SNx4HC573A Octal Transparent D-Type Latches With 3-State Outputs

1 Features

- Wide Operating Voltage Range from 2 V to 6 V
- High-Current 3-State Outputs Drive Bus Lines Directly up to 15 LSTTL Loads
- Low Power Consumption: 80-µA Maximum I_{CC}
- Typical t_{pd} = 21 ns
- ±6-mA Output Drive at 5 V
- Low Input Current: 1 µA (Maximum)
- Bus-Structured Pinout

2 Applications

- Buffer Registers
- Bidirectional Bus Drivers
- Working Registers

3 Description

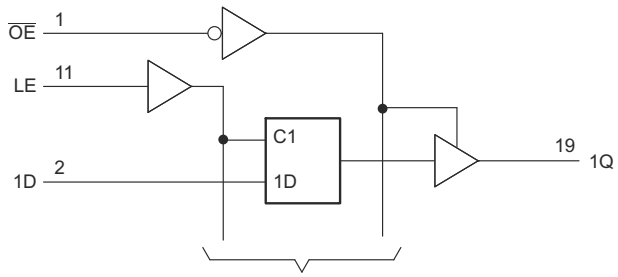
The SNx4HC573A devices are octal transparent D-type latches that feature 3-state outputs designed specifically for driving highly capacitive or relatively low-impedance loads. They are particularly suitable for implementing buffer registers, I/O ports, bidirectional bus drivers, and working registers.

While the latch-enable (LE) input is high, the Q outputs respond to the data (D) inputs. When LE is low, the outputs are latched to retain the data that was set up.

Device Information(1)

PART NUMBER	PACKAGE	BODY SIZE (NOM)
SN54HC573AJ	CDIP (20)	26.92 mm × 6.92 mm
SN54HC573AW	CFP (20)	13.72 mm × 6.92 mm
SN54HC573AFK	LCCC (20)	8.89 mm × 8.89 mm
SN74HC573AN	PDIP (20)	25.40 mm × 6.35 mm
SN74HC573ADW	SOIC (20)	12.80 mm × 7.50 mm
SN74HC573ADB	SSOP (20)	7.20 mm × 5.30 mm
SN74HC573APW	TSSOP (20)	5.00 mm × 4.40 mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.



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Logic Diagram (Positive Logic)

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4 Revision History

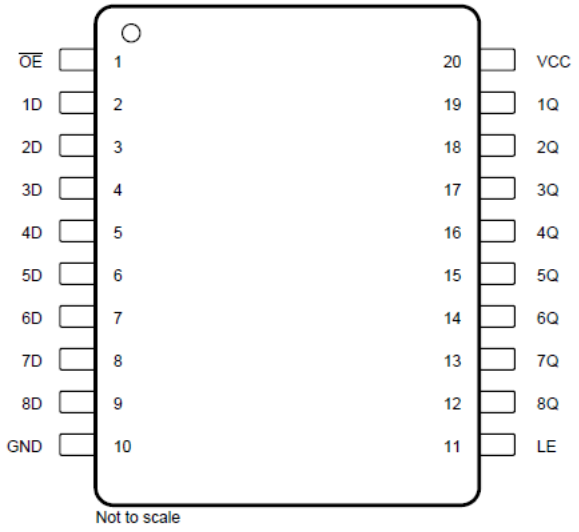
NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Revision E (September 2003) to Revision F (October 2016)	Page
• Added *ESD Ratings* table, *Feature Description* section, *Device Functional Modes*, *Application and Implementation* section, *Power Supply Recommendations* section, *Layout* section, *Device and Documentation Support* section, and *Mechanical, Packaging, and Orderable Information* section	1
• Deleted Ordering Information table; see POA at the end of the data sheet	1
• Changed Package thermal impedance, $R_{\theta JA}$, values from 70 to 92.5 (DB), from 58 to 78.3 (DW), from 69 to 49.1 (N), and from 83 to 101.1 (PW)	5

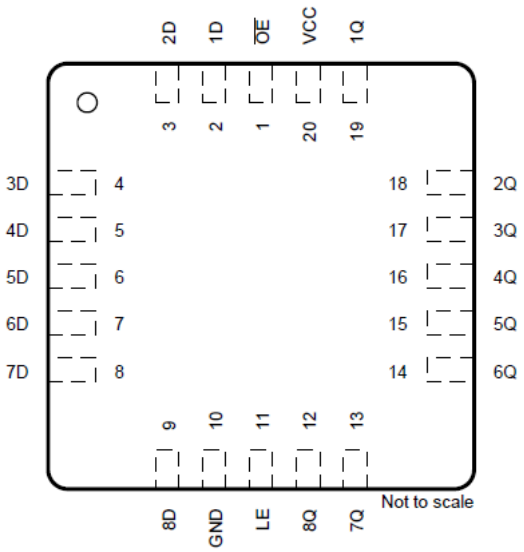
Changes from Revision F (October 2016) to Revision G (April 2022)	Page
• Updated ESD ratings table to modern TI standards	4
• Changed Package thermal impedance, $R_{\theta JA}$, values from 92.5 to 122.7 (DB), from 78.3 to 109.1 (DW), from 49.1 to 84.6 (N), and from 101.1 to 131.8 (PW)	5

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5 Pin Configuration and Functions



DB, DW, J, N, PW, or W Packages
20-Pin SSOP, SOIC, CDIP, PDIP, TSSOP, or CFP
Top View



FK Package
20-Pin LCCC
Top View

Pin Functions

PIN		I/O[1]	DESCRIPTION
NO.	NAME		
1	$\overline{OE}$	I	Output enable
2	1D	I	1D input
3	2D	I	2D input
4	3D	I	3D input
5	4D	I	4D input
6	5D	I	5D input
7	6D	I	6D input
8	7D	I	7D input
9	8D	I	8D input
10	GND	—	Ground
11	LE	I	Latch enable input
12	8Q	O	8Q output
13	7Q	O	7Q output
14	6Q	O	6Q output
15	5Q	O	5Q output
16	4Q	O	4Q output
17	3Q	O	3Q output
18	2Q	O	2Q output
19	1Q	O	1Q output
20	V_{CC}	—	Power pin

(1) Signal Types: I = Input, O = Output, I/O = Input or Output.

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6 Specifications

6.1 Absolute Maximum Ratings

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

			MIN	MAX	UNIT
V_{CC}	Supply voltage		–0.5	7	V
I_{IK}	Input clamp current(2)	$V_I < 0$ or $V_I > V_{CC}$		±20	mA
I_{OK}	Output clamp current(2)	$V_O < 0$ or $V_O > V_{CC}$		±20	mA
I_O	Continuous output current	$V_O = 0$ to V_{CC}		±35	mA
	Continuous current through V_{CC} or GND			±70	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.

6.2 ESD Ratings

			VALUE	UNIT
$V_{(ESD)}$	Electrostatic discharge	Human-body model (HBM), per ANSI/ESDA/JEDEC JS-001(1)	±3500	V
		Charged device model (CDM), per ANSI/ESDA/JEDEC JS-002(2)	±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.

6.3 Recommended Operating Conditions

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

			MIN	NOM	MAX	UNIT
V_{CC}	Supply voltage		2	5	6	V
V_{IH}	High-level input voltage	V_{CC} = 2 V	1.5			V
		V_{CC} = 4.5 V	3.15			
		V_{CC} = 6 V	4.2			
V_{IL}	Low-level input voltage	V_{CC} = 2 V			0.5	V
		V_{CC} = 4.5 V			1.35	
		V_{CC} = 6 V			1.8	
V_I	Input voltage		0		V_{CC}	V
V_O	Output voltage		0		V_{CC}	V
t_t	Input transition (rise and fall) time	V_{CC} = 2 V			1000	ns
		V_{CC} = 4.5 V			500	
		V_{CC} = 6 V			400	
T_A	Operating free-air temperature	SN54HC573A	–55		125	°C
		SN74HC573A	–40		85	

(1) All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation. See the *Implications of Slow or Floating CMOS Inputs* application report (SCBA004).

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6.4 Thermal Information

THERMAL METRIC		SN74HC573A				UNIT
		DW (SOIC)	DB (SSOP)	N (PDIP)	PW (TSSOP)	
		20 PINS	20 PINS	20 PINS	20 PINS	
$R_{\theta JA}$	Junction-to-ambient thermal resistance[1]	109.1	122.7	84.6	131.8	°C/W
$R_{\theta JC\ (top)}$	Junction-to-case (top) thermal resistance	76	81.6	72.5	72.2	°C/W
$R_{\theta JB}$	Junction-to-board thermal resistance	77.6	77.5	65.3	82.8	°C/W
Ψ_{JT}	Junction-to-top characterization parameter	51.5	46.1	55.3	21.5	°C/W
Ψ_{JB}	Junction-to-board characterization parameter	77.1	77.1	65.2	82.4	°C/W
$R_{\theta JC(bot)}$	Junction-to-case (bottom) thermal resistance	N/A	N/A	N/A	N/A	°C/W

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

6.5 Electrical Characteristics

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

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
V_{OH}	$V_I = V_{IH}$ or V_{IL}	I_{OH} = –20 µA	V_{CC} = 2 V	1.9	1.998		V
			V_{CC} = 4.5 V	4.4	4.499		
			V_{CC} = 6 V	5.9	5.999		
		I_{OH} = –6 mA, V_{CC} = 4.5 V	T_A = 25°C	3.98	4.3		
			SN54HC573A	3.7			
			SN74HC573A	3.84			
		I_{OH} = –7.8 mA, V_{CC} = 6 V	T_A = 25°C	5.48	5.8		
			SN54HC573A	5.2			
			SN74HC573A	5.34			
V_{OL}	$V_I = V_{IH}$ or V_{IL}	I_{OL} = 20 µA	V_{CC} = 2 V		0.002	0.1	V
			V_{CC} = 4.5 V		0.001	0.1	
			V_{CC} = 6 V		0.001	0.1	
		I_{OL} = 6 mA, V_{CC} = 4.5 V	T_A = 25°C		0.17	0.26	
			SN54HC573A			0.4	
			SN74HC573A			0.33	
		I_{OL} = 7.8 mA, V_{CC} = 6 V	T_A = 25°C		0.15	0.26	
			SN54HC573A			0.4	
			SN74HC573A			0.33	
I_I	$V_I = V_{CC}$ or 0, V_{CC} = 6 V		T_A = 25°C		±0.1	±100	nA
			SNx4HC573A			±1000	
I_{OZ}	$V_O = V_{CC}$ or 0, V_{CC} = 6 V		T_A = 25°C		±0.01	±0.5	µA
			SN54HC573A			±10	
			SN74HC573A			±5	
I_{CC}	$V_I = V_{CC}$ or 0, I_O = 0, V_{CC} = 6 V		T_A = 25°C			8	µA
			SN54HC573A			160	
			SN74HC573A			80	
C_i	V_{CC} = 2 V to 6 V				3	10	pF

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

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
C_{pd}	Power dissipation capacitance per latch	T_A = 25°C, no load		50		pF

6.6 Timing Requirements

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

				MIN	NOM	MAX	UNIT
t_w	Pulse duration, LE high	V_{CC} = 2 V	T_A = 25°C	80			ns
			SN54HC573A	120			
			SN74HC573A	100			
		V_{CC} = 4.5 V	T_A = 25°C	16			
			SN54HC573A	24			
			SN74HC573A	20			
		V_{CC} = 6 V	T_A = 25°C	14			
			SN54HC573A	20			
			SN74HC573A	17			
t_{su}	Setup time, data before LE↓	V_{CC} = 2 V	T_A = 25°C	50			ns
			SN54HC573A	75			
			SN74HC573A	63			
		V_{CC} = 4.5 V	T_A = 25°C	10			
			SN54HC573A	15			
			SN74HC573A	13			
		V_{CC} = 6 V	T_A = 25°C	9			
			SN54HC573A	13			
			SN74HC573A	11			
t_h	Hold time, data after LE↓	V_{CC} = 2 V	T_A = 25°C	20			ns
			SNx4HC573A	24			
		V_{CC} = 4.5 V		5			
		V_{CC} = 6 V		5			

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6.7 Switching Characteristics

over operating free-air temperature range (unless otherwise noted; see Figure 7-1)

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
t_{pd}	C_L = 50 pF, from D (input) to Q (output)	V_{CC} = 2 V	T_A = 25°C		77	175	ns
			SN54HC573A			265	
			SN74HC573A			220	
		V_{CC} = 4.5 V	T_A = 25°C		26	35	
			SN54HC573A			53	
			SN74HC573A			44	
		V_{CC} = 6 V	T_A = 25°C		23	30	
			SN54HC573A			45	
			SN74HC573A			38	
	C_L = 50 pF, from LE (input) to any Q (output)	V_{CC} = 2 V	T_A = 25°C		87	175	
			SN54HC573A			265	
			SN74HC573A			220	
		V_{CC} = 4.5 V	T_A = 25°C		27	35	
			SN54HC573A			53	
			SN74HC573A			44	
		V_{CC} = 6 V	T_A = 25°C		23	30	
			SN54HC573A			45	
			SN74HC573A			38	
t_{en}	C_L = 50 pF, from $\overline{OE}$ (input) to any Q (output)	V_{CC} = 2 V	T_A = 25°C		68	150	ns
			SN54HC573A			225	
			SN74HC573A			190	
		V_{CC} = 4.5 V	T_A = 25°C		24	30	
			SN54HC573A			45	
			SN74HC573A			38	
		V_{CC} = 6 V	T_A = 25°C		21	26	
			SN54HC573A			38	
			SN74HC573A			32	
t_{dis}	C_L = 50 pF, from $\overline{OE}$ (input) to any Q (output)	V_{CC} = 2 V	T_A = 25°C		47	150	ns
			SN54HC573A			225	
			SN74HC573A			190	
		V_{CC} = 4.5 V	T_A = 25°C		23	30	
			SN54HC573A			45	
			SN74HC573A			38	
		V_{CC} = 6 V	T_A = 25°C		21	26	
			SN54HC573A			38	
			SN74HC573A			32	

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over operating free-air temperature range (unless otherwise noted; see Figure 7-1)

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
t_t	C_L = 50 pF to any Q (output)	V_{CC} = 2 V	T_A = 25°C		28	60	ns
			SN54HC573A			90	
			SN74HC573A			75	
		V_{CC} = 4.5 V	T_A = 25°C		8	12	
			SN54HC573A			18	
			SN74HC573A			15	
		V_{CC} = 6 V	T_A = 25°C		6	10	
			SN54HC573A			15	
			SN74HC573A			13	
t_{pd}	C_L = 150 pF, from D (input) to Q (output)	V_{CC} = 2 V	T_A = 25°C		95	200	ns
			SN54HC573A			300	
			SN74HC573A			250	
		V_{CC} = 4.5 V	T_A = 25°C		33	40	
			SN54HC573A			60	
			SN74HC573A			50	
		V_{CC} = 6 V	T_A = 25°C		21	34	
			SN54HC573A			51	
			SN74HC573A			43	
	C_L = 150 pF, from LE (input) to any Q (output)	V_{CC} = 2 V	T_A = 25°C		103	225	
			SN54HC573A			335	
			SN74HC573A			285	
		V_{CC} = 4.5 V	T_A = 25°C		33	45	
			SN54HC573A			67	
			SN74HC573A			57	
		V_{CC} = 6 V	T_A = 25°C		29	40	
			SN54HC573A			60	
			SN74HC573A			50	
t_{en}	C_L = 150 pF, from $\overline{OE}$ (input) to any Q (output)	V_{CC} = 2 V	T_A = 25°C		85	200	ns
			SN54HC573A			300	
			SN74HC573A			250	
		V_{CC} = 4.5 V	T_A = 25°C		29	40	
			SN54HC573A			60	
			SN74HC573A			50	
		V_{CC} = 6 V	T_A = 25°C		26	34	
			SN54HC573A			51	
			SN74HC573A			43	
t_t	C_L = 150 pF to any Q (output)	V_{CC} = 2 V	T_A = 25°C		60	210	ns
			SN54HC573A			315	
			SN74HC573A			265	
		V_{CC} = 4.5 V	T_A = 25°C		17	42	
			SN54HC573A			63	
			SN74HC573A			53	
		V_{CC} = 6 V	T_A = 25°C		14	36	
			SN54HC573A			53	
			SN74HC573A			45	

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6.8 Typical Characteristics

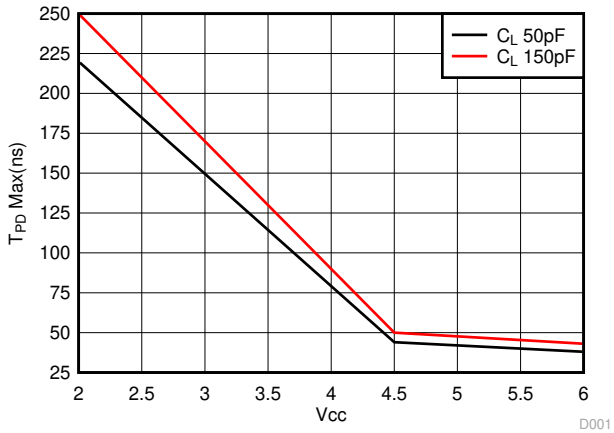
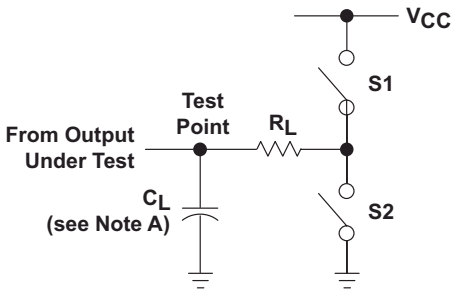


Figure 6-1. Maximum Propagation Delay Curves

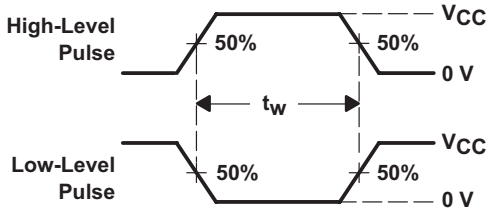
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7 Parameter Measurement Information

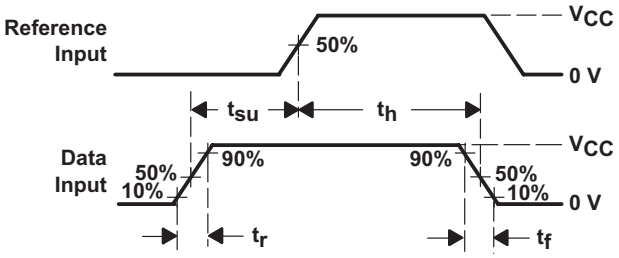


LOAD CIRCUIT

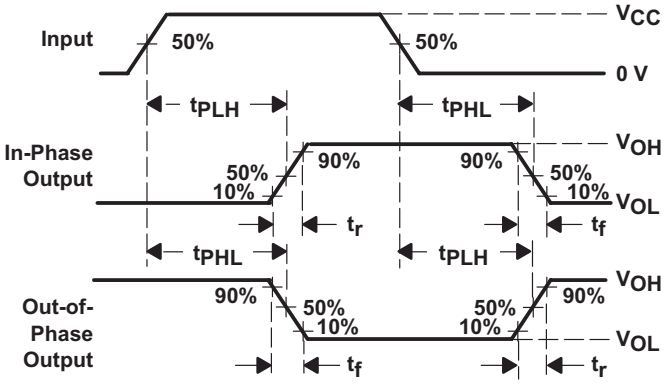
PARAMETER		R_L	C_L	S1	S2
t_{en}	t_{PZH}	1 kΩ	50 pF or 150 pF	Open	Closed
	t_{PZL}			Closed	Open
t_{dis}	t_{PHZ}	1 kΩ	50 pF	Open	Closed
	t_{PLZ}			Closed	Open
t_{pd} or t_t		--	50 pF or 150 pF	Open	Open



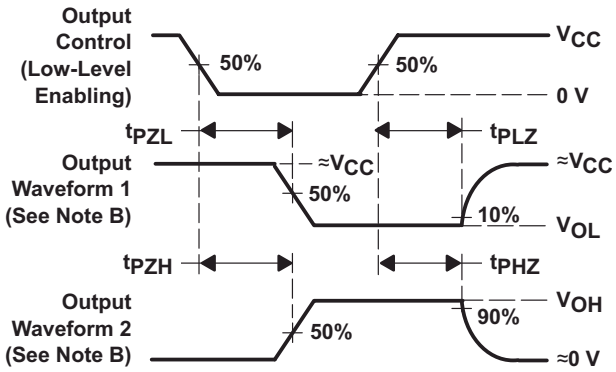
VOLTAGE WAVEFORMS
PULSE DURATIONS



VOLTAGE WAVEFORMS
SETUP AND HOLD AND INPUT RISE AND FALL TIMES



VOLTAGE WAVEFORMS
PROPAGATION DELAY AND OUTPUT TRANSITION TIMES



VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES FOR 3-STATE OUTPUTS

A. C_L includes probe and test-fixture capacitance.
B. 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.
C. Phase relationships between waveforms were chosen arbitrarily. All input pulses are supplied by generators having the following characteristics: PRR ≤ 1 MHz, Z_O = 50 Ω, t_r = 6 ns, t_f = 6 ns.
D. The outputs are measured one at a time with one input transition per measurement.
E. t_{PLZ} and t_{PHZ} are the same as t_{dis}.
F. t_{PZL} and t_{PZH} are the same as t_{en}.
G. t_{PLH} and t_{PHL} are the same as t_{pd}.

Figure 7-1. Load Circuit and Voltage Waveforms

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8 Detailed Description

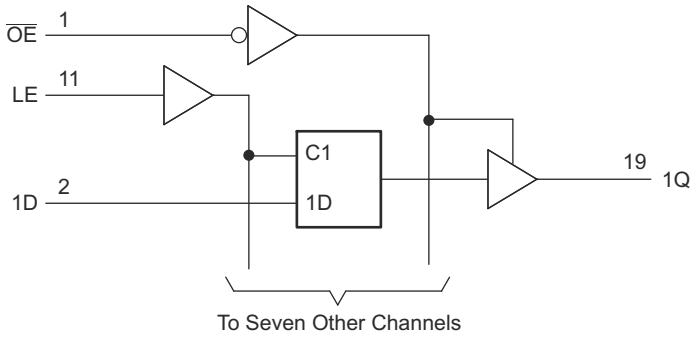
8.1 Overview

The SNx4HC573A devices are octal transparent D-type latches that feature 3-state outputs designed specifically for driving highly capacitive or relatively low-impedance loads. A buffered output-enable ($\overline{OE}$) input can be used to place the eight outputs in either a normal logic state (high or low logic levels) or the high-impedance state. In the high-impedance state, the outputs neither load nor drive the bus lines significantly. The high-impedance state and increased drive provide the capability to drive bus lines without interface or pullup components.

To ensure the high-impedance state during power up or power down, $\overline{OE}$ must be tied to V_{CC} through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

$\overline{OE}$ does not affect the internal operations of the latches. Old data can be retained or new data can be entered while the outputs are in the high-impedance state.

8.2 Functional Block Diagram



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Figure 8-1. Logic Diagram (Positive Logic)

8.3 Feature Description

The SNx4HC573A is a high current 3-state output device which can drive bus lines directly or up to 15 LSTTL loads. It has low power consumption up to 80-µA maximum I_{CC}. The high speed CMOS family has typical propagation delay of 21 ns with ±6-mA output drive at 5 V. The input leakage current is a very low 1-µA (maximum).

8.4 Device Functional Modes

Table 8-1 lists the functional modes of the SNx4HC573A.

Table 8-1. Function Table (Each Latch)

INPUTS			OUTPUT
$\overline{OE}$	LE	D	Q
L	H	H	H
L	H	L	L
L	L	X	Q_0
H	X	X	Hi-Z

9 Application and Implementation

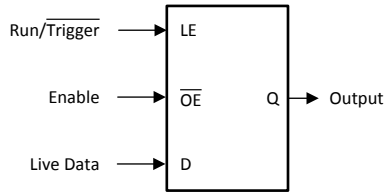
Note

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

9.1 Application Information

To ensure the high-impedance state during power up or power down, $\overline{OE}$ must be tied to V_{CC} through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver. $\overline{OE}$ does not affect the internal operations of the latches. Old data can be retained or new data can be entered while the outputs are in the high-impedance state. The SNx4HC573A latches can be used to store 8 bits of data. Figure 9-1 shows a typical application. A low trigger event latches the output to preserve the event for processing later. With latch input high, this acts as a buffer which follows the live data at the D input when output enable pin held is low.

9.2 Typical Application



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Figure 9-1. Typical Application Schematic

9.2.1 Design Requirements

The SNx4HC573A device uses CMOS technology and has balanced output drive (±7.8-mA). Take care to avoid bus contention, because it can drive currents that would exceed maximum limits.

9.2.2 Detailed Design Procedure

Design requirements must adhere to the *Section 6.3* and must never exceed the *Section 6.1*.

The inputs must have a ramp time less than input transition time mentioned in the *Section 6.3*. Slow inputs can cause oscillations at the output, false triggering, and increased current consumption. TI recommends a Schmitt trigger device like SN74HC14 which can tolerate slower signals.

The inputs and outputs must never exceed V_{CC} to not forward bias the internal ESD diodes. The maximum frequency supported by this device is 28 MHz.

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9.2.3 Application Curve

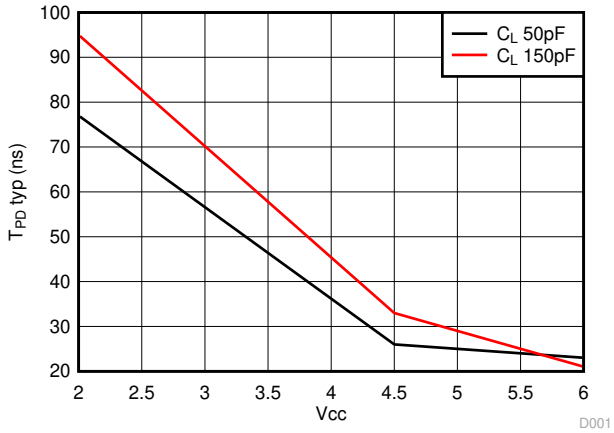


Figure 9-2. Typical Propagation Delay Curves

10 Power Supply Recommendations

The power supply can be any voltage between the minimum and maximum supply voltage rating located in the *Section 6.3* table. The total current through Ground or V_{CC} must not exceed ±70 mA as per *Section 6.1* table.

Each V_{CC} pin must have a good bypass capacitor to prevent power disturbance. For devices with a single supply, TI recommends 0.1-µF capacitor; if there are multiple V_{CC} pins, then TI recommends 0.01-µF or 0.022-µF capacitor for each power pin. It is acceptable to parallel multiple bypass capacitors to reject different frequencies of noise. A 0.1-µF and 1-µF capacitor are commonly used in parallel. The bypass capacitor must be installed as close to the power pin as possible for best results.

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11 Layout

11.1 Layout Guidelines

When using multiple-bit logic devices, inputs must never float.

In many cases, functions or parts of functions of digital logic devices are unused, for example, when only two inputs of a triple-input and the gate are used, or only 3 of the 4 buffer gates are used. Such input pins must not be left unconnected because the undefined voltages at the outside connections result in undefined operational states. Figure 11-1 specifies the 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 must be applied to any particular unused input depends on the function of the device. Generally, they are 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 disables the output section of the part when asserted. This does not disable the input section of the I/Os, so they cannot float when disabled.

11.2 Layout Example

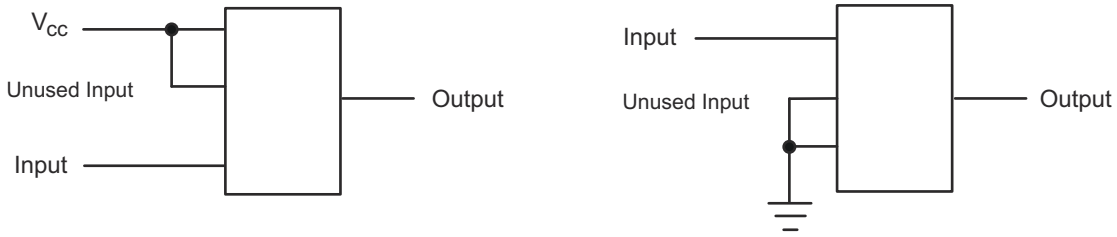


Figure 11-1. Layout Diagram

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12 Device and Documentation Support

12.1 Documentation Support

12.1.1 Related Documentation

For related documentation see the following:

Implications of Slow or Floating CMOS Inputs (SCBA004)

12.2 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.

Table 12-1. Related Links

PARTS	PRODUCT FOLDER	SAMPLE & BUY	TECHNICAL DOCUMENTS	TOOLS & SOFTWARE	SUPPORT & COMMUNITY
SN54HC573A	Click here	Click here	Click here	Click here	Click here
SN74HC573A	Click here	Click here	Click here	Click here	Click here

12.3 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on ti.com. In the upper right corner, click on *Alert me* 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.

12.4 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.

Linked content is provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's Terms of Use.

12.5 Trademarks

TI E2E™ is a trademark of Texas Instruments.
All trademarks are the property of their respective owners.

12.6 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

12.7 Glossary

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

13 Mechanical, Packaging, and Orderable Information

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

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PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
5962-8512801VRA	ACTIVE	CDIP	J	20	20	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	5962-8512801VR A SNV54HC573AJ	Samples
85128012A	ACTIVE	LCCC	FK	20	55	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	85128012A SNJ54HC 573AFK	Samples
8512801RA	ACTIVE	CDIP	J	20	20	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	8512801RA SNJ54HC573AJ	Samples
8512801SA	ACTIVE	CFP	W	20	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	8512801SA SNJ54HC573AW	Samples
JM38510/65406BRA	ACTIVE	CDIP	J	20	20	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	JM38510/ 65406BRA	Samples
M38510/65406BRA	ACTIVE	CDIP	J	20	20	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	JM38510/ 65406BRA	Samples
SN54HC573AJ	ACTIVE	CDIP	J	20	20	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	SN54HC573AJ	Samples
SN74HC573ADBR	ACTIVE	SSOP	DB	20	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HC573A	Samples
SN74HC573ADWR	ACTIVE	SOIC	DW	20	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HC573A	Samples
SN74HC573ADWRG4	ACTIVE	SOIC	DW	20	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HC573A	Samples
SN74HC573AN	ACTIVE	PDIP	N	20	20	RoHS & Green	NIPDAU	N / A for Pkg Type	-40 to 85	SN74HC573AN	Samples
SN74HC573ANE4	ACTIVE	PDIP	N	20	20	RoHS & Green	NIPDAU	N / A for Pkg Type	-40 to 85	SN74HC573AN	Samples
SN74HC573APWR	ACTIVE	TSSOP	PW	20	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HC573A	Samples
SN74HC573APWRG4	ACTIVE	TSSOP	PW	20	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-40 to 85	HC573A	Samples
SNJ54HC573AFK	ACTIVE	LCCC	FK	20	55	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	85128012A SNJ54HC 573AFK	Samples
SNJ54HC573AJ	ACTIVE	CDIP	J	20	20	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	8512801RA SNJ54HC573AJ	Samples

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
SNJ54HC573AW	ACTIVE	CFP	W	20	25	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	8512801SA SNJ54HC573AW	Samples

(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.
PREVIEW: Device has been announced but is not in production. Samples may or may not be available.
OBSOLETE: TI has discontinued the production of the device.

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

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

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

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

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

OTHER QUALIFIED VERSIONS OF SN54HC573A, SN54HC573A-SP, SN74HC573A :

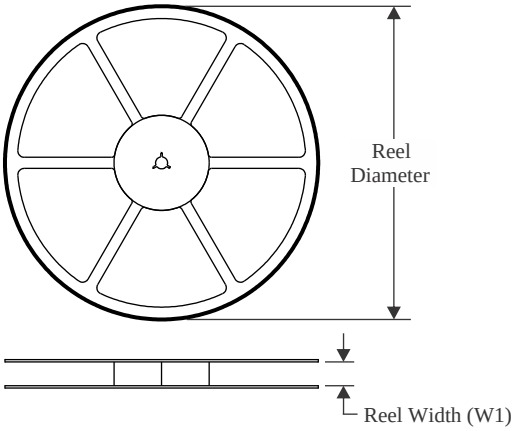
- Catalog : SN74HC573A, SN54HC573A
- Automotive : SN74HC573A-Q1, SN74HC573A-Q1
- Military : SN54HC573A
- Space : SN54HC573A-SP

NOTE: Qualified Version Definitions:

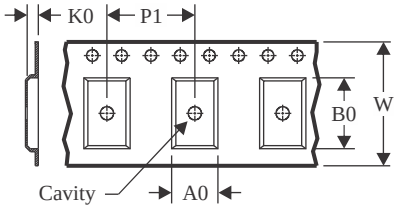
- Catalog - TI's standard catalog product
- Automotive - Q100 devices qualified for high-reliability automotive applications targeting zero defects
- Military - QML certified for Military and Defense Applications
- Space - Radiation tolerant, ceramic packaging and qualified for use in Space-based application

TAPE AND REEL INFORMATION

REEL DIMENSIONS

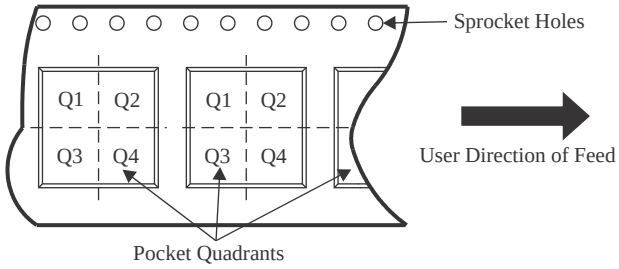


TAPE DIMENSIONS



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

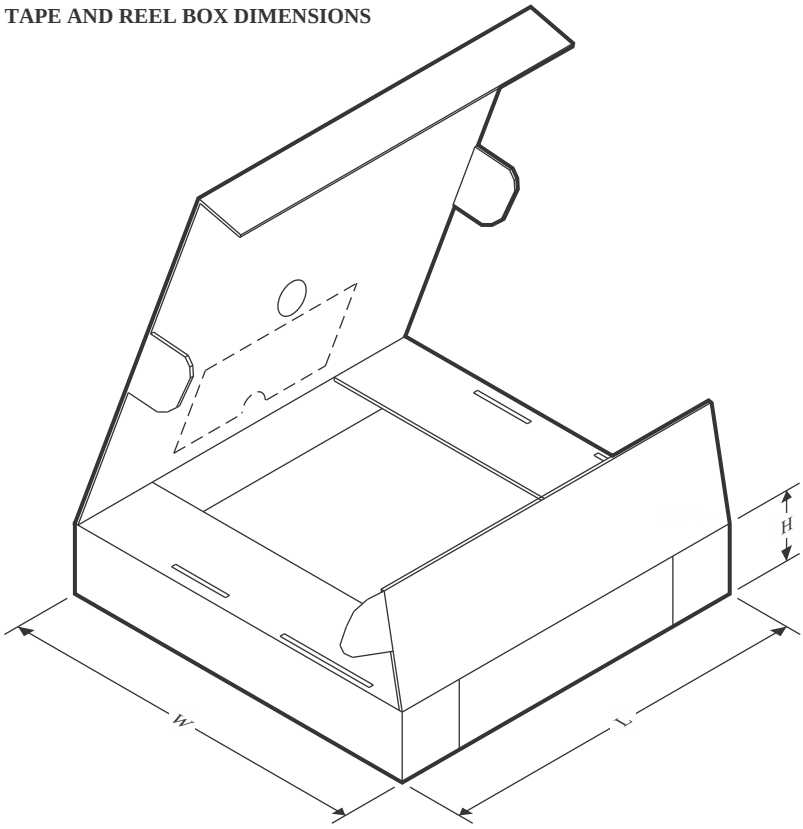
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*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
SN74HC573ADBR	SSOP	DB	20	2000	330.0	16.4	8.2	7.5	2.5	12.0	16.0	Q1
SN74HC573ADWR	SOIC	DW	20	2000	330.0	24.4	10.9	13.3	2.7	12.0	24.0	Q1
SN74HC573ADWR	SOIC	DW	20	2000	330.0	24.4	10.9	13.3	2.7	12.0	24.0	Q1
SN74HC573APWR	TSSOP	PW	20	2000	330.0	16.4	6.95	7.0	1.4	8.0	16.0	Q1
SN74HC573APWR	TSSOP	PW	20	2000	330.0	16.4	6.95	7.0	1.4	8.0	16.0	Q1

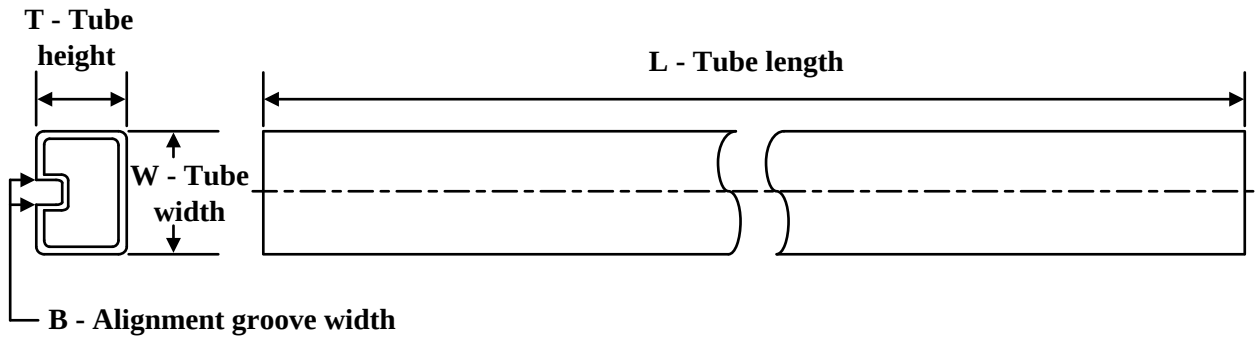
TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74HC573ADBR	SSOP	DB	20	2000	356.0	356.0	35.0
SN74HC573ADWR	SOIC	DW	20	2000	367.0	367.0	45.0
SN74HC573ADWR	SOIC	DW	20	2000	367.0	367.0	45.0
SN74HC573APWR	TSSOP	PW	20	2000	356.0	356.0	35.0
SN74HC573APWR	TSSOP	PW	20	2000	356.0	356.0	35.0

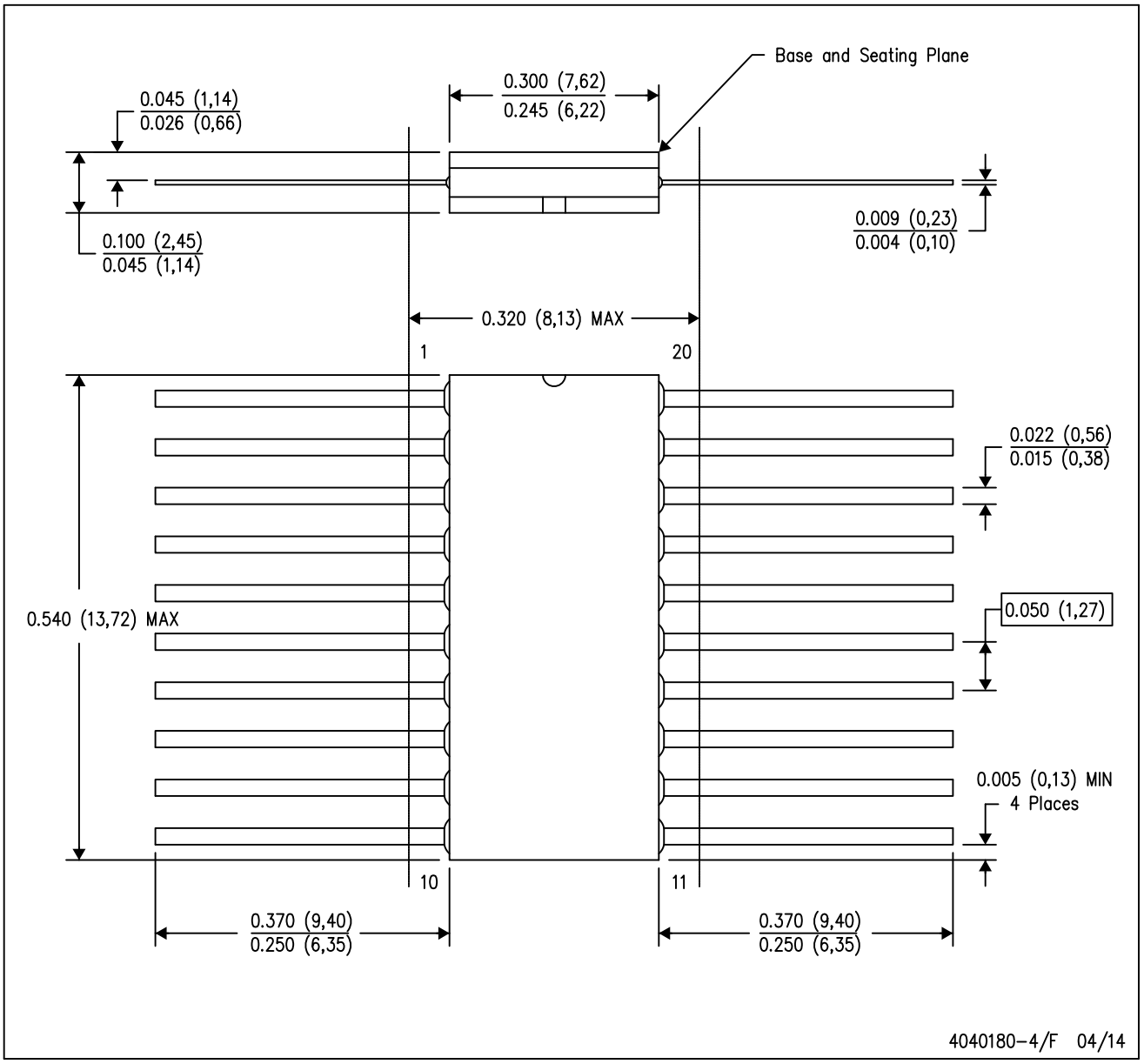
TUBE



*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (µm)	B (mm)
85128012A	FK	LCCC	20	55	506.98	12.06	2030	NA
8512801SA	W	CFP	20	25	506.98	26.16	6220	NA
SN74HC573AN	N	PDIP	20	20	506	13.97	11230	4.32
SN74HC573ANE4	N	PDIP	20	20	506	13.97	11230	4.32
SNJ54HC573AFK	FK	LCCC	20	55	506.98	12.06	2030	NA
SNJ54HC573AW	W	CFP	20	25	506.98	26.16	6220	NA

W (R–GDFP–F20) CERAMIC DUAL FLATPACK



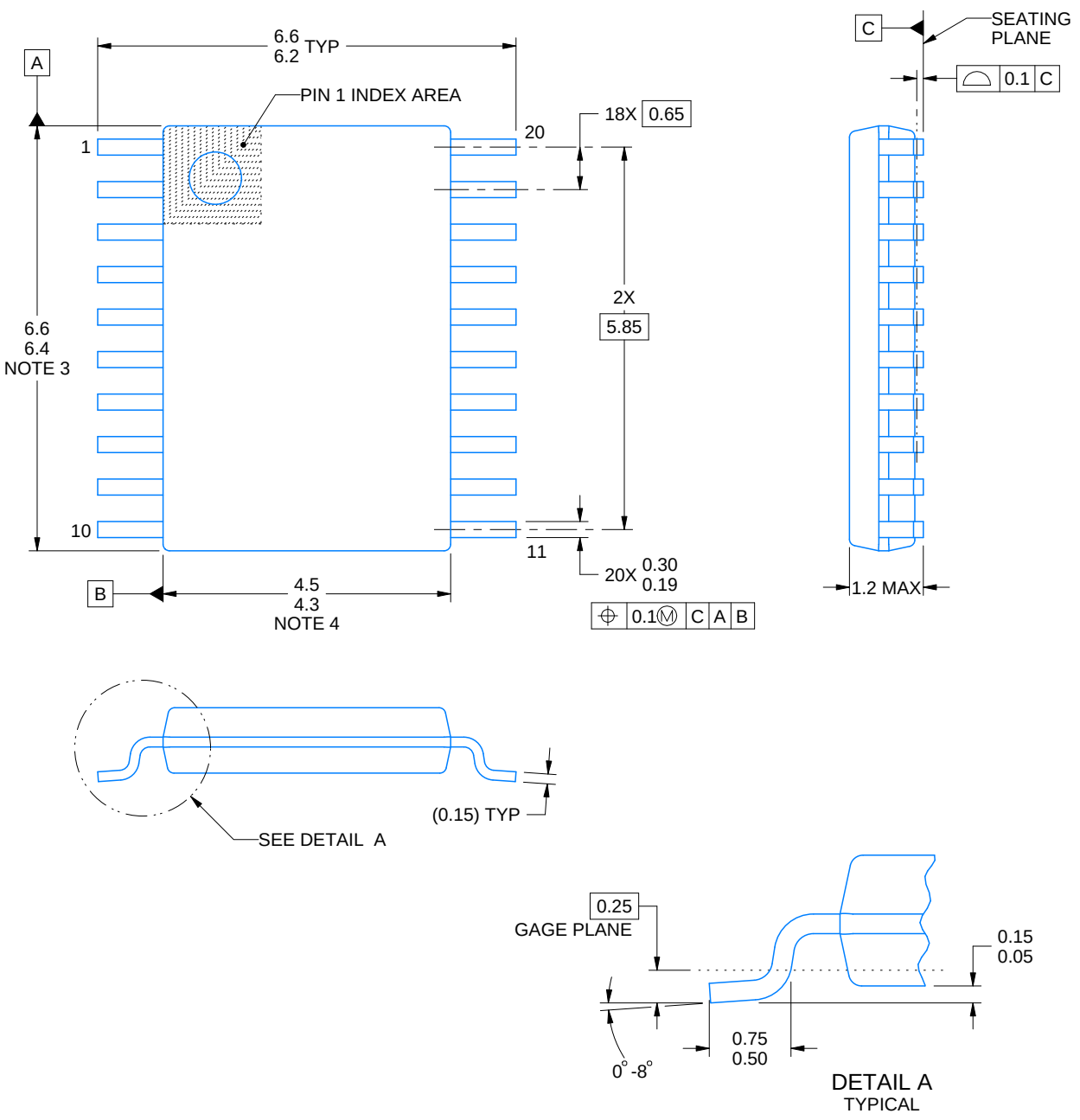
NOTES:
A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. This package can be hermetically sealed with a ceramic lid using glass frit.
D. Index point is provided on cap for terminal identification only.
E. Falls within Mil–Std 1835 GDFP2–F20

PACKAGE OUTLINE

PW0020A

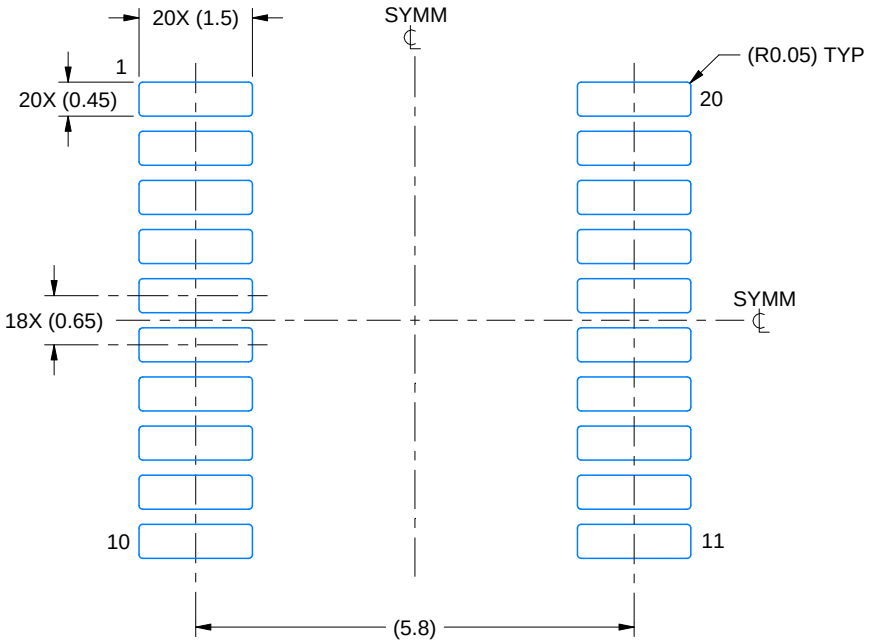
TSSOP - 1.2 mm max height

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.



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 10X

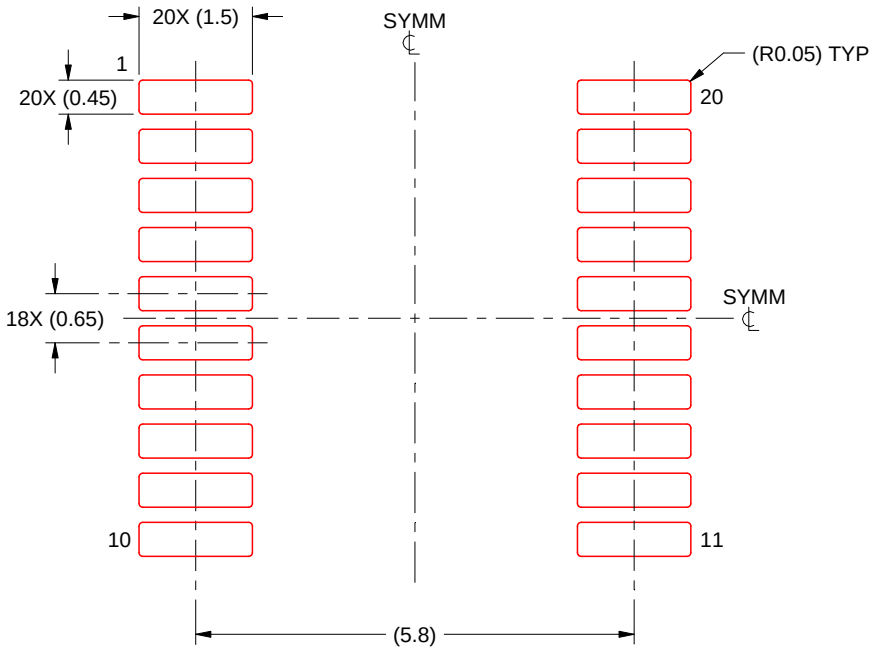


SOLDER MASK DETAILS

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.



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

4220206/A 02/2017

NOTES: (continued)

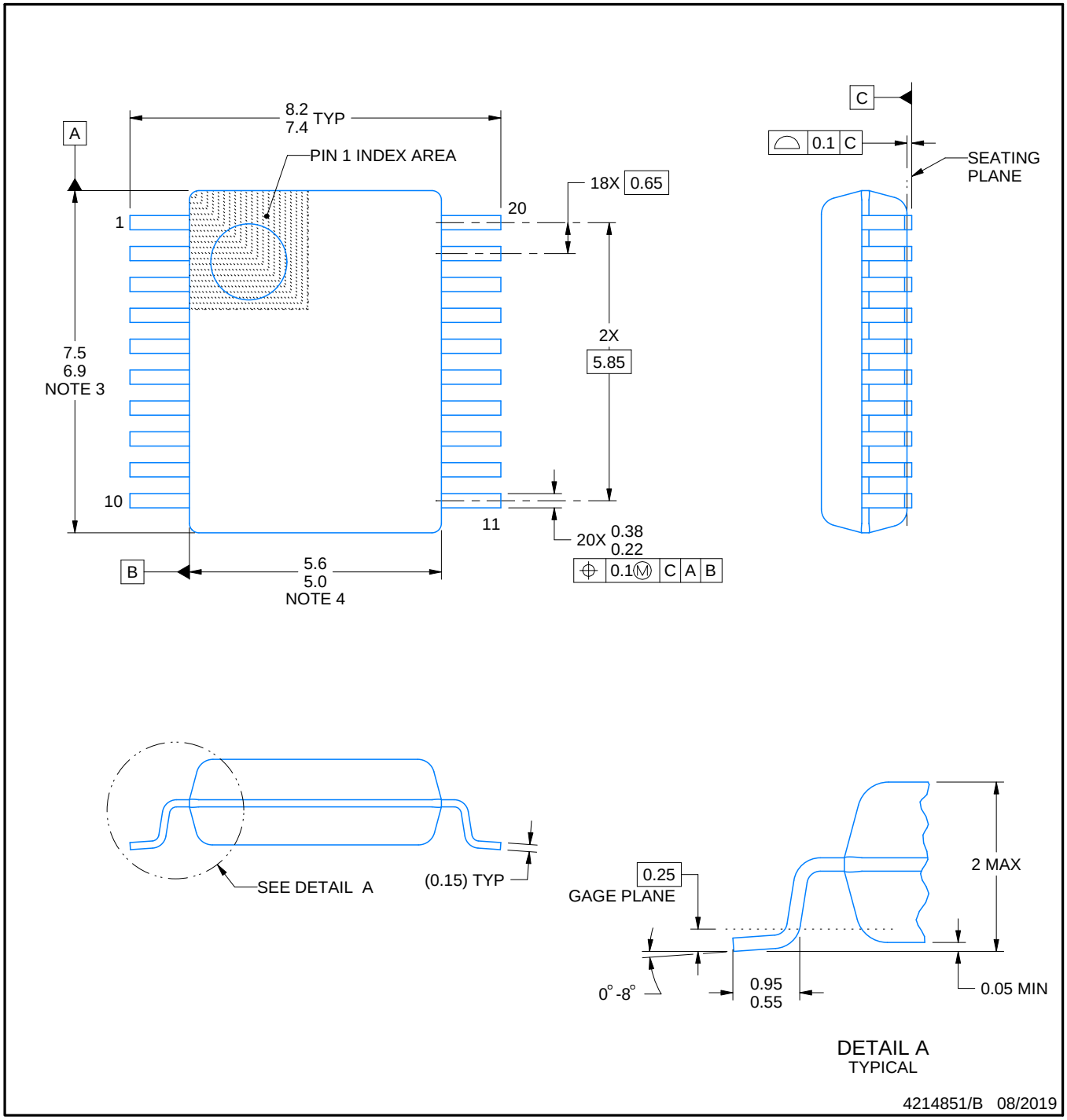
8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
9. Board assembly site may have different recommendations for stencil design.

PACKAGE OUTLINE

DB0020A

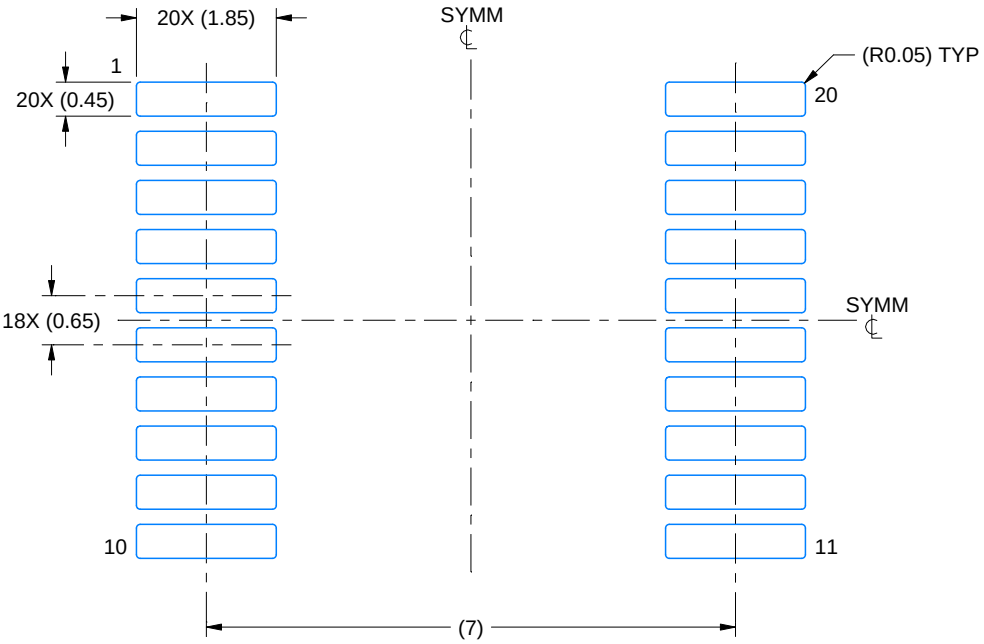
SSOP - 2 mm max height

SMALL OUTLINE PACKAGE

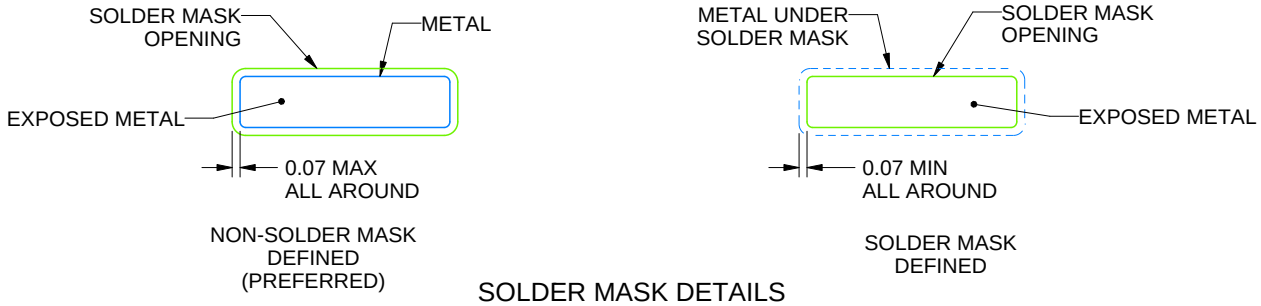


NOTES:

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.



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 10X



SOLDER MASK DETAILS

4214851/B 08/2019

NOTES: (continued)

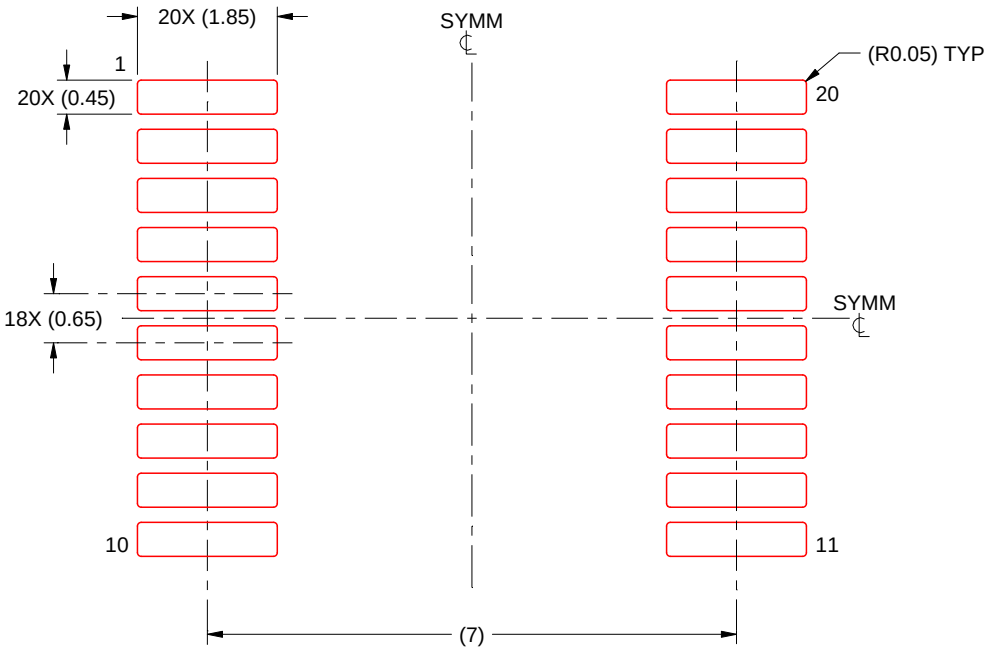
6. Publication IPC-7351 may have alternate designs.
7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

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

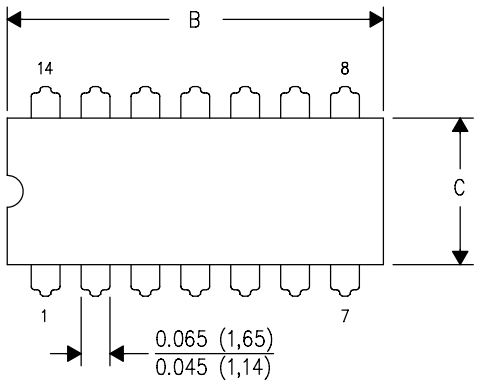
NOTES: (continued)

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.

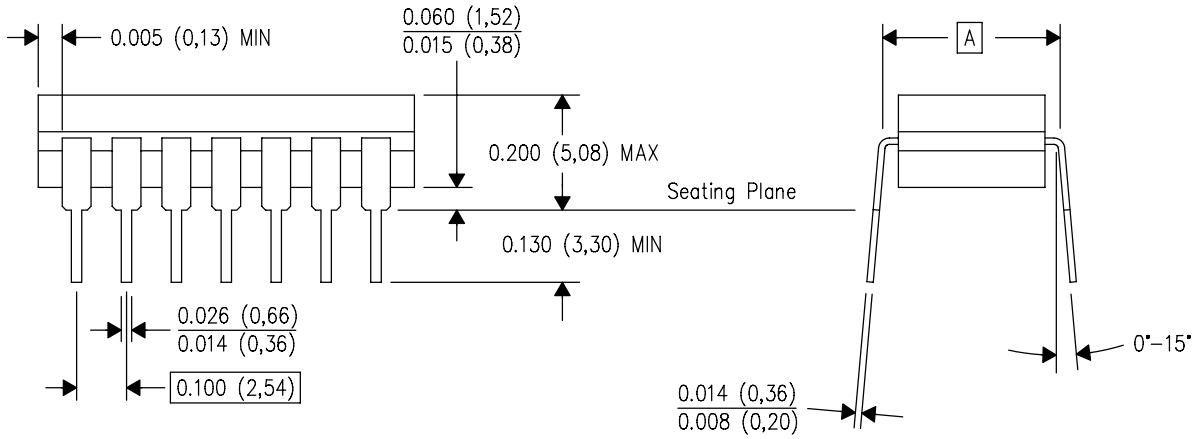
J (R–GDIP–T**)

14 LEADS SHOWN

CERAMIC DUAL IN–LINE PACKAGE



DIM \ PINS **	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

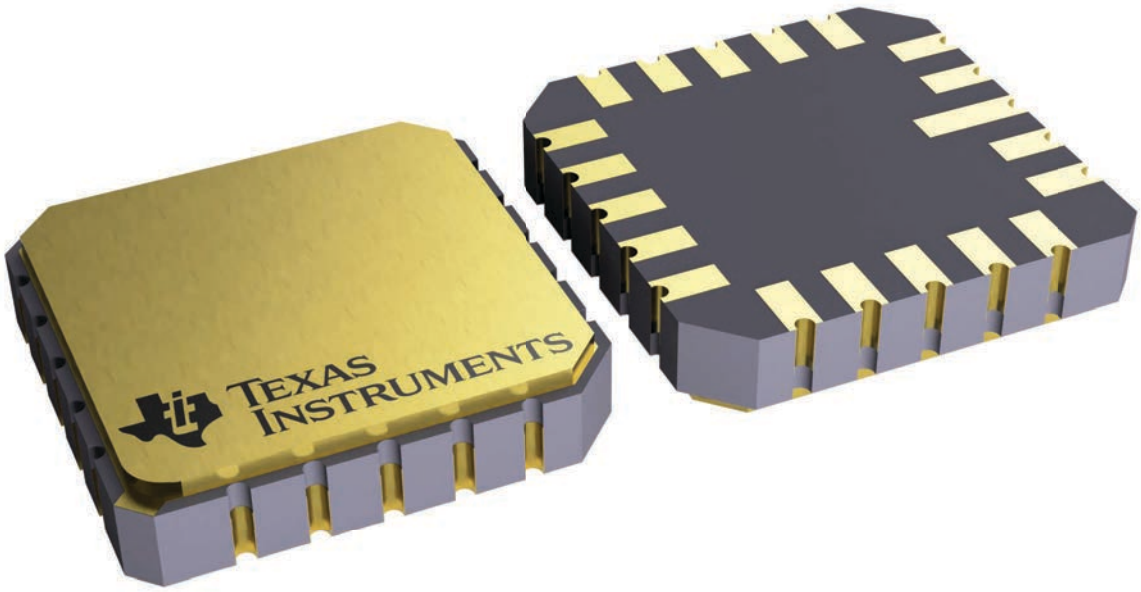
FK 20

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.

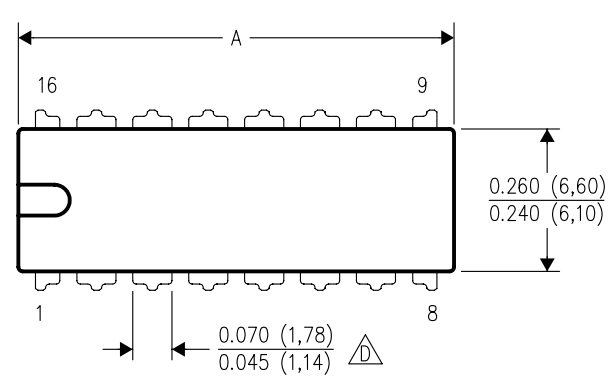


4229370VA\

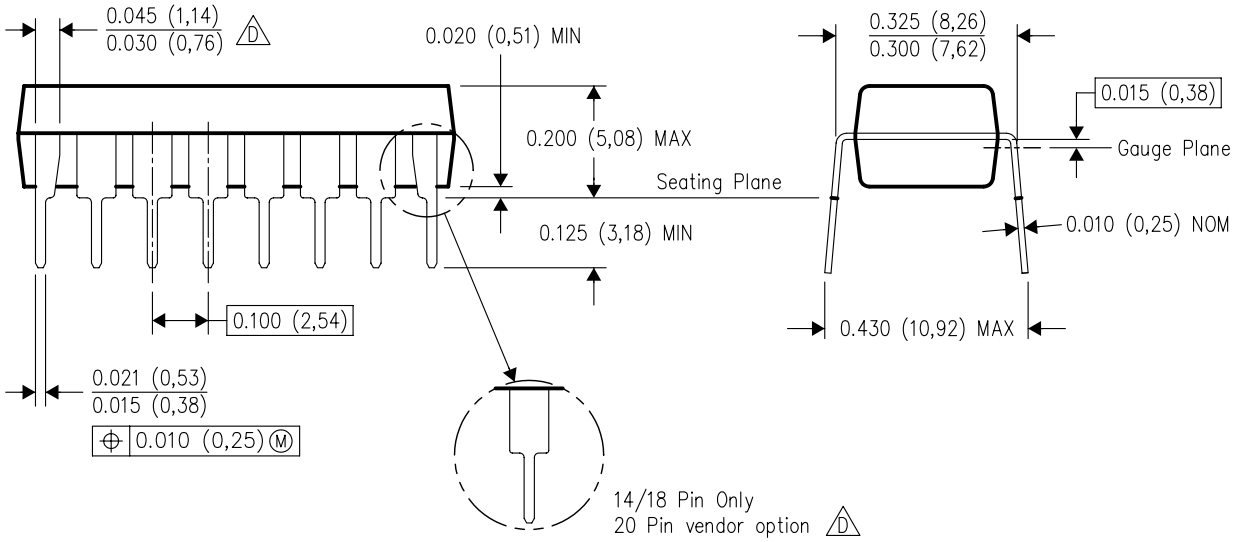
N (R–PDIP–T**)

PLASTIC DUAL–IN–LINE PACKAGE

16 PINS SHOWN

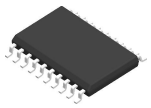


DIM \ PINS **	14	16	18	20
A MAX	0.775 (19,69)	0.775 (19,69)	0.920 (23,37)	1.060 (26,92)
A MIN	0.745 (18,92)	0.745 (18,92)	0.850 (21,59)	0.940 (23,88)
MS–001 VARIATION (C)	AA	BB	AC	AD



4040049/E 12/2002

NOTES:
A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. Falls within JEDEC MS–001, except 18 and 20 pin minimum body length (Dim A).
D. The 20 pin end lead shoulder width is a vendor option, either half or full width.

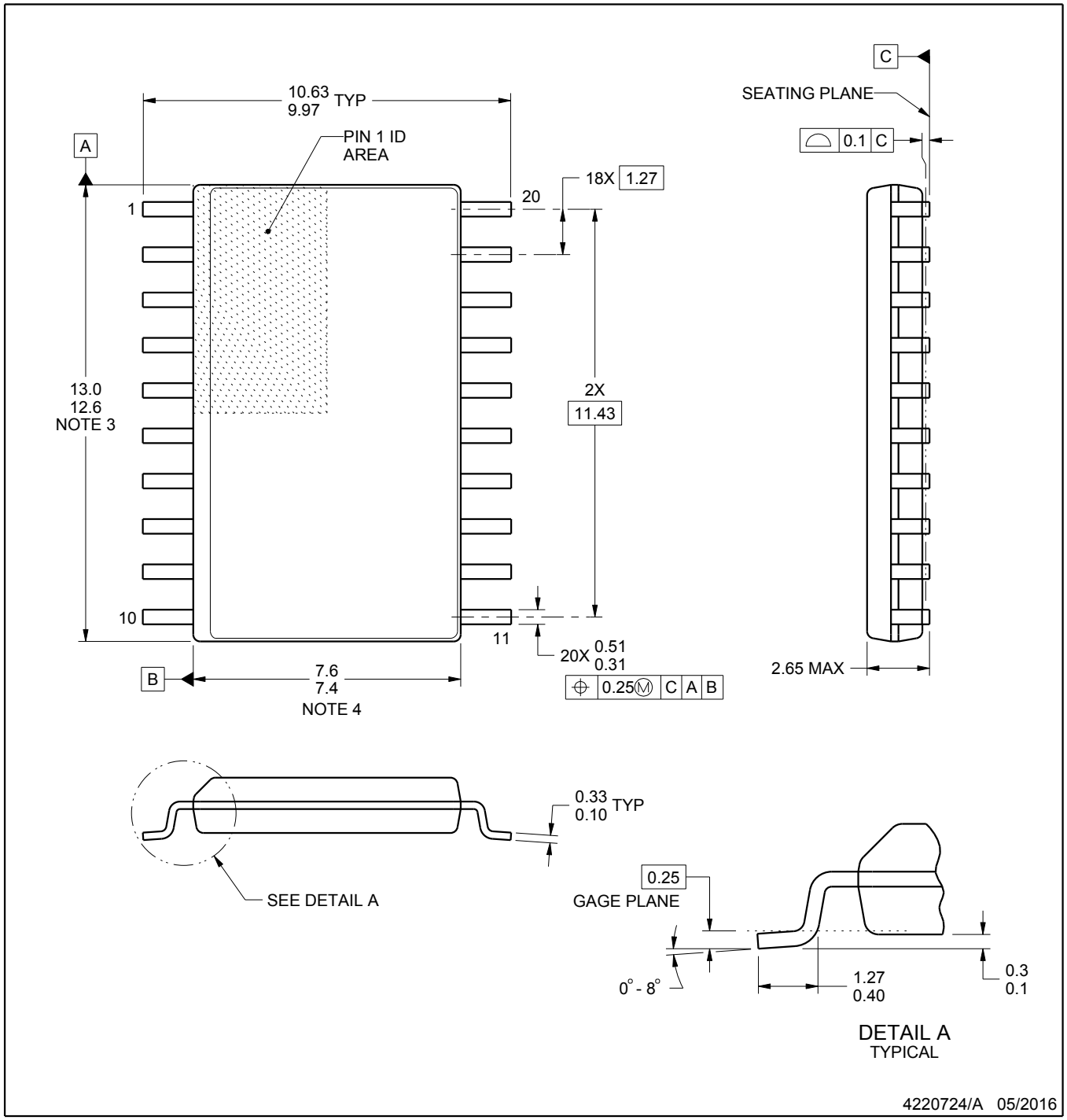


PACKAGE OUTLINE

DW0020A

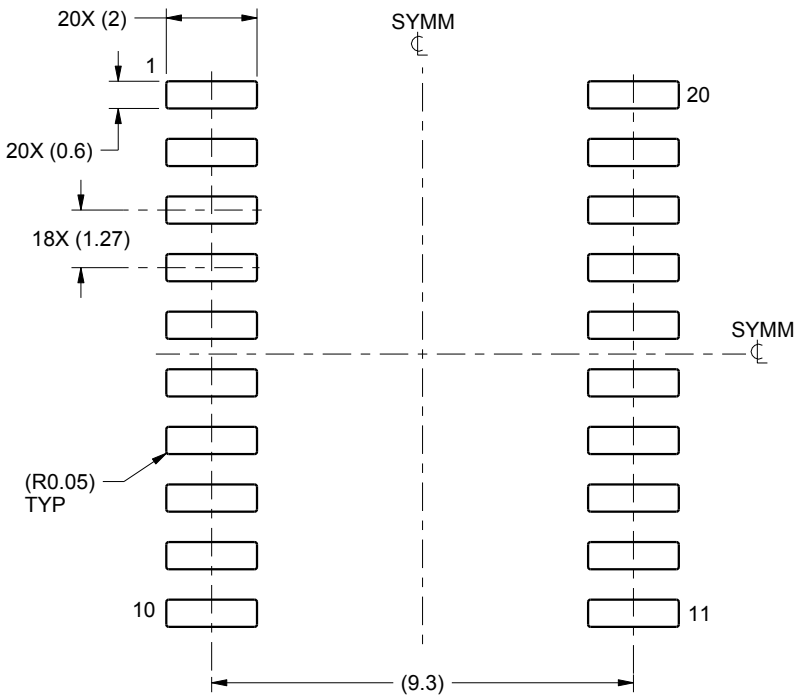
SOIC - 2.65 mm max height

SOIC

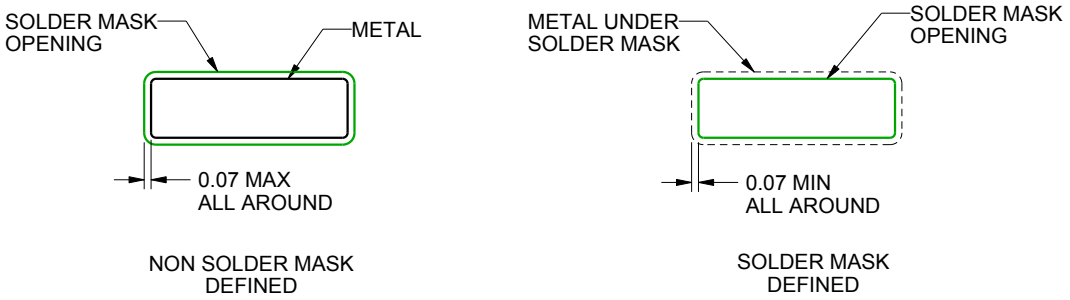


NOTES:

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.



LAND PATTERN EXAMPLE
SCALE:6X

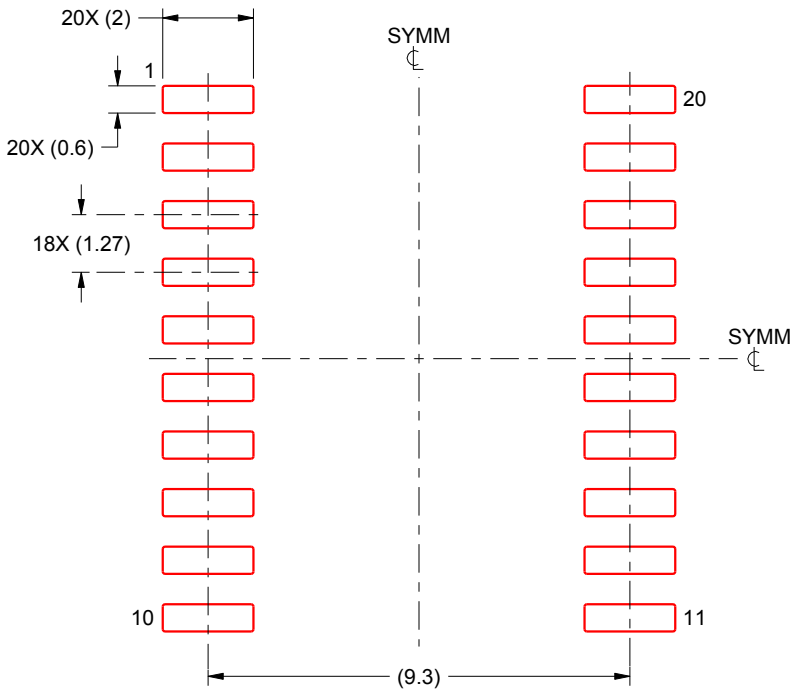


SOLDER MASK DETAILS

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.



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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MSP430F5438AIPZR SN74ALVC244PWE4 TVP5150AM1PBSR BQ25616RTWR RI-I02-114B-01
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