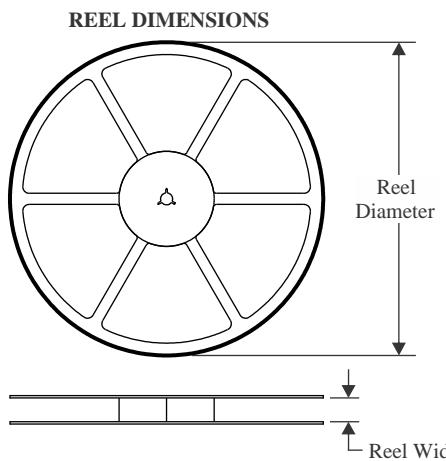
In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

**OTHER QUALIFIED VERSIONS OF SN54AHCT240, SN74AHCT240 :**

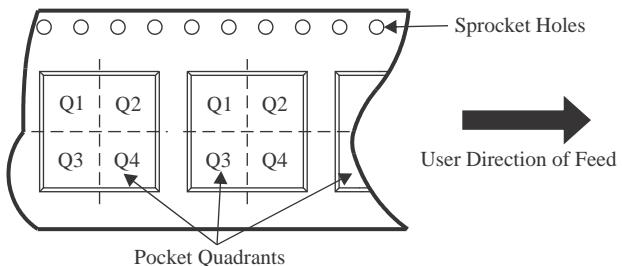
- Catalog : [SN74AHCT240](#)
- Automotive : [SN74AHCT240-Q1](#), [SN74AHCT240-Q1](#)
- Military : [SN54AHCT240](#)

**NOTE: Qualified Version Definitions:**

- Catalog - TI's standard catalog product
- Automotive - Q100 devices qualified for high-reliability automotive applications targeting zero defects
- Military - QML certified for Military and Defense Applications

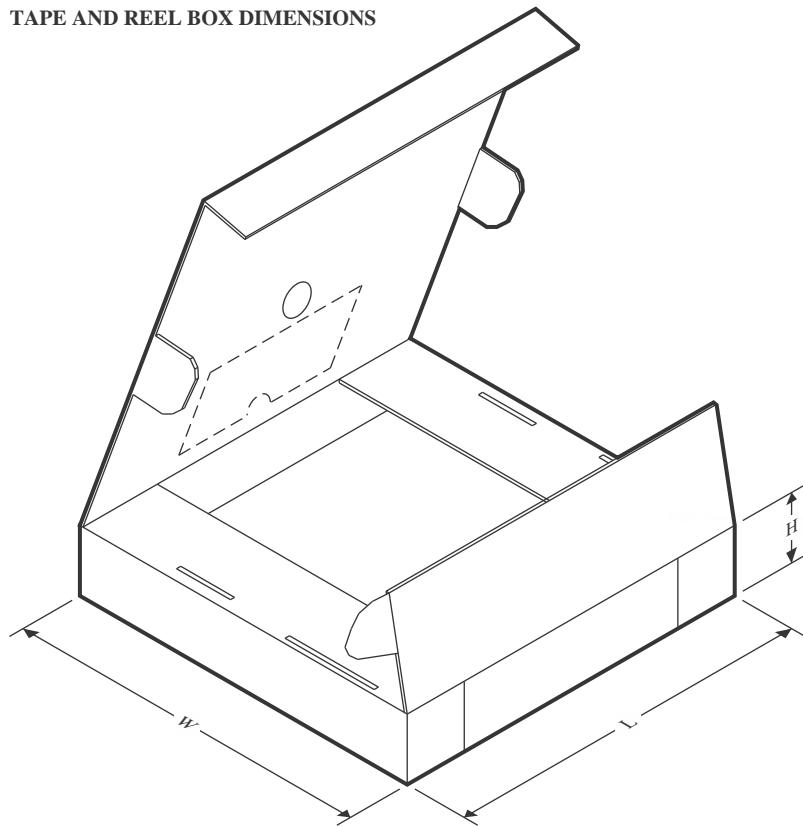
**TAPE AND REEL INFORMATION**


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**


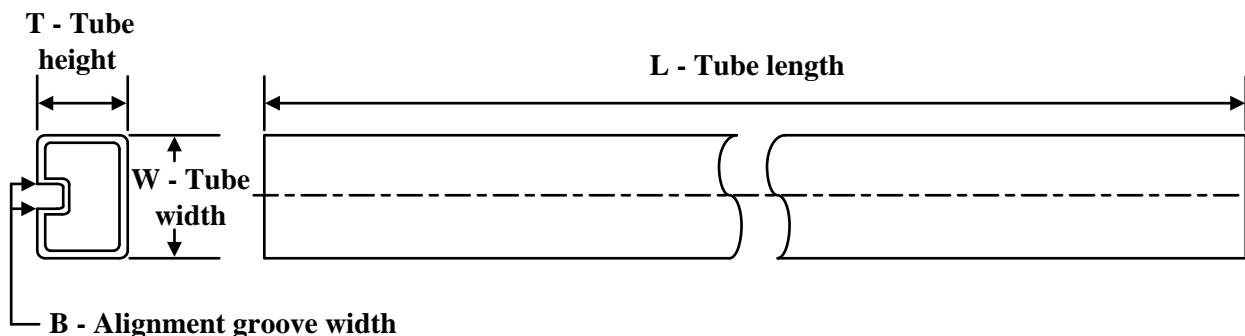
\*All dimensions are nominal

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
SN74AHCT240DBR	SSOP	DB	20	2000	330.0	16.4	8.2	7.5	2.5	12.0	16.0	Q1
SN74AHCT240DGSR	VSSOP	DGS	20	5000	330.0	16.4	5.4	5.4	1.45	8.0	16.0	Q1
SN74AHCT240DWR	SOIC	DW	20	2000	330.0	24.4	10.9	13.3	2.7	12.0	24.0	Q1
SN74AHCT240DWR	SOIC	DW	20	2000	330.0	24.4	10.8	13.3	2.7	12.0	24.0	Q1
SN74AHCT240NSR	SOP	NS	20	2000	330.0	24.4	8.4	13.0	2.5	12.0	24.0	Q1
SN74AHCT240PWR	TSSOP	PW	20	2000	330.0	16.4	6.95	7.0	1.4	8.0	16.0	Q1
SN74AHCT240RKS	VQFN	RKS	20	3000	180.0	12.4	2.8	4.8	1.2	4.0	12.0	Q1

**TAPE AND REEL BOX DIMENSIONS**


\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74AHCT240DBR	SSOP	DB	20	2000	353.0	353.0	32.0
SN74AHCT240DGSR	VSSOP	DGS	20	5000	353.0	353.0	32.0
SN74AHCT240DWR	SOIC	DW	20	2000	356.0	356.0	45.0
SN74AHCT240DWR	SOIC	DW	20	2000	356.0	356.0	45.0
SN74AHCT240NSR	SOP	NS	20	2000	356.0	356.0	45.0
SN74AHCT240PWR	TSSOP	PW	20	2000	353.0	353.0	32.0
SN74AHCT240RKS	VQFN	RKS	20	3000	210.0	185.0	35.0

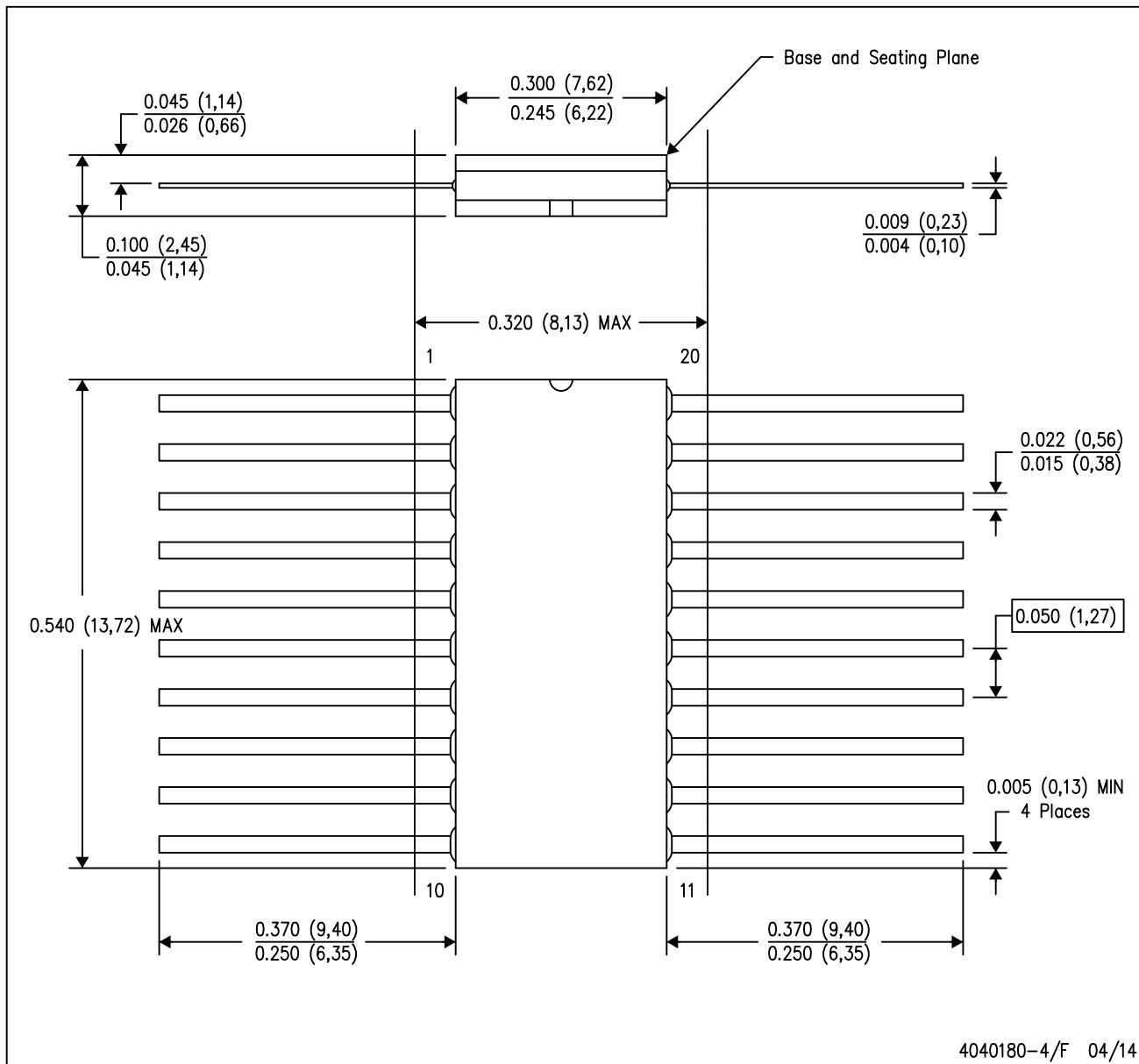
**TUBE**


\*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T ( $\mu$ m)	B (mm)
5962-9680601Q2A	FK	LCCC	20	55	506.98	12.06	2030	NA
5962-9680601QSA	W	CFP	20	25	506.98	26.16	6220	NA
SN74AHCT240N	N	PDIP	20	20	506	13.97	11230	4.32
SN74AHCT240N.A	N	PDIP	20	20	506	13.97	11230	4.32
SNJ54AHCT240FK	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ54AHCT240FK.A	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ54AHCT240W	W	CFP	20	25	506.98	26.16	6220	NA
SNJ54AHCT240W.A	W	CFP	20	25	506.98	26.16	6220	NA

W (R-GDFP-F20)

CERAMIC DUAL FLATPACK



NOTES:

- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. This package can be hermetically sealed with a ceramic lid using glass frit.
- D. Index point is provided on cap for terminal identification only.
- E. Falls within Mil-Std 1835 GDFP2-F20

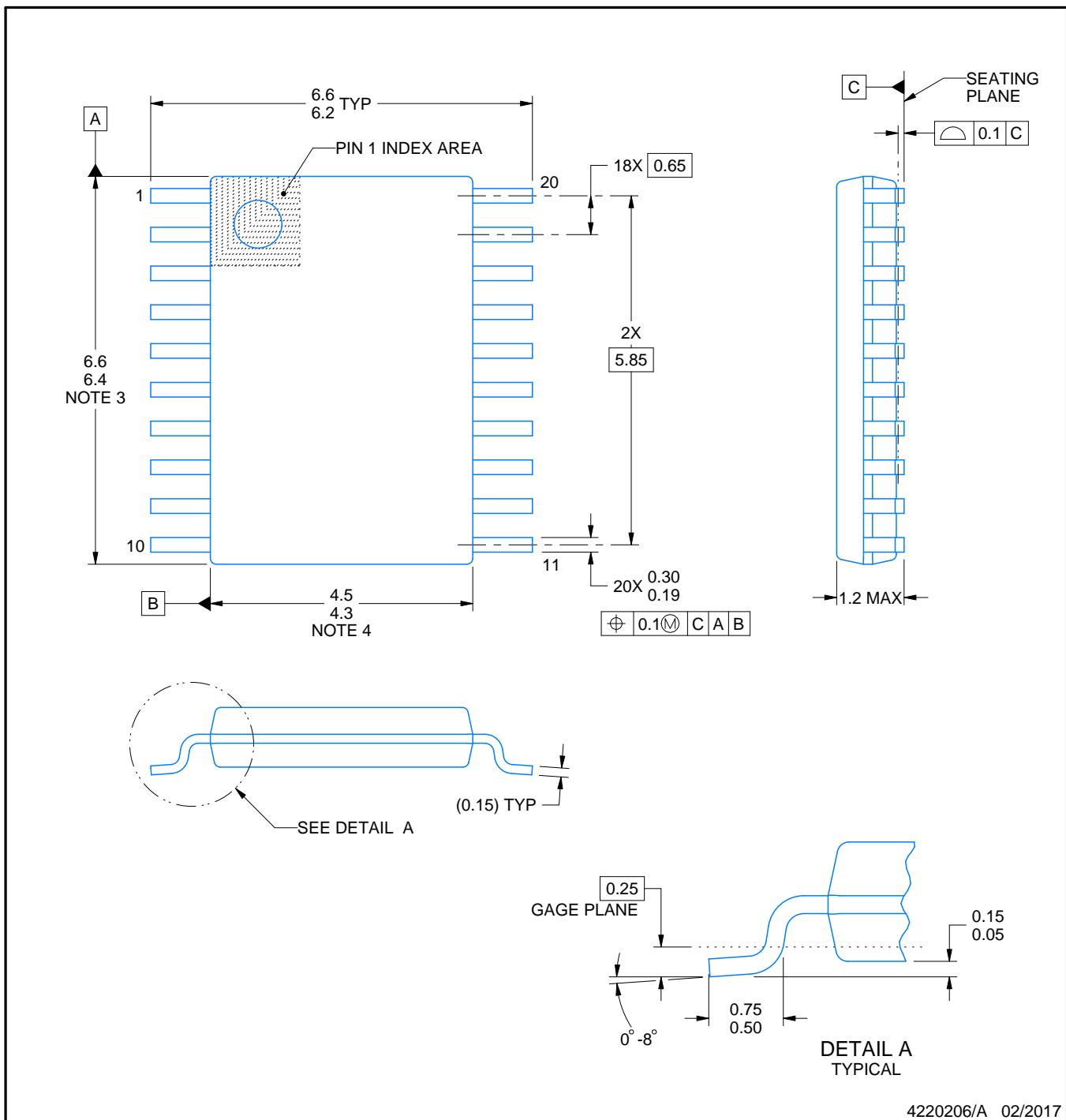
## PACKAGE OUTLINE

**PW0020A**



## **TSSOP - 1.2 mm max height**

## SMALL OUTLINE PACKAGE



## NOTES:

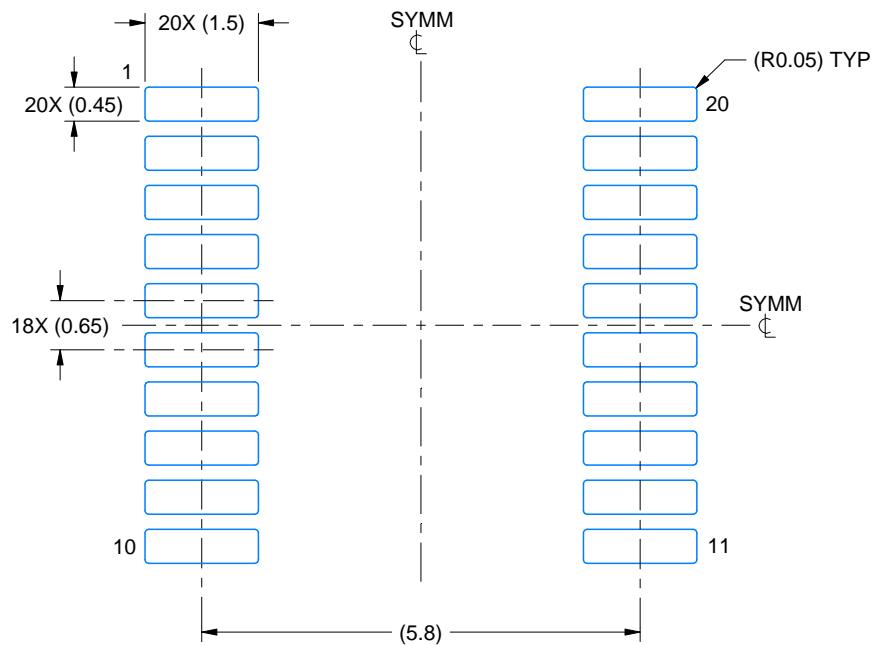
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm per side.
5. Reference JEDEC registration MO-153.

## EXAMPLE BOARD LAYOUT

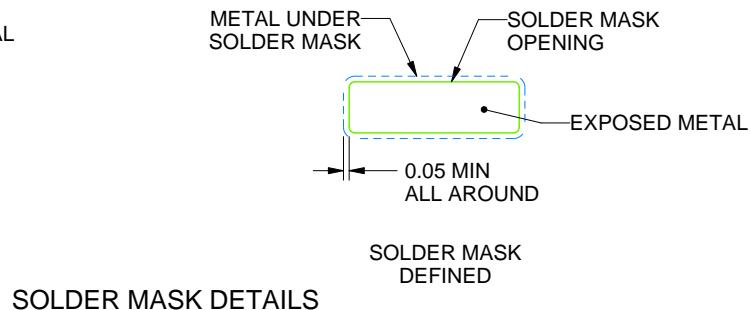
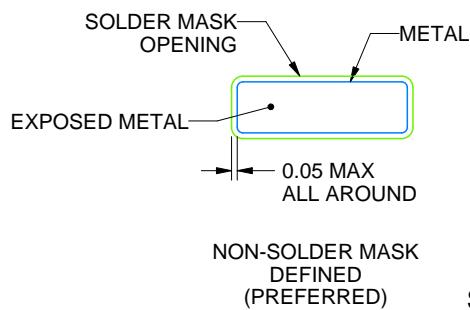
**PW0020A**

## **TSSOP - 1.2 mm max height**

## SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE  
EXPOSED METAL SHOWN  
SCALE: 10X



4220206/A 02/2017

#### NOTES: (continued)

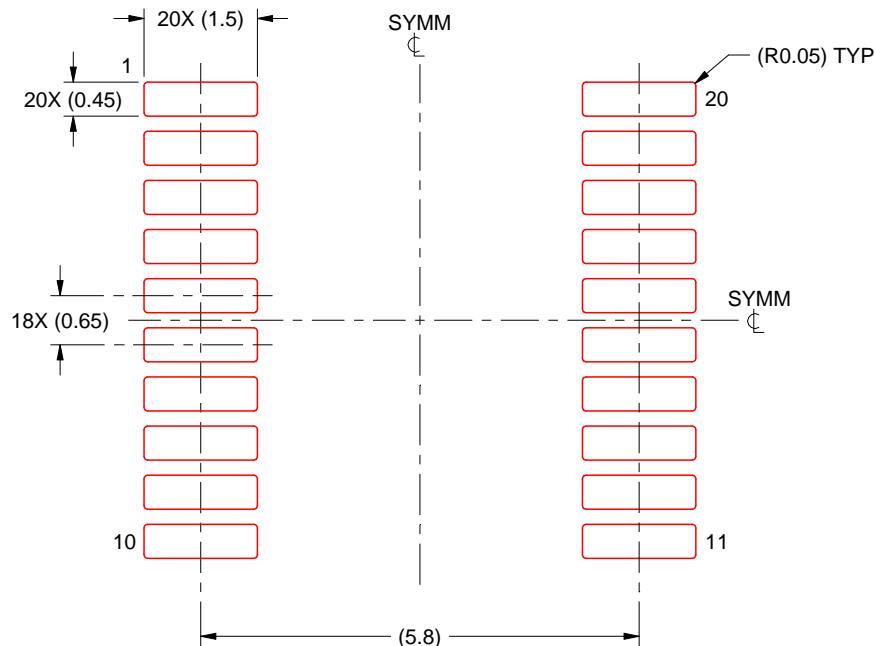
6. Publication IPC-7351 may have alternate designs.
7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

PW0020A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE: 10X

4220206/A 02/2017

NOTES: (continued)

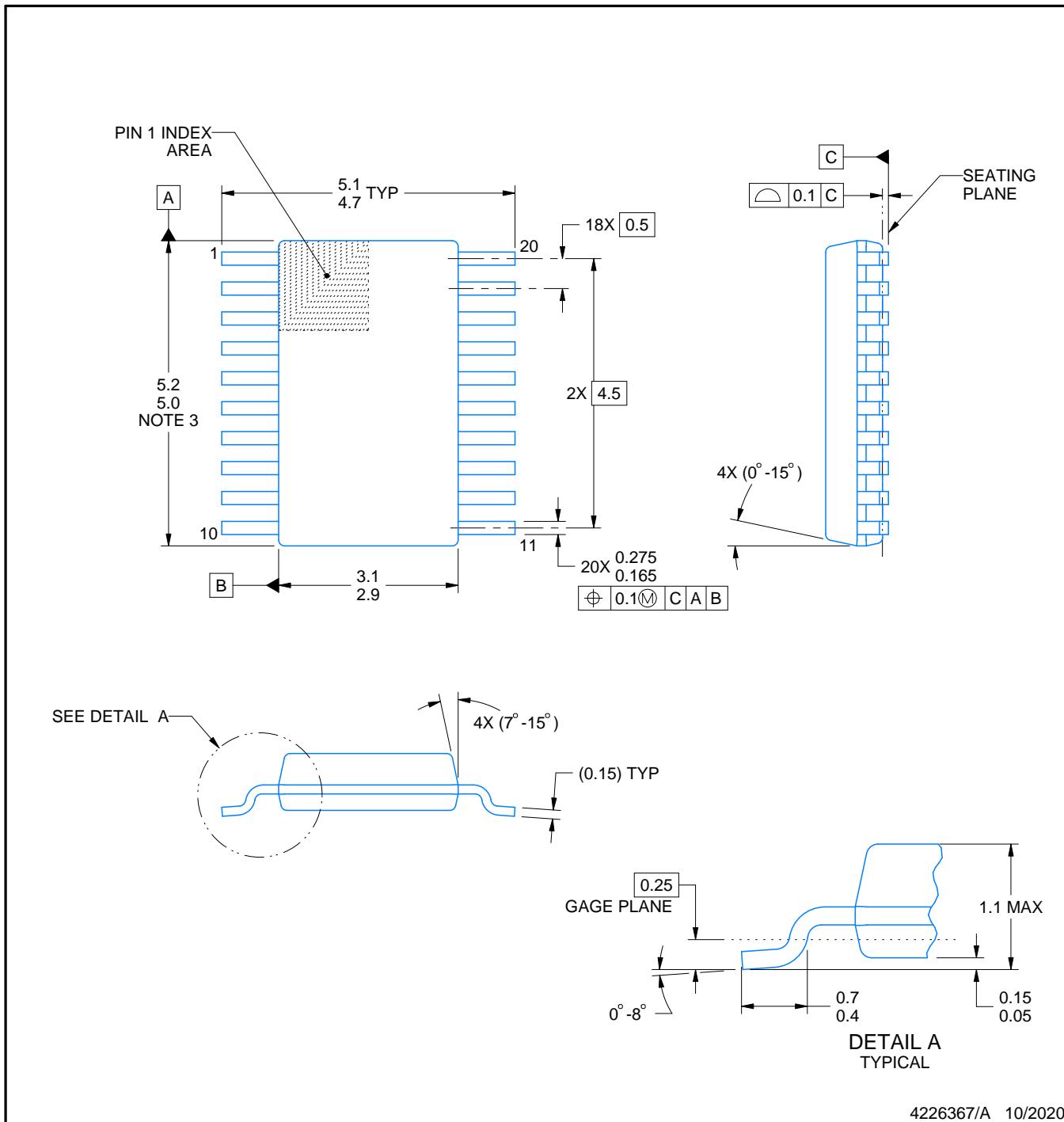
8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
9. Board assembly site may have different recommendations for stencil design.

# PACKAGE OUTLINE

DGS0020A

VSSOP - 1.1 mm max height

SMALL OUTLINE PACKAGE



NOTES:

PowerPAD is a trademark of Texas Instruments.

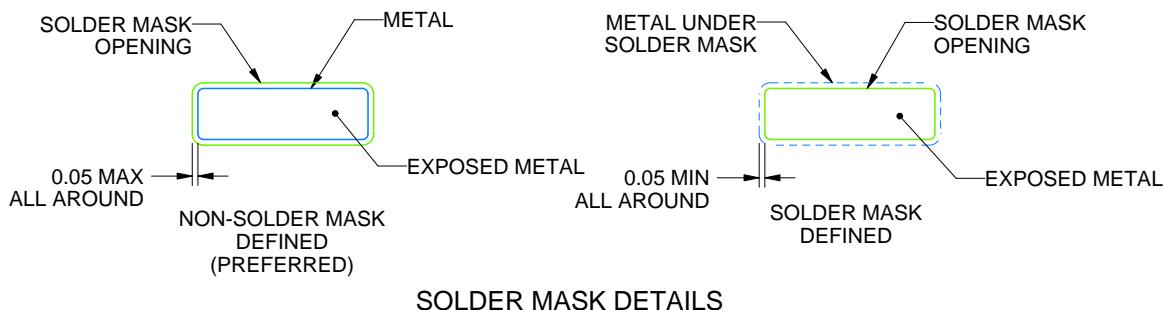
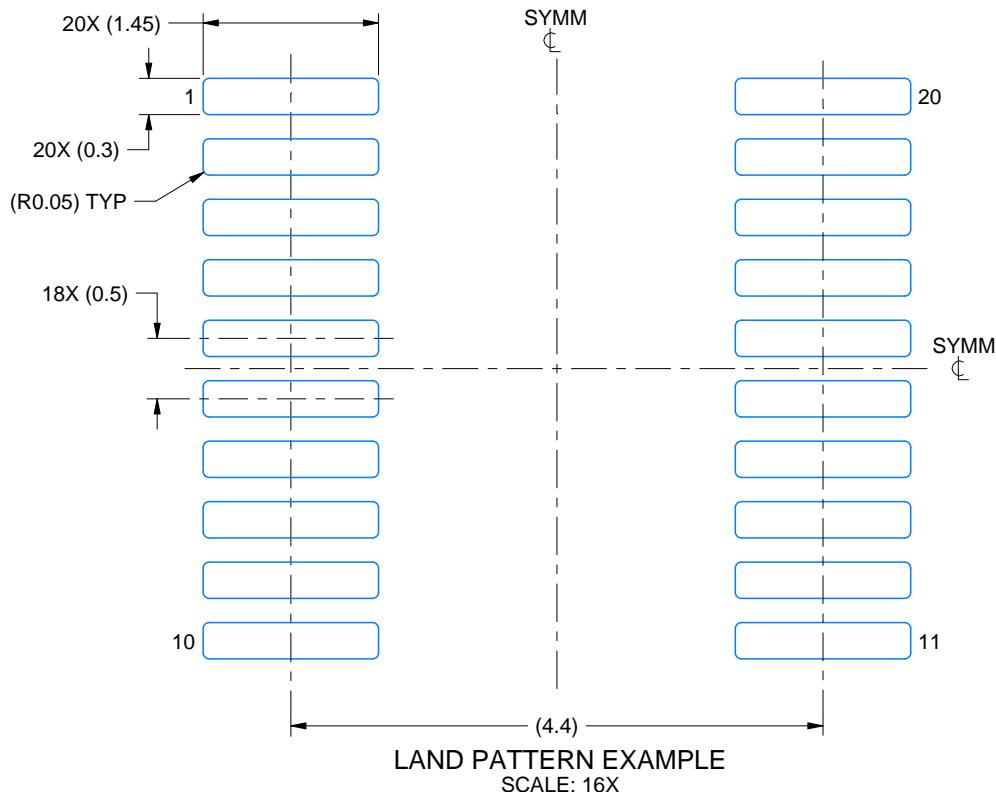
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. No JEDEC registration as of September 2020.
5. Features may differ or may not be present.

# EXAMPLE BOARD LAYOUT

DGS0020A

VSSOP - 1.1 mm max height

SMALL OUTLINE PACKAGE



4226367/A 10/2020

NOTES: (continued)

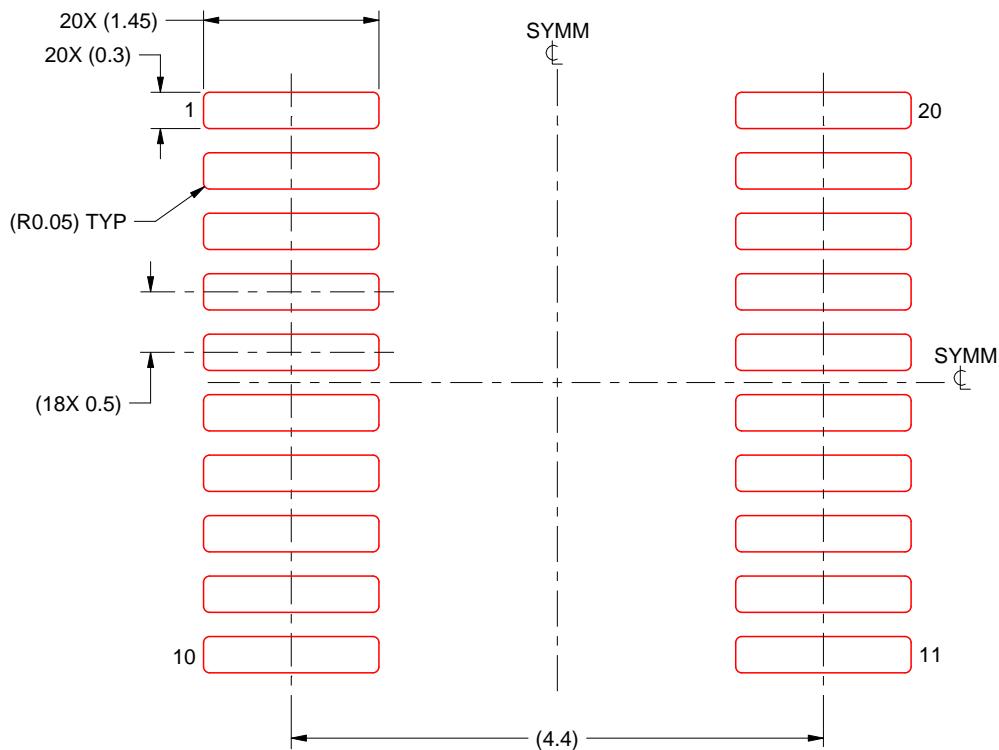
6. Publication IPC-7351 may have alternate designs.
7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.
8. This package is designed to be soldered to a thermal pad on the board. For more information, see Texas Instruments literature numbers SLMA002 ([www.ti.com/lit/slma002](http://www.ti.com/lit/slma002)) and SLMA004 ([www.ti.com/lit/slma004](http://www.ti.com/lit/slma004)).
9. Size of metal pad may vary due to creepage requirement.
10. Vias are optional depending on application, refer to device data sheet. It is recommended that vias under paste be filled, plugged or tented.

# EXAMPLE STENCIL DESIGN

DGS0020A

VSSOP - 1.1 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE: 16X

4226367/A 10/2020

NOTES: (continued)

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

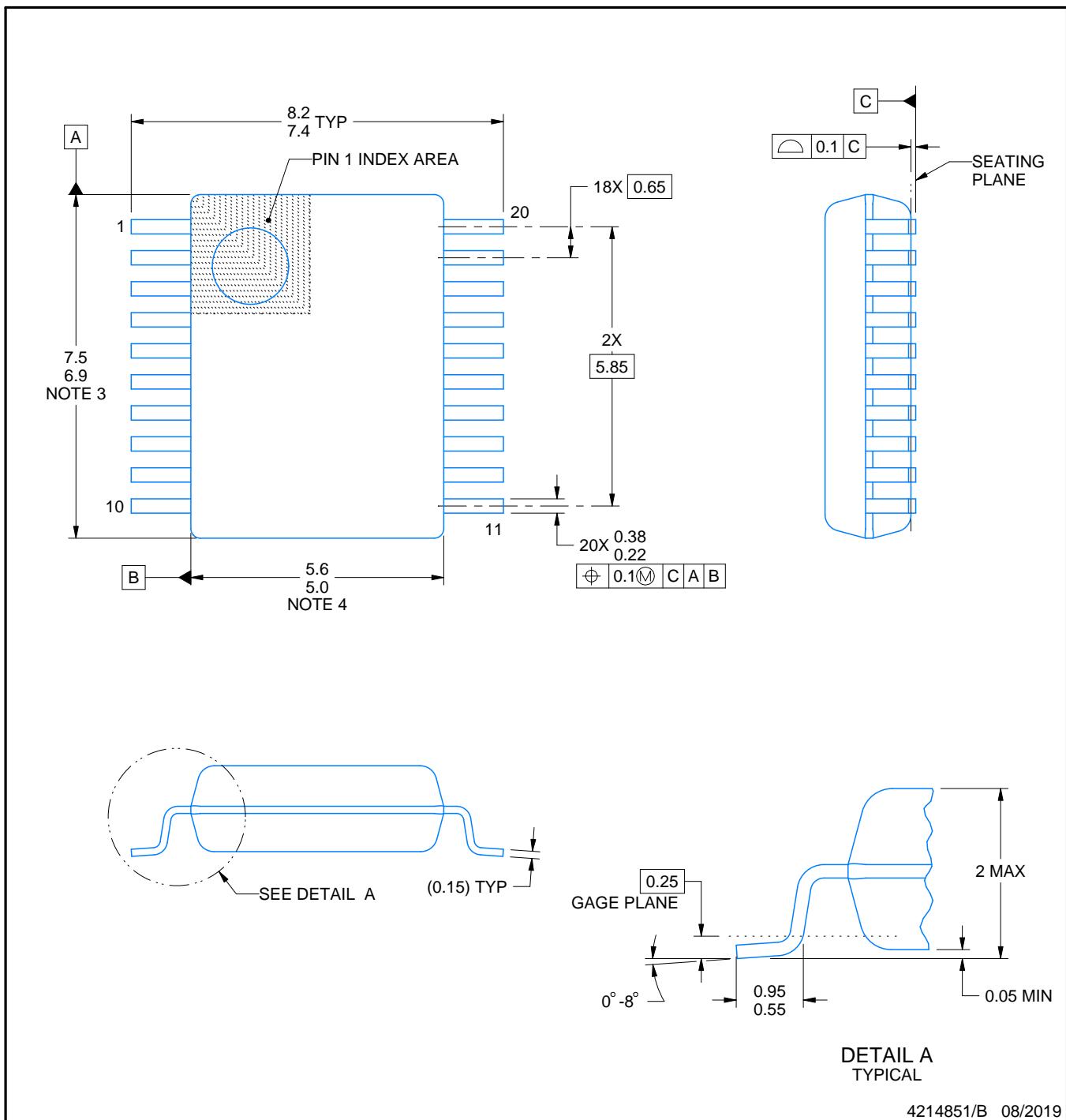
# PACKAGE OUTLINE

DB0020A



SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



## NOTES:

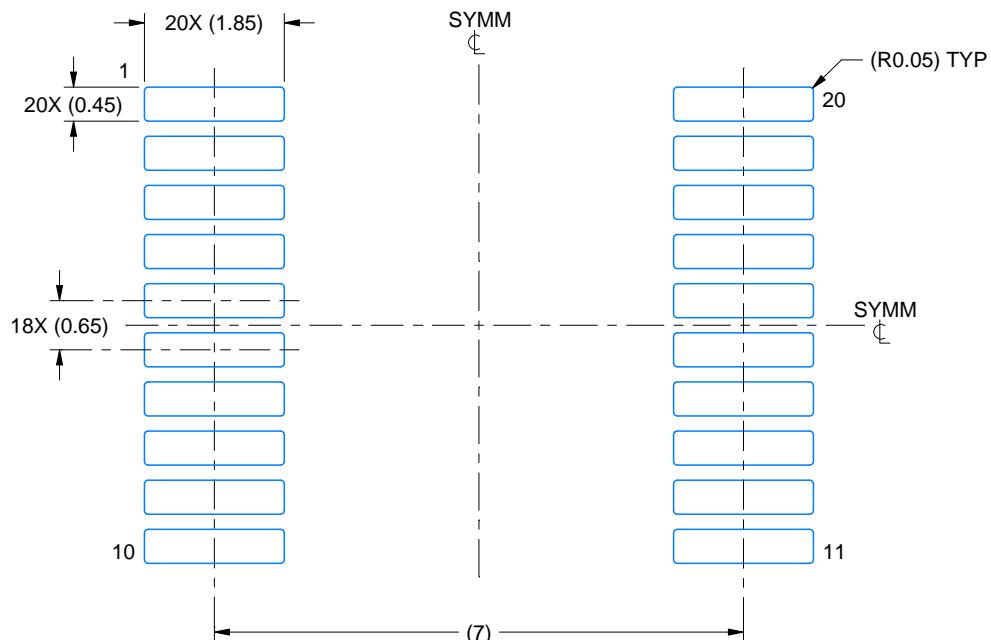
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm per side.
5. Reference JEDEC registration MO-150.

# EXAMPLE BOARD LAYOUT

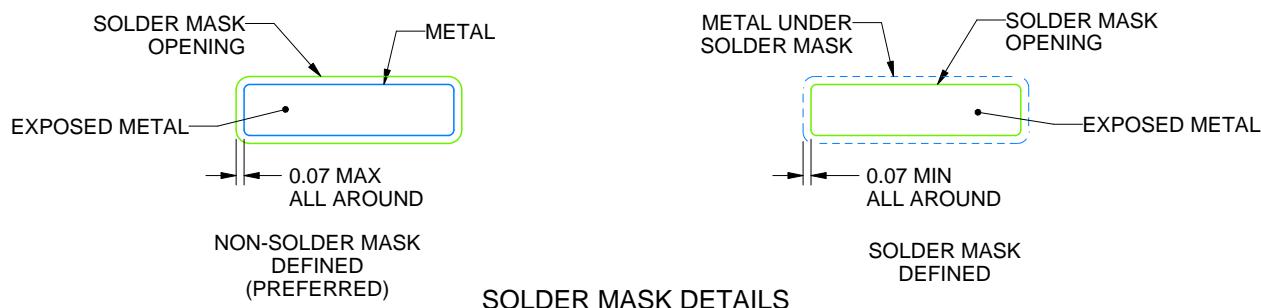
DB0020A

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



LAND PATTERN EXAMPLE  
EXPOSED METAL SHOWN  
SCALE: 10X



SOLDER MASK DETAILS

4214851/B 08/2019

NOTES: (continued)

6. Publication IPC-7351 may have alternate designs.

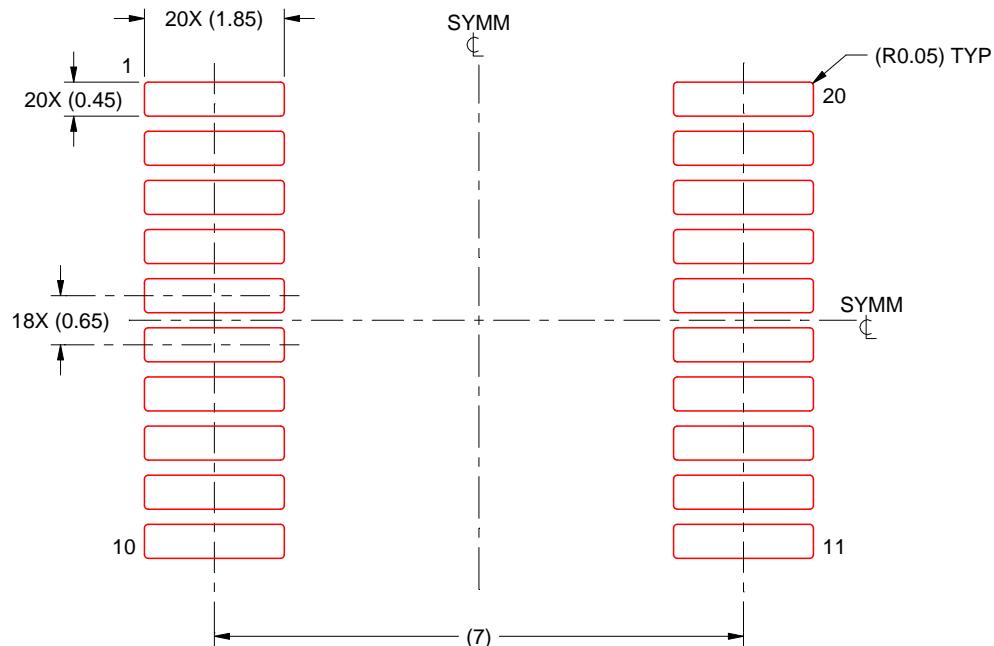
7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

DB0020A

SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE: 10X

4214851/B 08/2019

NOTES: (continued)

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

## GENERIC PACKAGE VIEW

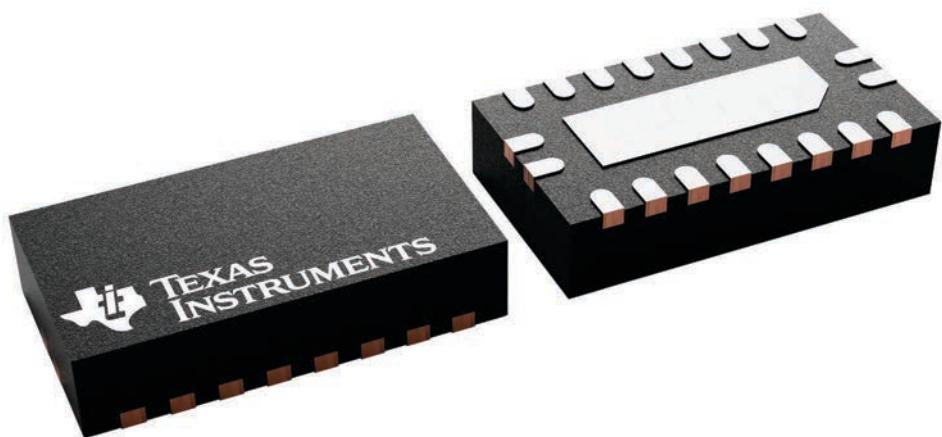
**RKS 20**

**VQFN - 1 mm max height**

**2.5 x 4.5, 0.5 mm pitch**

**PLASTIC QUAD FLATPACK - NO LEAD**

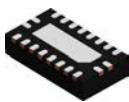
This image is a representation of the package family, actual package may vary.  
Refer to the product data sheet for package details.



4226872/A

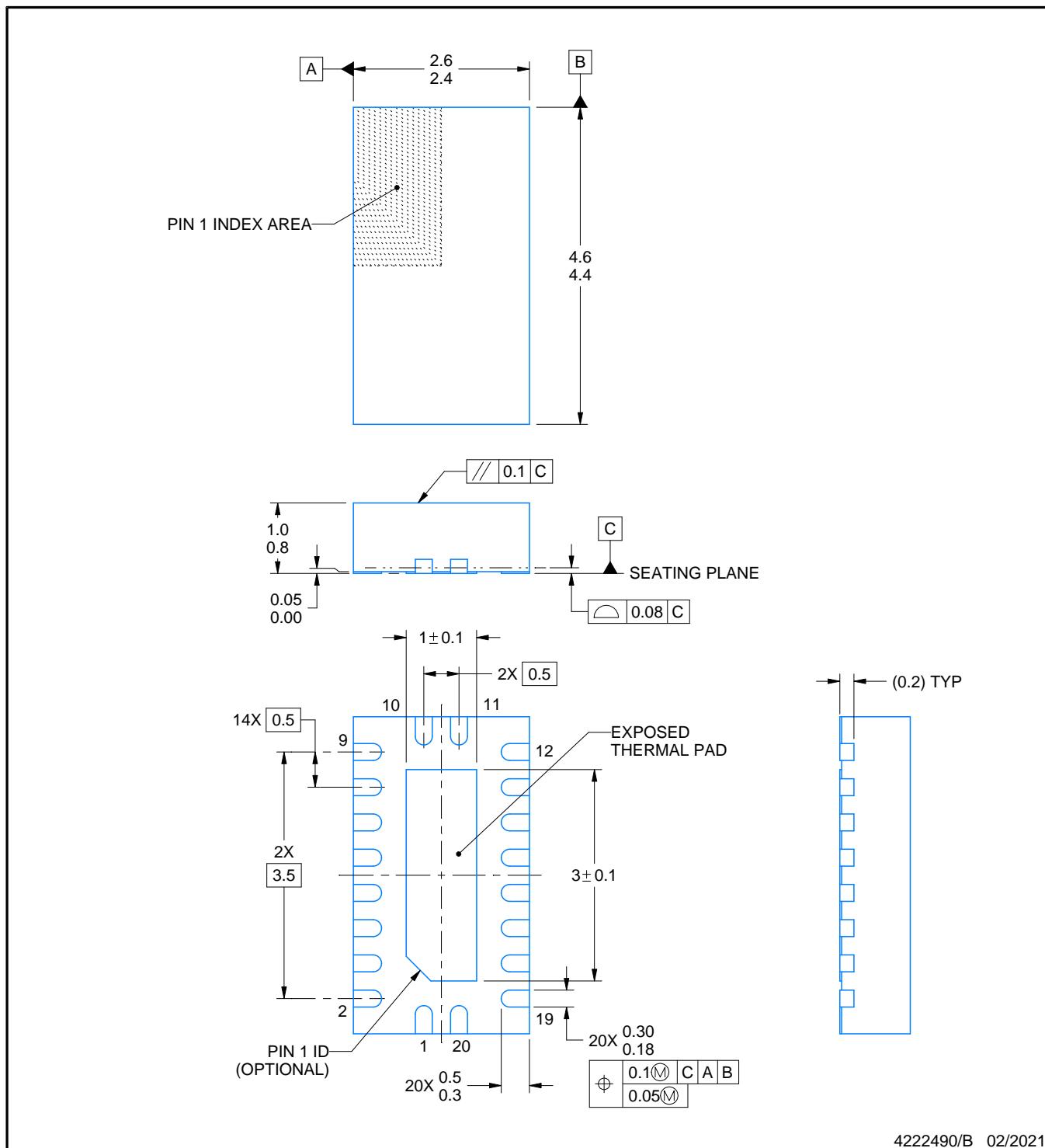
## PACKAGE OUTLINE

**RKS0020A**



## **VQFN - 1 mm max height**

## PLASTIC QUAD FLATPACK - NO LEAD



4222490/B 02/2021

## NOTES:

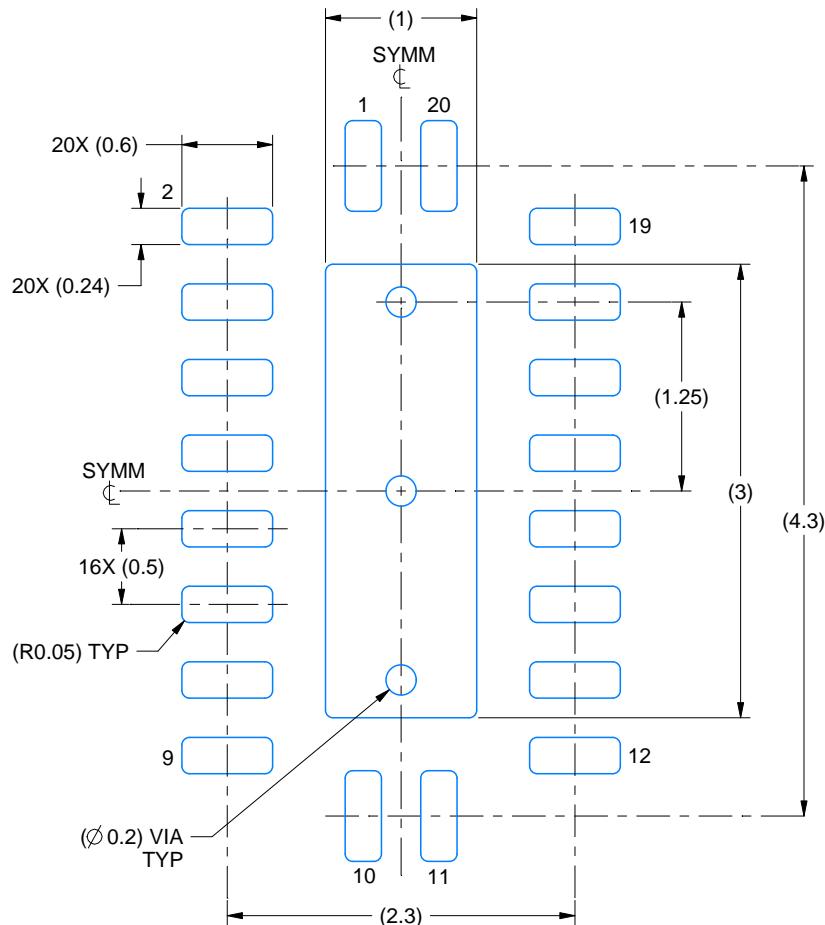
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. The package thermal pad must be soldered to the printed circuit board for thermal and mechanical performance.

## EXAMPLE BOARD LAYOUT

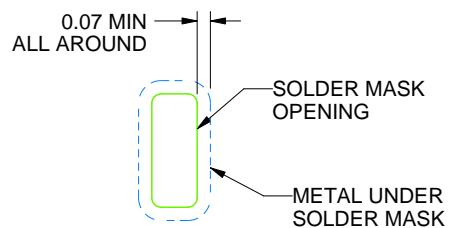
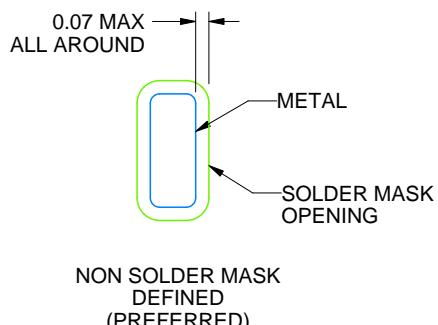
**RKS0020A**

## VQFN - 1 mm max height

#### PLASTIC QUAD FLATPACK - NO LEAD



## LAND PATTERN EXAMPLE



## SOLDER MASK DETAILS

4222490/B 02/2021

#### NOTES: (continued)

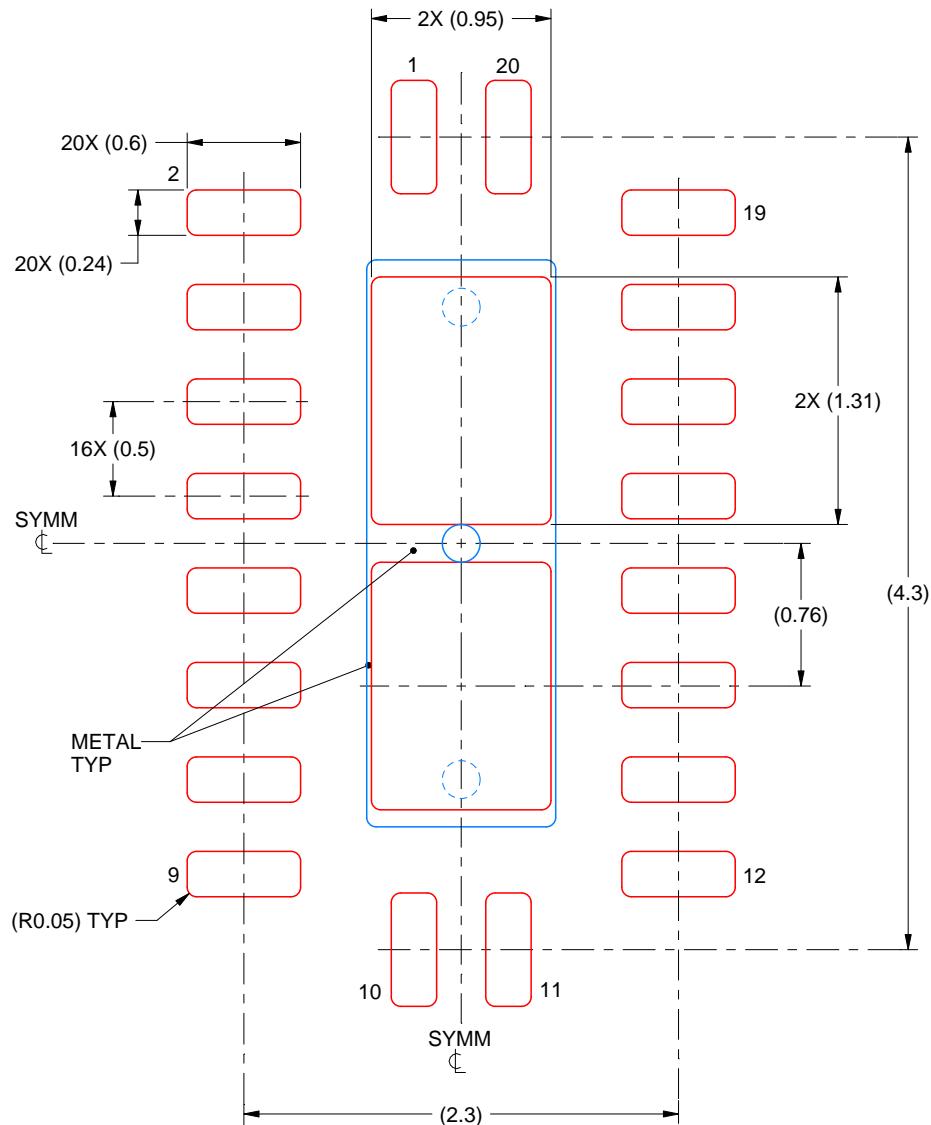
4. This package is designed to be soldered to a thermal pad on the board. For more information, see Texas Instruments literature number SLUA271 ([www.ti.com/lit/slua271](http://www.ti.com/lit/slua271)).
5. Vias are optional depending on application, refer to device data sheet. If some or all are implemented, recommended via locations are shown.

# EXAMPLE STENCIL DESIGN

RKS0020A

VQFN - 1 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL

EXPOSED PAD  
83% PRINTED SOLDER COVERAGE BY AREA  
SCALE:25X

4222490/B 02/2021

NOTES: (continued)

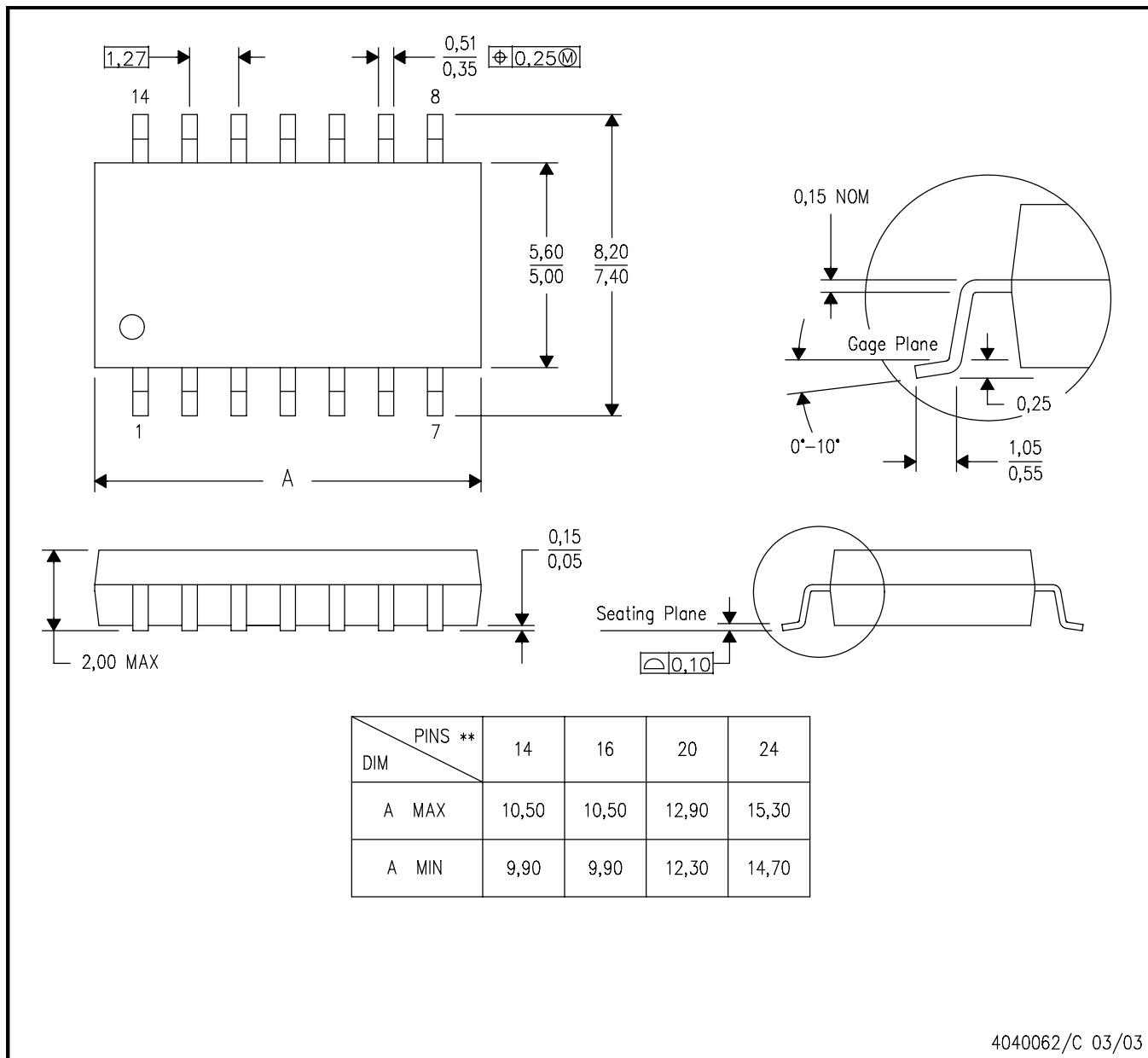
6. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.

## MECHANICAL DATA

## NS (R-PDSO-G\*\*)

## PLASTIC SMALL-OUTLINE PACKAGE

**14-PINS SHOWN**



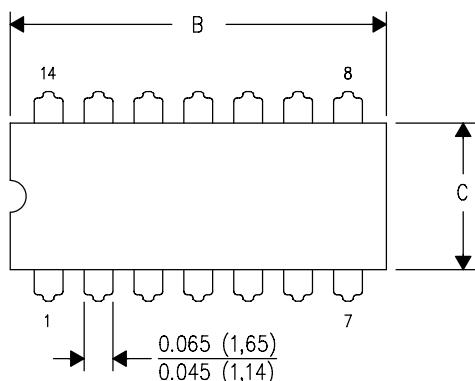
NOTES:

- 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, not to exceed 0,15.

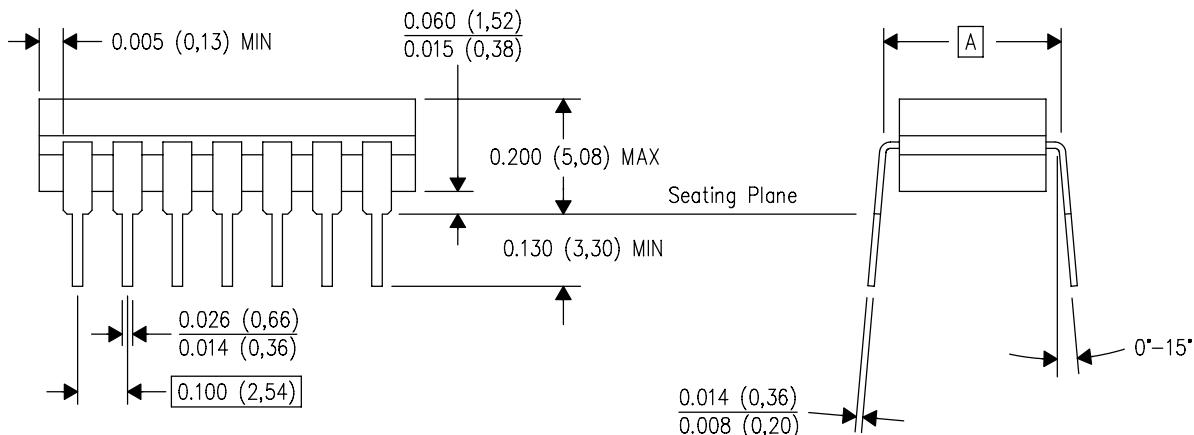
J (R-GDIP-T\*\*)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



PINS ** DIM	14	16	18	20
A	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC
B MAX	0.785 (19,94)	.840 (21,34)	0.960 (24,38)	1.060 (26,92)
B MIN	—	—	—	—
C MAX	0.300 (7,62)	0.300 (7,62)	0.310 (7,87)	0.300 (7,62)
C MIN	0.245 (6,22)	0.245 (6,22)	0.220 (5,59)	0.245 (6,22)



4040083/F 03/03

NOTES: A. All linear dimensions are in inches (millimeters).  
B. This drawing is subject to change without notice.  
C. This package is hermetically sealed with a ceramic lid using glass frit.  
D. Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.  
E. Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

# GENERIC PACKAGE VIEW

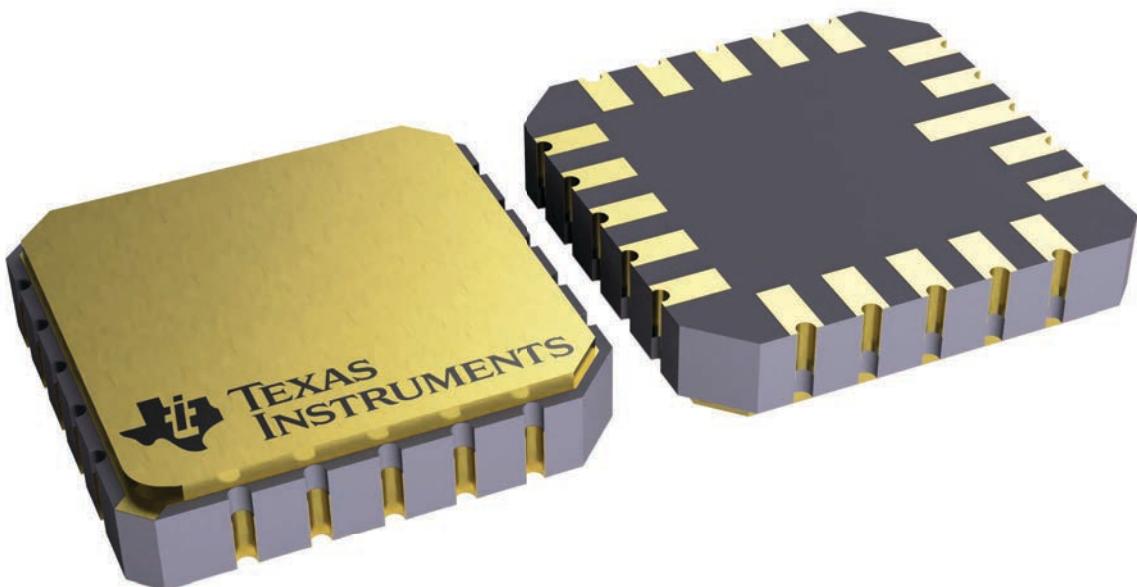
**FK 20**

**LCCC - 2.03 mm max height**

**8.89 x 8.89, 1.27 mm pitch**

**LEADLESS CERAMIC CHIP CARRIER**

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

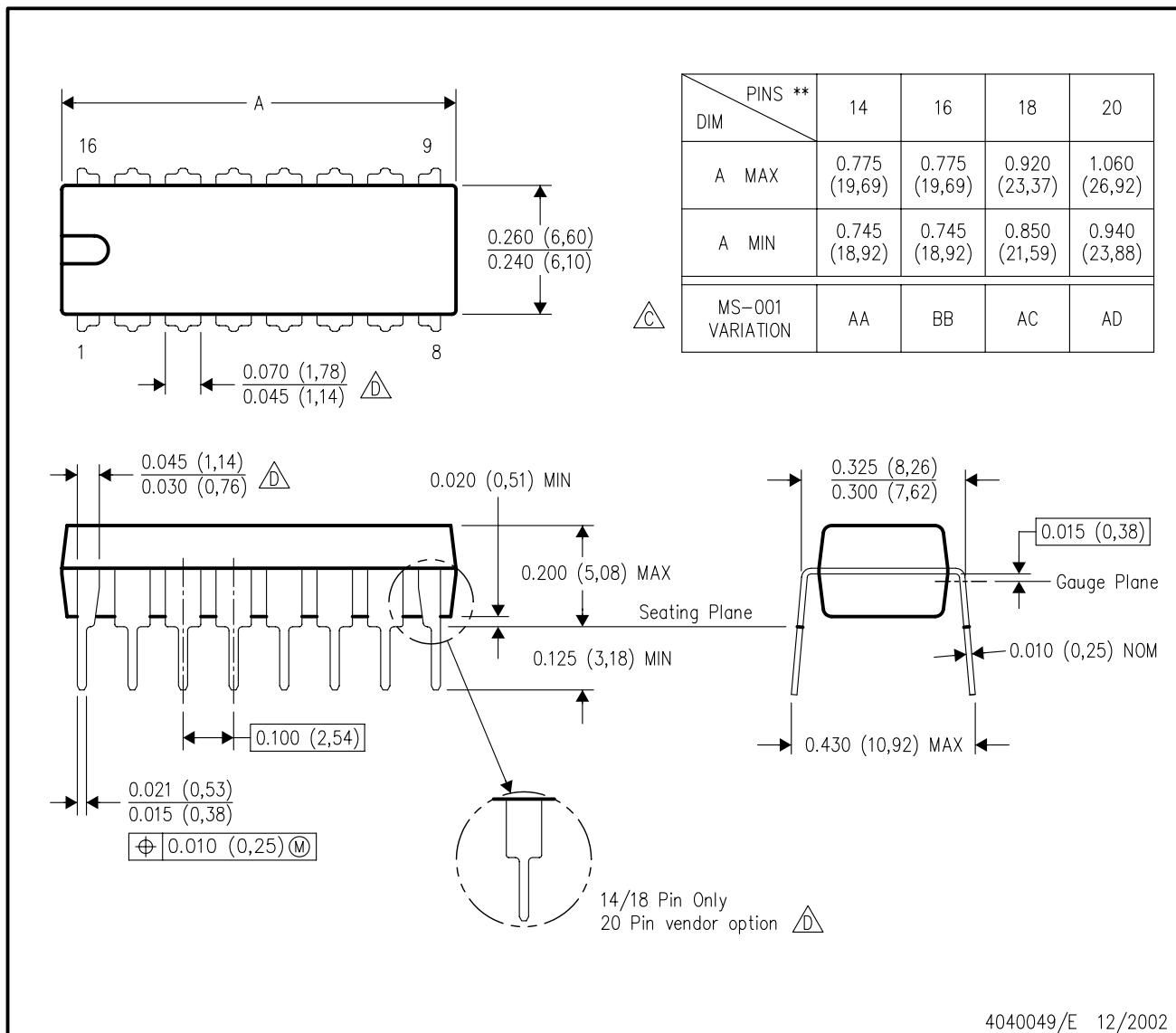


4229370VA\

## N (R-PDIP-T\*\*)

16 PINS SHOWN

## PLASTIC DUAL-IN-LINE PACKAGE



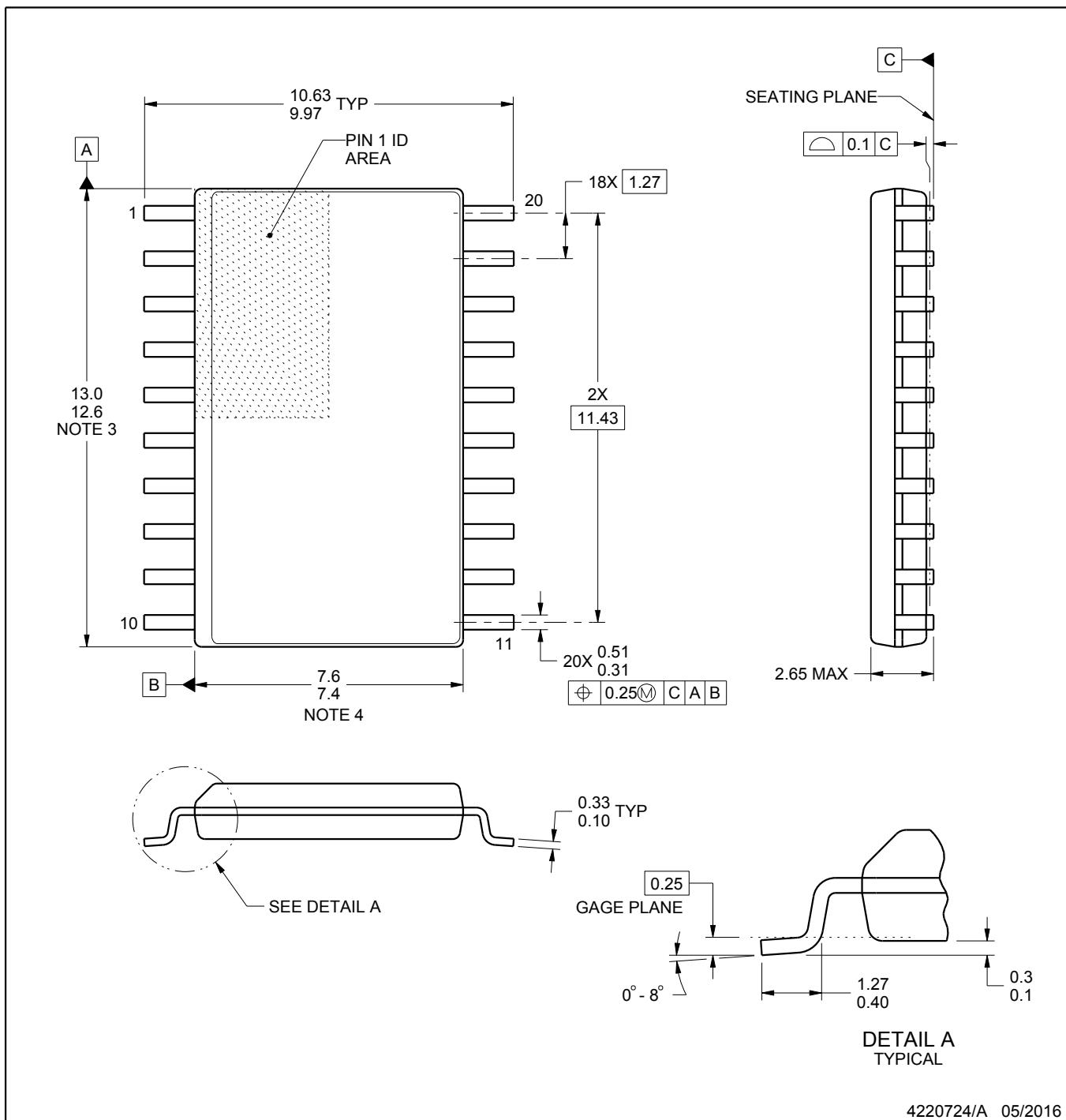
# PACKAGE OUTLINE

DW0020A



SOIC - 2.65 mm max height

SOIC



## NOTES:

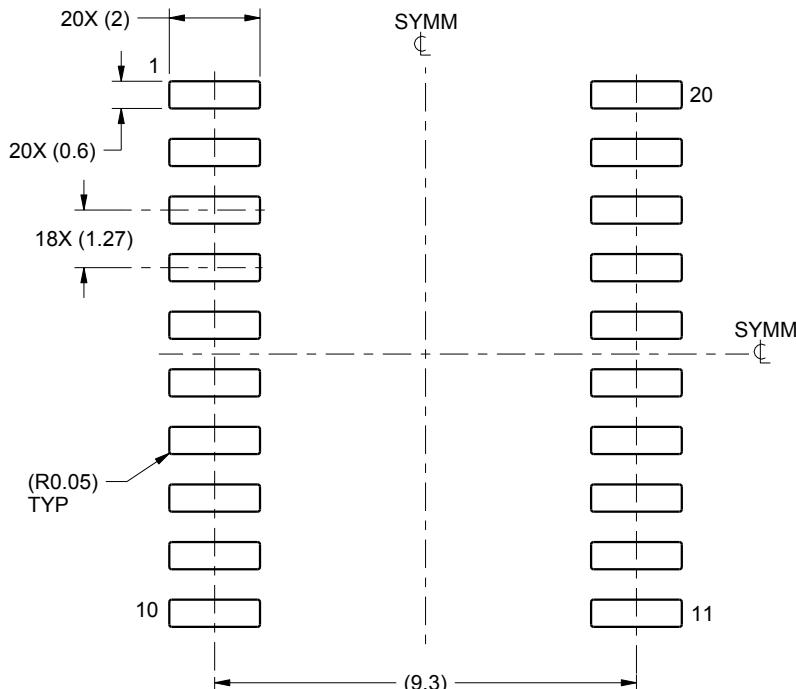
1. All linear dimensions are in millimeters. Dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.43 mm per side.
5. Reference JEDEC registration MS-013.

# EXAMPLE BOARD LAYOUT

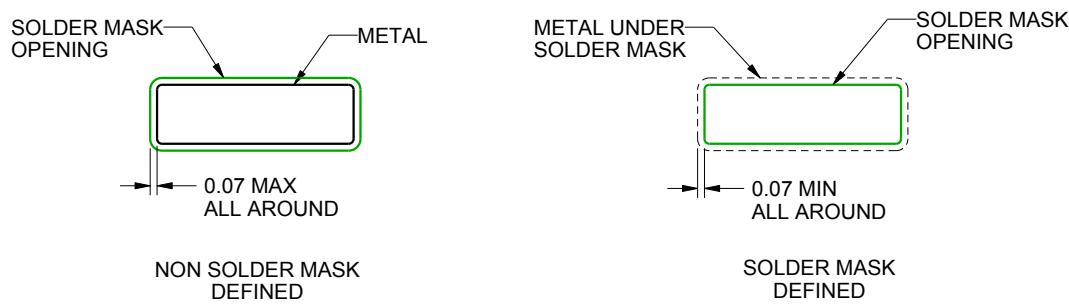
DW0020A

SOIC - 2.65 mm max height

SOIC



LAND PATTERN EXAMPLE  
SCALE:6X



SOLDER MASK DETAILS

4220724/A 05/2016

NOTES: (continued)

6. Publication IPC-7351 may have alternate designs.

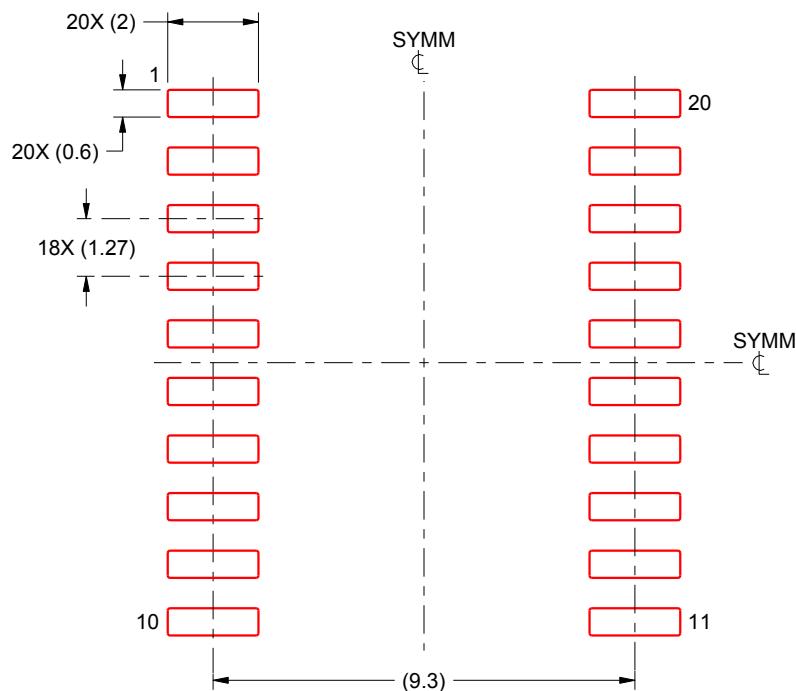
7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# EXAMPLE STENCIL DESIGN

DW0020A

SOIC - 2.65 mm max height

SOIC



SOLDER PASTE EXAMPLE  
BASED ON 0.125 mm THICK STENCIL  
SCALE:6X

4220724/A 05/2016

NOTES: (continued)

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

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