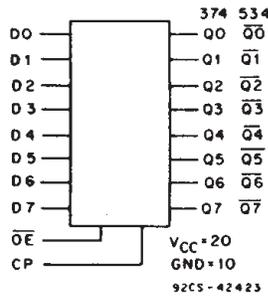




Data sheet acquired from Harris Semiconductor  
SCHS290

# CD54/74AC374, CD54/74AC534 CD54/74ACT374, CD54/74ACT534



FUNCTIONAL DIAGRAM

## Octal D-Type Flip-Flops, 3-State Positive-Edge Triggered

CD54/74AC/ACT374 - Non-Inverting  
CD54/74AC/ACT534 - Inverting

**Type Features:**

- Buffered inputs
- Typical propagation delay:  
5 ns @  $V_{CC} = 5\text{ V}$ ,  $T_A = 25^\circ\text{C}$ ,  $C_L = 50\text{ pF}$

The RCA-CD54/74AC374 and CD54/74AC534 and the CD54/74ACT374 and CD54/74ACT534 octal D-type, 3-state, positive-edge triggered flip-flops use the RCA ADVANCED CMOS technology. The eight flip-flops enter data into their registers on the LOW-to-HIGH transition of the clock (CP). The Output Enable ( $\overline{OE}$ ) controls the 3-state outputs and is independent of the register operation. When the Output Enable ( $\overline{OE}$ ) is HIGH, the outputs are in the high-impedance state. The CD54/74AC/ACT374 and CD54/74AC/ACT534 share the same pin configurations, but the CD54/74AC/ACT374 outputs are non-inverted while the CD54/74AC/ACT534 devices have inverted outputs. (For flow-through pin configurations, see CD54/74AC/ACT564 and CD54/74AC/ACT574.)

The CD74AC/ACT374 and CD74AC/ACT534 are supplied in 20-lead dual-in-line plastic packages (E suffix) and in 20-lead dual-in-line small-outline plastic packages (M suffix). Both package types are operable over the following temperature ranges: Commercial (0 to 70°C); Industrial (-40 to +85°C); and Extended Industrial/Military (-55 to +125°C).

The CD54AC/ACT374 and CD54AC/ACT534, available in chip form (H suffix), are operable over the -55 to +125°C temperature range.

**Family Features:**

- Exceeds 2-kV ESD Protection - MIL-STD-883, Method 3015
- SCR-Latch-up-resistant CMOS process and circuit design
- Speed of bipolar FAST\*/AS/S with significantly reduced power consumption
- Balanced propagation delays
- AC types feature 1.5-V to 5.5-V operation and balanced noise immunity at 30% of the supply
- $\pm 24\text{-mA}$  output drive current
  - Fanout to 15 FAST\* ICs
  - Drives 50-ohm transmission lines

\*FAST is a Registered Trademark of Fairchild Semiconductor Corp.

TRUTH TABLE

INPUTS			OUTPUTS	
			374	534
$\overline{OE}$	CP	Dn	Qn	$\overline{Qn}$
L		H	H	L
L		L	L	H
L	L	X	QO	QO
H	X	X	Z	Z

H = High level (steady state)  
 L = Low level (steady state)  
 X = Don't care  
 = Transition from low to high level  
 QO = The level of Q before the indicated steady-state input conditions were established  
 Z = High impedance



This data sheet is applicable to the CD54/74AC374, CD54/74AC534, CD54/74ACT374, and CD54ACT534. The CD74ACT534 was not acquired from Harris Semiconductor.

Technical Data

# CD54/74AC374, CD54/74AC534 CD54/74ACT374, CD54/74ACT534

**MAXIMUM RATINGS, Absolute-Maximum Values:**

DC SUPPLY-VOLTAGE ( $V_{CC}$ )	-0.5 to 6 V
DC INPUT DIODE CURRENT, $I_{IK}$ (for $V_i < -0.5$ V or $V_i > V_{CC} + 0.5$ V)	$\pm 20$ mA
DC OUTPUT DIODE CURRENT, $I_{OK}$ (for $V_o < -0.5$ V or $V_o > V_{CC} + 0.5$ V)	$\pm 50$ mA
DC OUTPUT SOURCE OR SINK CURRENT per Output Pin, $I_o$ (for $V_o > -0.5$ V or $V_o < V_{CC} + 0.5$ V)	$\pm 50$ mA
DC $V_{CC}$ or GROUND CURRENT ( $I_{CC}$ or $I_{GND}$ )	$\pm 100$ mA*
POWER DISSIPATION PER PACKAGE ( $P_D$ ):	
For $T_A = -55$ to $+100^\circ\text{C}$ (PACKAGE TYPE E)	500 mW
For $T_A = +100$ to $+125^\circ\text{C}$ (PACKAGE TYPE E)	Derate Linearly at 8 mW/ $^\circ\text{C}$ to 300 mW
For $T_A = -55$ to $+70^\circ\text{C}$ (PACKAGE TYPE M)	400 mW
For $T_A = +70$ to $+125^\circ\text{C}$ (PACKAGE TYPE M)	Derate Linearly at 6 mW/ $^\circ\text{C}$ to 70 mW
OPERATING-TEMPERATURE RANGE ( $T_A$ )	-55 to $+125^\circ\text{C}$
STORAGE TEMPERATURE ( $T_{stg}$ )	-65 to $+150^\circ\text{C}$
LEAD TEMPERATURE (DURING SOLDERING):	
At distance $1/16 \pm 1/32$ in. ( $1.59 \pm 0.79$ mm) from case for 10 s maximum	$+265^\circ\text{C}$
Unit inserted into PC board min. thickness $1/16$ in. (1.59 mm) with solder contacting lead tips only	$+300^\circ\text{C}$

\*For up to 4 outputs per device; add  $\pm 25$  mA for each additional output.

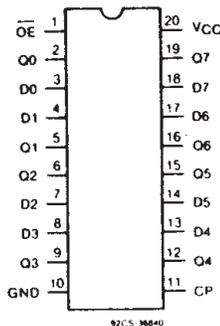
**RECOMMENDED OPERATING CONDITIONS:**

For maximum reliability, normal operating conditions should be selected so that operation is always within the following ranges:

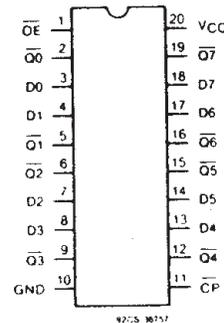
CHARACTERISTIC	LIMITS		UNITS
	MIN.	MAX.	
Supply-Voltage Range, $V_{CC}$ *: (For $T_A =$ Full Package-Temperature Range)			
AC Types	1.5	5.5	V
ACT Types	4.5	5.5	V
DC Input or Output Voltage, $V_i, V_o$	0	$V_{CC}$	V
Operating Temperature, $T_A$	-55	$+125$	$^\circ\text{C}$
Input Rise and Fall Slew Rate, $dt/dv$			
at 1.5 V to 3 V (AC Types)	0	50	ns/V
at 3.6 V to 5.5 V (AC Types)	0	20	ns/V
at 4.5 V to 5.5 V (ACT Types)	0	10	ns/V

\*Unless otherwise specified, all voltages are referenced to ground.

**TERMINAL ASSIGNMENT DIAGRAMS**



CD54/74AC/ACT374



CD54/74AC/ACT534

Technical Data

# CD54/74AC374, CD54/74AC534 CD54/74ACT374, CD54/74ACT534

STATIC ELECTRICAL CHARACTERISTICS: AC Series

CHARACTERISTICS	TEST CONDITIONS		V <sub>CC</sub> (V)	AMBIENT TEMPERATURE (T <sub>A</sub> ) - °C						UNITS	
				+25		-40 to +85		-55 to +125			
				MIN.	MAX.	MIN.	MAX.	MIN.	MAX.		
High-Level Input Voltage V <sub>IH</sub>			1.5	1.2	—	1.2	—	1.2	—	V	
			3	2.1	—	2.1	—	2.1	—		
			5.5	3.85	—	3.85	—	3.85	—		
Low-Level Input Voltage V <sub>IL</sub>			1.5	—	0.3	—	0.3	—	0.3	V	
			3	—	0.9	—	0.9	—	0.9		
			5.5	—	1.65	—	1.65	—	1.65		
High-Level Output Voltage V <sub>OH</sub>	V <sub>IH</sub> or V <sub>IL</sub>	#, *	-0.05	1.5	1.4	—	1.4	—	1.4	—	V
			-0.05	3	2.9	—	2.9	—	2.9	—	
			-0.05	4.5	4.4	—	4.4	—	4.4	—	
			-4	3	2.58	—	2.48	—	2.4	—	
			-24	4.5	3.94	—	3.8	—	3.7	—	
			-75	5.5	—	—	3.85	—	—	—	
			-50	5.5	—	—	—	—	3.85	—	
Low-Level Output Voltage V <sub>OL</sub>	V <sub>IH</sub> or V <sub>IL</sub>	#, *	0.05	1.5	—	0.1	—	0.1	—	0.1	V
			0.05	3	—	0.1	—	0.1	—	0.1	
			0.05	4.5	—	0.1	—	0.1	—	0.1	
			12	3	—	0.36	—	0.44	—	0.5	
			24	4.5	—	0.36	—	0.44	—	0.5	
			75	5.5	—	—	—	1.65	—	—	
			50	5.5	—	—	—	—	—	1.65	
Input Leakage Current I <sub>I</sub>	V <sub>CC</sub> or GND		5.5	—	±0.1	—	±1	—	±1	μA	
3-State Leakage Current I <sub>OZ</sub>	V <sub>IH</sub> or V <sub>IL</sub> V <sub>O</sub> = V <sub>CC</sub> or GND		5.5	—	±0.5	—	±5	—	±10	μA	
Quiescent Supply Current, MSI I <sub>CC</sub>	V <sub>CC</sub> or GND	0	5.5	—	8	—	80	—	160	μA	

#Test one output at a time for a 1-second maximum duration. Measurement is made by forcing current and measuring voltage to minimize power dissipation.

\*Test verifies a minimum 50-ohm transmission-line-drive capability at +85°C, 75 ohms at +125°C.

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**Technical Data**  
**CD54/74AC374, CD54/74AC534**  
**CD54/74ACT374, CD54/74ACT534**

STATIC ELECTRICAL CHARACTERISTICS: ACT Series

CHARACTERISTICS	TEST CONDITIONS	$V_{CC}$ (V)	AMBIENT TEMPERATURE ( $T_A$ ) - °C						UNITS	
			+25		-40 to +85		-55 to +125			
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.		
High-Level Input Voltage $V_{IH}$		4.5 to 5.5	2	—	2	—	2	—	V	
Low-Level Input Voltage $V_{IL}$		4.5 to 5.5	—	0.8	—	0.8	—	0.8	V	
High-Level Output Voltage $V_{OH}$	$V_{IH}$ or $V_{IL}$ #, *	-0.05	4.5	4.4	—	4.4	—	4.4	—	V
		-24	4.5	3.94	—	3.8	—	3.7	—	
		-75	5.5	—	—	3.85	—	—	—	
		-50	5.5	—	—	—	—	3.85	—	
Low-Level Output Voltage $V_{OL}$	$V_{IH}$ or $V_{IL}$ #, *	0.05	4.5	—	0.1	—	0.1	—	0.1	V
		24	4.5	—	0.36	—	0.44	—	0.5	
		75	5.5	—	—	—	1.65	—	—	
		50	5.5	—	—	—	—	—	1.65	
Input Leakage Current $I_I$	$V_{CC}$ or GND	5.5	—	±0.1	—	±1	—	±1	µA	
3-State Leakage Current $I_{OZ}$	$V_{IH}$ or $V_{IL}$ $V_O = V_{CC}$ or GND	5.5	—	±0.5	—	±5	—	±10	µA	
Quiescent Supply Current, MSI $I_{CC}$	$V_{CC}$ or GND	0	5.5	—	8	—	80	—	160	µA
Additional Quiescent Supply Current per Input Pin TTL Inputs High 1 Unit Load $\Delta I_{CC}$	$V_{CC}-2.1$	4.5 to 5.5	—	2.4	—	2.8	—	3	mA	

#Test one output at a time for a 1-second maximum duration. Measurement is made by forcing current and measuring voltage to minimize power dissipation.

\*Test verifies a minimum 50-ohm transmission-line-drive capability at +85°C, 75 ohms at +125°C.

**ACT INPUT LOADING TABLE**

INPUT	UNIT LOADS*
D, $\overline{OE}$	0.7
CP	1.17

\*Unit load is  $\Delta I_{CC}$  limit specified in Static Characteristics Chart, e.g., 2.4 mA max. @ 25°C.

Technical Data

# CD54/74AC374, CD54/74AC534 CD54/74ACT374, CD54/74ACT534

**PREREQUISITE FOR SWITCHING: AC Series**

CHARACTERISTICS	SYMBOL	V <sub>CC</sub> (V)	AMBIENT TEMPERATURE (T <sub>A</sub> ) - °C				UNITS
			-40 to +85		-55 to +125		
			MIN.	MAX.	MIN.	MAX.	
Clock Pulse Width	t <sub>w</sub>	1.5	44	—	50	—	ns
		3.3*	4.9	—	5.6	—	
		5†	3.5	—	4	—	
Setup Time Data to Clock	t <sub>su</sub>	1.5	2	—	2	—	ns
		3.3	2	—	2	—	
		5	2	—	2	—	
Hold Time Data to Clock	t <sub>h</sub>	1.5	2	—	2	—	ns
		3.3	2	—	2	—	
		5	2	—	2	—	
Maximum Clock Frequency	f <sub>MAX</sub>	1.5	11	—	10	—	MHz
		3.3	101	—	89	—	
		5	143	—	125	—	

\*3.3 V: min. is @ 3 V  
†5 V: min. is @ 4.5 V

**SWITCHING CHARACTERISTICS: AC Series; t<sub>r</sub>, t<sub>f</sub> = 3 ns, C<sub>L</sub> = 50 pF**

CHARACTERISTICS	SYMBOL	V <sub>CC</sub> (V)	AMBIENT TEMPERATURE (T <sub>A</sub> ) - °C				UNITS
			-40 to +85		-55 to +125		
			MIN.	MAX.	MIN.	MAX.	
Propagation Delays: Clock to Q	t <sub>PLH</sub> t <sub>PHL</sub>	1.5	—	123	—	135	ns
		3.3*	3.9	13.7	3.8	15.1	
		5†	2.8	9.8	2.7	10.8	
Clock to Q̄	t <sub>PLH</sub> t <sub>PHL</sub>	1.5	—	128	—	141	ns
		3.3	4.1	14.4	4	15.8	
		5	2.9	10.3	2.8	11.3	
Output Enable to Q, Q̄	t <sub>PZL</sub> t <sub>PZH</sub>	1.5	—	165	—	181	ns
		3.3	5.6	19.8	5.5	21.8	
		5	3.7	13.2	3.6	14.5	
Output Disable to Q, Q̄	t <sub>PLZ</sub> t <sub>PHZ</sub>	1.5	—	165	—	181	ns
		3.3	4.7	16.5	4.5	18.1	
		5	3.7	13.2	3.6	14.5	
Power Dissipation Capacitance	C <sub>PD</sub> §	—	67 Typ.		67 Typ.		pF
Min. (Valley) V <sub>OH</sub> During Switching of Other Outputs (Output Under Test Not Switching)	V <sub>OHV</sub> See Fig. 1	5	4 Typ. @ 25°C				V
Max. (Peak) V <sub>OL</sub> During Switching of Other Outputs (Output Under Test Not Switching)	V <sub>OLP</sub> See Fig. 1	5	1 Typ. @ 25°C				V
Input Capacitance	C <sub>I</sub>	—	—	10	—	10	pF
3-State Output Capacitance	C <sub>O</sub>	—	—	15	—	15	pF

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\*3.3 V: min. is @ 3.6 V  
max. is @ 3 V  
†5 V: min. is @ 5.5 V  
max. is @ 4.5 V

§C<sub>PD</sub> is used to determine the dynamic power consumption, per flip flop.

$$P_D = C_{PD} V_{CC}^2 f_i + \sum V_{CC}^2 f_o C_L$$

where f<sub>i</sub> = input frequency  
f<sub>o</sub> = output frequency  
C<sub>L</sub> = output load capacitance  
V<sub>CC</sub> = supply voltage.

# CD54/74AC374, CD54/74AC534 CD54/74ACT374, CD54/74ACT534

PREREQUISITE FOR SWITCHING: ACT Series

CHARACTERISTICS	SYMBOL	V <sub>CC</sub> (V)	AMBIENT TEMPERATURE (T <sub>A</sub> ) - °C				UNITS
			-40 to +85		-55 to +125		
			MIN.	MAX.	MIN.	MAX.	
Clock Pulse Width	t <sub>w</sub>	5†	3.9	—	4.5	—	ns
Setup Time Data to Clock	t <sub>SU</sub>	5	2	—	2	—	ns
Hold Time Data to Clock	t <sub>H</sub>	5	2.6	—	3	—	ns
Maximum Clock Frequency	f <sub>MAX</sub>	5	125	—	110	—	MHz

†5 V: min. is @ 4.5 V

SWITCHING CHARACTERISTICS: ACT Series; t<sub>r</sub>, t<sub>f</sub> = 3 ns, C<sub>L</sub> = 50 pF

CHARACTERISTICS	SYMBOL	V <sub>CC</sub> (V)	AMBIENT TEMPERATURE (T <sub>A</sub> ) - °C				UNITS
			-40 to +85		-55 to +125		
			MIN.	MAX.	MIN.	MAX.	
Propagation Delays: Clock to Q ACT374	t <sub>PLH</sub> t <sub>PHL</sub>	5†	2.9	10.2	2.8	11.2	ns
Clock to $\bar{Q}$ ACT534	t <sub>PLH</sub> t <sub>PHL</sub>	5	3	10.6	2.9	11.7	ns
Output Enable and Disable to Q ACT374	t <sub>PLZ</sub> t <sub>PHZ</sub> t <sub>PZL</sub> t <sub>PZH</sub>	5	3.7	13.2	3.6	14.5	ns
Output Enable and Disable to $\bar{Q}$ ACT534	t <sub>PLZ</sub> t <sub>PHZ</sub> t <sub>PZL</sub> t <sub>PZH</sub>	5	3.7	13.2	3.6	14.5	ns
Power Dissipation Capacitance	C <sub>PD</sub> §	—	67 Typ.		67 Typ.		pF
Min. (Valley) V <sub>OH</sub> During Switching of Other Outputs (Output Under Test Not Switching)	V <sub>OHV</sub> See Fig. 1	5	4 Typ. @ 25°C				V
Max. (Peak) V <sub>OL</sub> During Switching of Other Outputs (Output Under Test Not Switching)	V <sub>OLP</sub> See Fig. 1	5	1 Typ. @ 25°C				V
Input Capacitance	C <sub>I</sub>	—	—	10	—	10	pF
3-State Output Capacitance	C <sub>O</sub>	—	—	15	—	15	pF

†5 V: min. is @ 5.5 V  
max. is @ 4.5 V

§C<sub>PD</sub> is used to determine the dynamic power consumption, per flip flop.

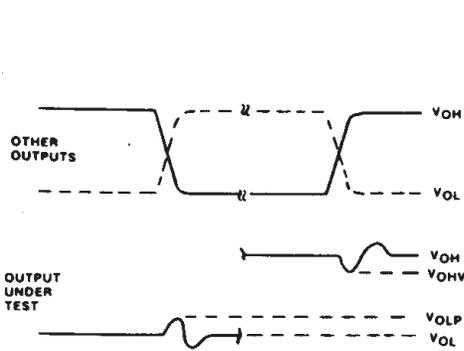
$$P_D = C_{PD} V_{CC}^2 f_i + V_{CC}^2 f_o C_L + V_{CC} \Delta I_{CC}$$

where f<sub>i</sub> = input frequency  
f<sub>o</sub> = output frequency  
C<sub>L</sub> = output load capacitance  
V<sub>CC</sub> = supply voltage.

# Technical Data

## CD54/74AC374, CD54/74AC534 CD54/74ACT374, CD54/74ACT534

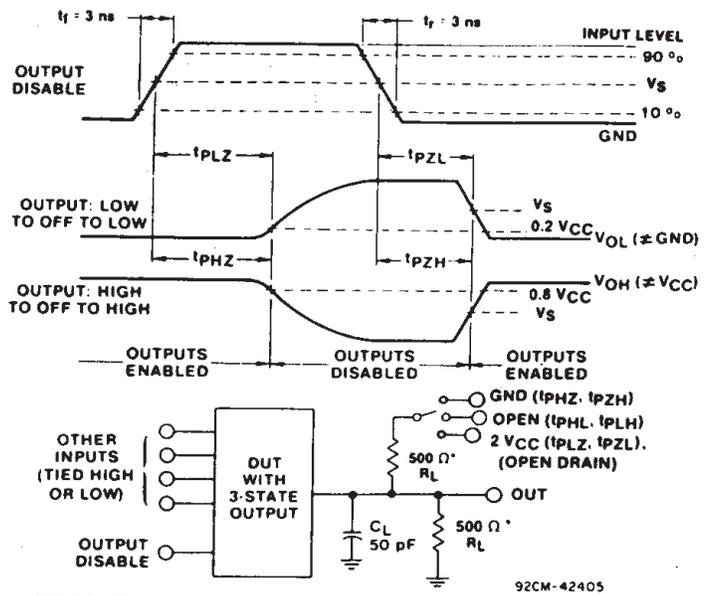
### PARAMETER MEASUREMENT INFORMATION



- NOTES:
1.  $V_{OHV}$  and  $V_{OLP}$  ARE MEASURED WITH RESPECT TO A GROUND REFERENCE NEAR THE OUTPUT UNDER TEST.
  2. INPUT PULSES HAVE THE FOLLOWING CHARACTERISTICS:  
 $P_{RR} \leq 1 \text{ MHz}$ ,  $t_r = 3 \text{ ns}$ ,  $t_f = 3 \text{ ns}$ , SKEW  $1 \text{ ns}$ .
  3. R.F. FIXTURE WITH 700-MHz DESIGN RULES REQUIRED.  
 IC SHOULD BE SOLDERED INTO TEST BOARD AND BYPASSED WITH  $0.1 \mu\text{F}$  CAPACITOR. SCOPE AND PROBES REQUIRE 700-MHz BANDWIDTH.

92CS-42406

Fig. 1 - Simultaneous switching transient waveforms.

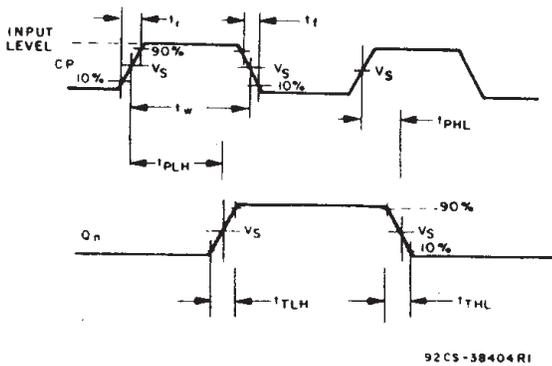


\*FOR AC SERIES ONLY: WHEN  $V_{CC} = 1.5 \text{ V}$ ,  $R_L = 1 \text{ k}\Omega$

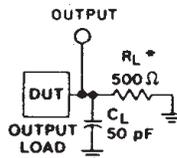
92CM-42405

\*For AC series only: When  $V_{CC} = 1.5 \text{ V}$ ,  $R_L = 1 \text{ k}\Omega$

Fig. 2 - Three-state propagation delay waveforms and test circuit.



92CS-38404R1



\*FOR AC SERIES ONLY: WHEN  
 $V_{CC} = 1.5 \text{ V}$ ,  $R_L = 1 \text{ k}\Omega$

92CS-42389

Fig. 3 - Propagation delay times and test circuit.

	CD54/74AC	CD54/74ACT
Input Level	$V_{CC}$	3 V
Input Switching Voltage, $V_S$	$0.5 V_{CC}$	1.5 V
Output Switching Voltage, $V_S$	$0.5 V_{CC}$	$0.5 V_{CC}$

**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
CD54AC374F3A	ACTIVE	CDIP	J	20	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	CD54AC374F3A	<a href="#">Samples</a>
CD54ACT374F3A	ACTIVE	CDIP	J	20	1	Non-RoHS & Green	SNPB	N / A for Pkg Type	-55 to 125	CD54ACT374F3A	<a href="#">Samples</a>
CD74AC374E	ACTIVE	PDIP	N	20	20	RoHS & Green	NIPDAU	N / A for Pkg Type	-55 to 125	CD74AC374E	<a href="#">Samples</a>
CD74AC374M	ACTIVE	SOIC	DW	20	25	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-55 to 125	AC374M	<a href="#">Samples</a>
CD74AC374M96	ACTIVE	SOIC	DW	20	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-55 to 125	AC374M	<a href="#">Samples</a>
CD74AC374ME4	ACTIVE	SOIC	DW	20	25	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-55 to 125	AC374M	<a href="#">Samples</a>
CD74AC534M96	ACTIVE	SOIC	DW	20	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-55 to 125	AC534M	<a href="#">Samples</a>
CD74ACT374E	ACTIVE	PDIP	N	20	20	RoHS & Non-Green	NIPDAU	N / A for Pkg Type	-55 to 125	CD74ACT374E	<a href="#">Samples</a>
CD74ACT374M	ACTIVE	SOIC	DW	20	25	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-55 to 125	ACT374M	<a href="#">Samples</a>
CD74ACT374M96	ACTIVE	SOIC	DW	20	2000	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	-55 to 125	ACT374M	<a href="#">Samples</a>

(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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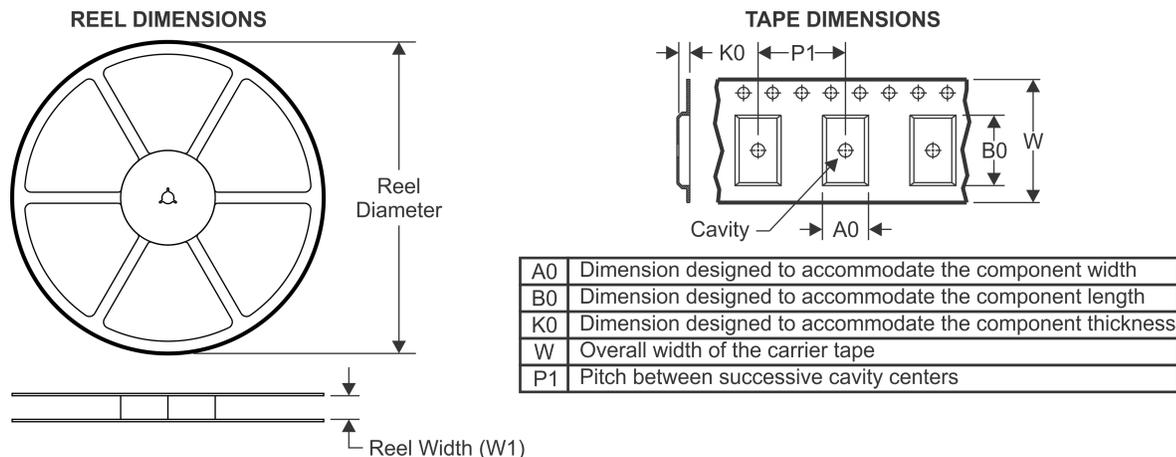
**OTHER QUALIFIED VERSIONS OF CD54AC374, CD54ACT374, CD74AC374, CD74ACT374 :**

- Catalog : [CD74AC374](#), [CD74ACT374](#)
- Military : [CD54AC374](#), [CD54ACT374](#)

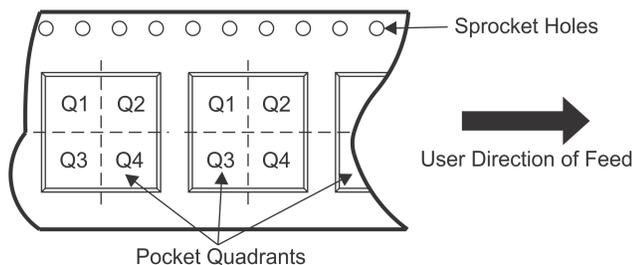
NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications

## TAPE AND REEL INFORMATION

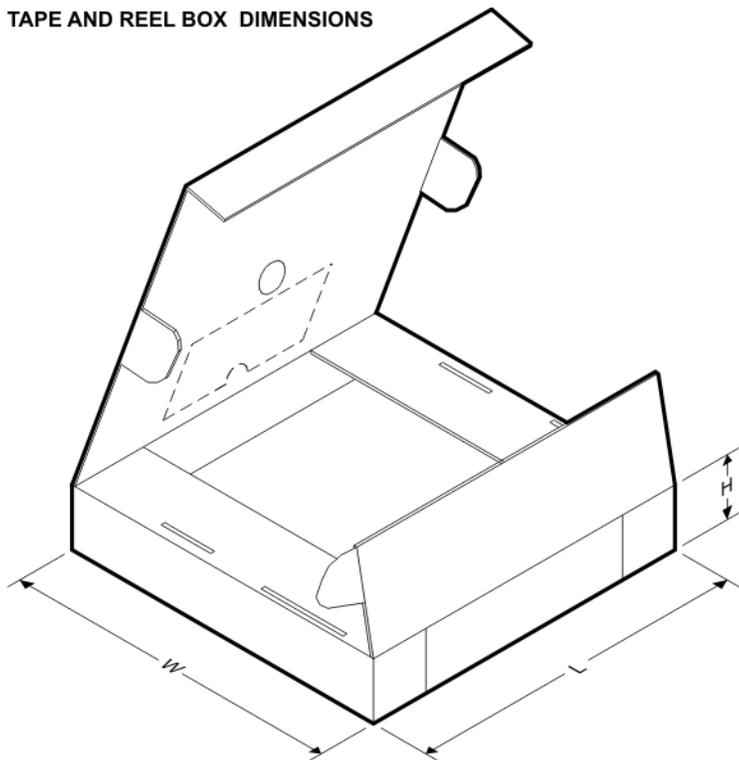


### QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



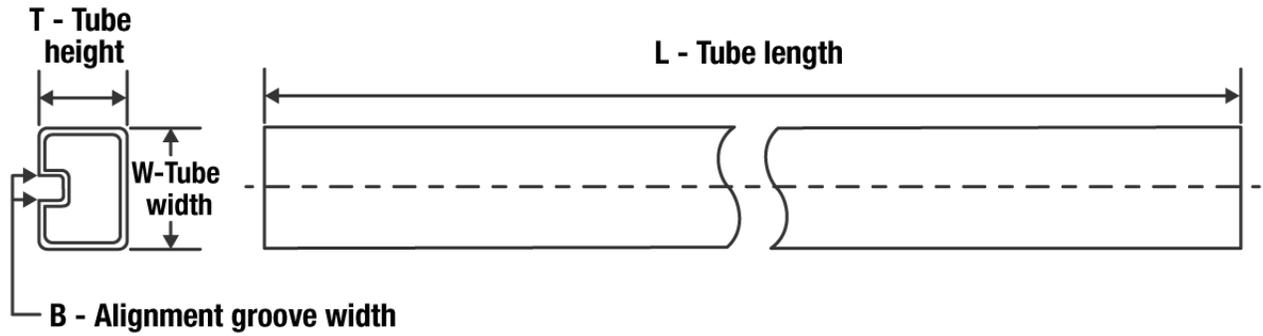
\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
CD74AC374M96	SOIC	DW	20	2000	330.0	24.4	10.8	13.3	2.7	12.0	24.0	Q1
CD74AC534M96	SOIC	DW	20	2000	330.0	24.4	10.8	13.3	2.7	12.0	24.0	Q1
CD74ACT374M96	SOIC	DW	20	2000	330.0	24.4	10.8	13.3	2.7	12.0	24.0	Q1

**TAPE AND REEL BOX DIMENSIONS**


\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
CD74AC374M96	SOIC	DW	20	2000	367.0	367.0	45.0
CD74AC534M96	SOIC	DW	20	2000	367.0	367.0	45.0
CD74ACT374M96	SOIC	DW	20	2000	367.0	367.0	45.0

**TUBE**


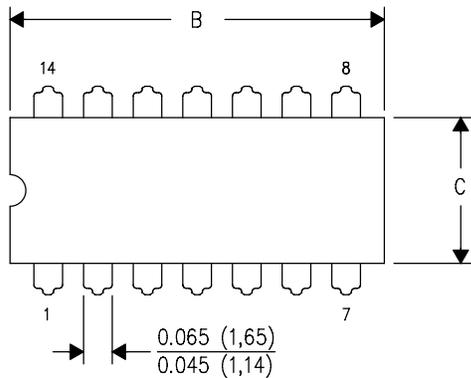
\*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
CD74AC374E	N	PDIP	20	20	506	13.97	11230	4.32
CD74AC374M	DW	SOIC	20	25	507	12.83	5080	6.6
CD74AC374ME4	DW	SOIC	20	25	507	12.83	5080	6.6
CD74ACT374E	N	PDIP	20	20	506	13.97	11230	4.32
CD74ACT374M	DW	SOIC	20	25	507	12.83	5080	6.6

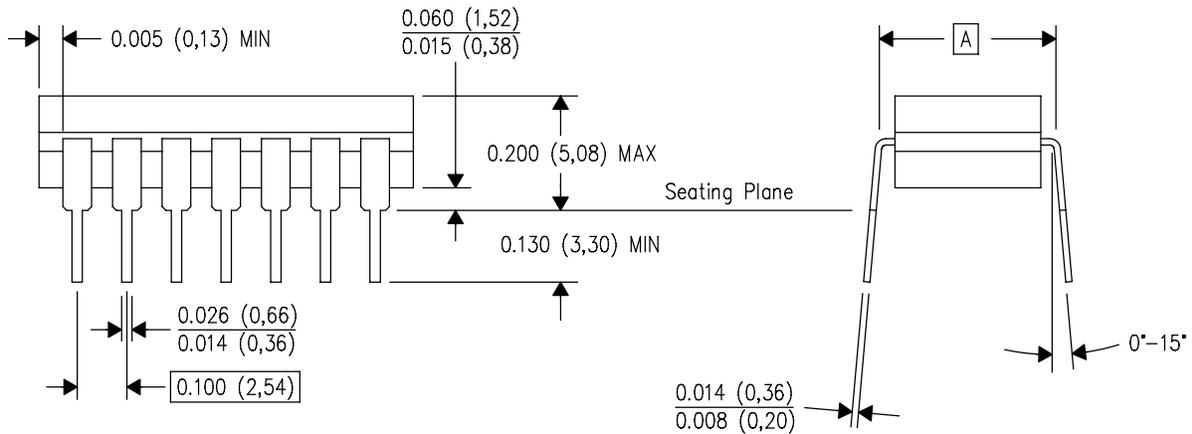
J (R-GDIP-T\*\*)

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.



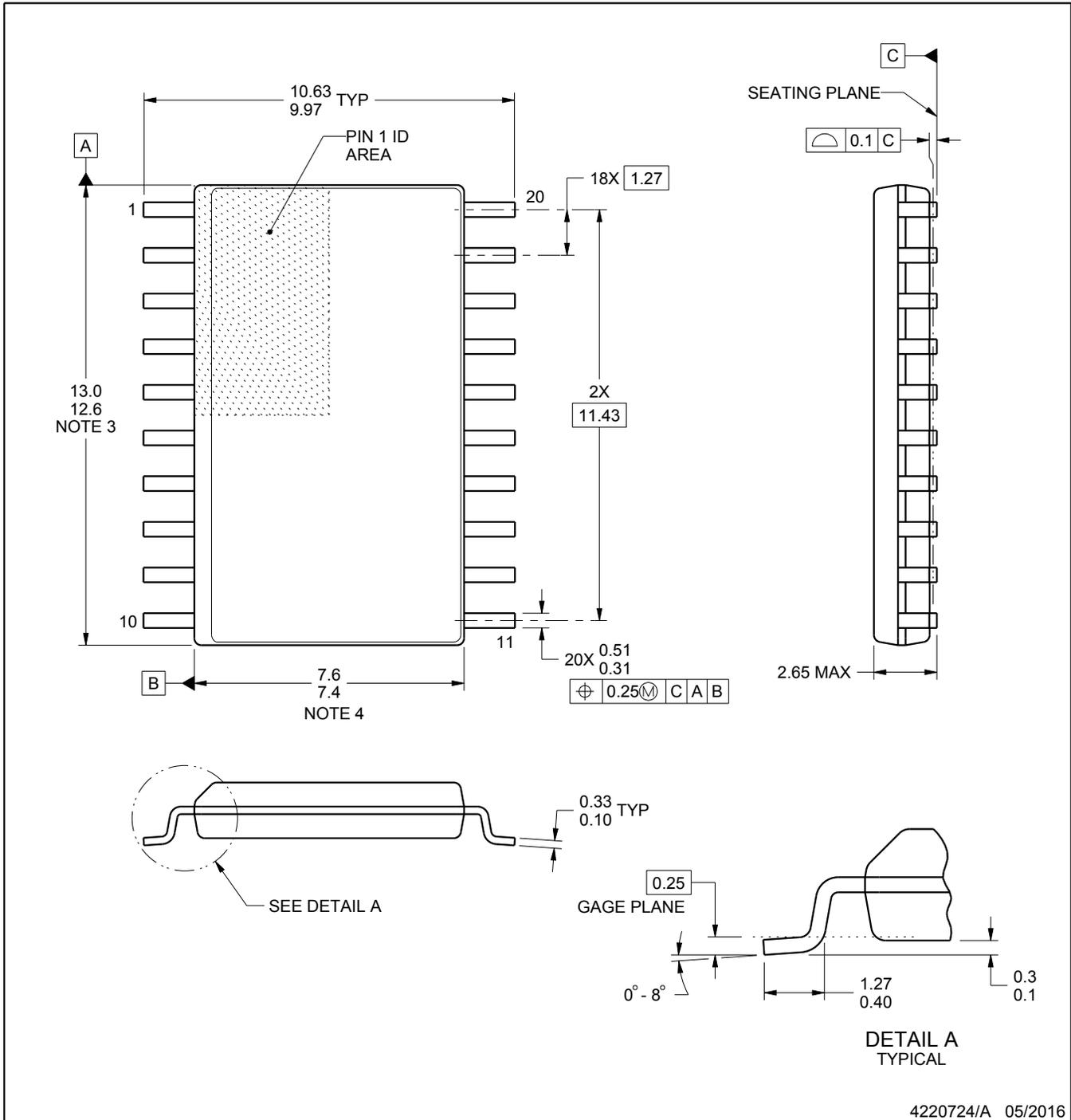
# DW0020A



# PACKAGE OUTLINE

## SOIC - 2.65 mm max height

SOIC



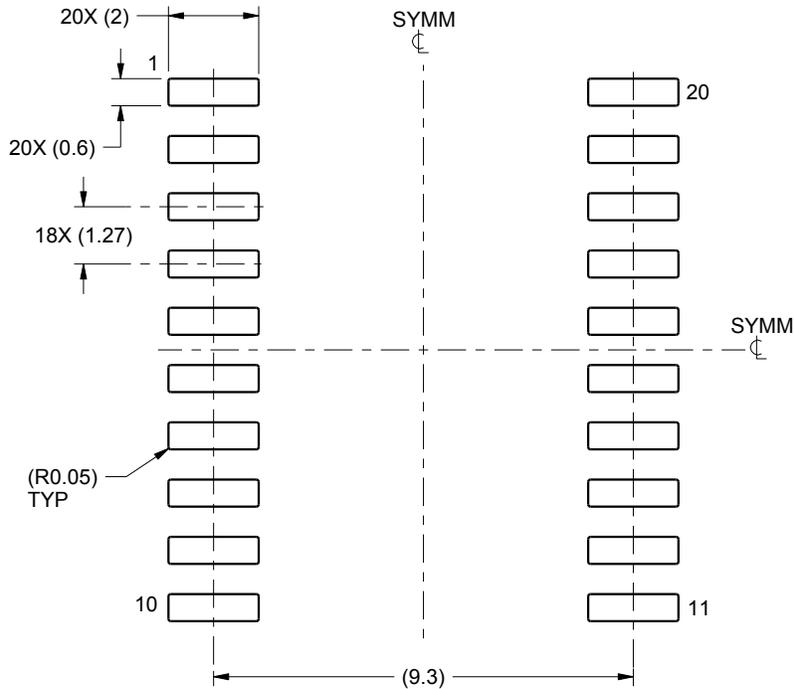
4220724/A 05/2016

# EXAMPLE BOARD LAYOUT

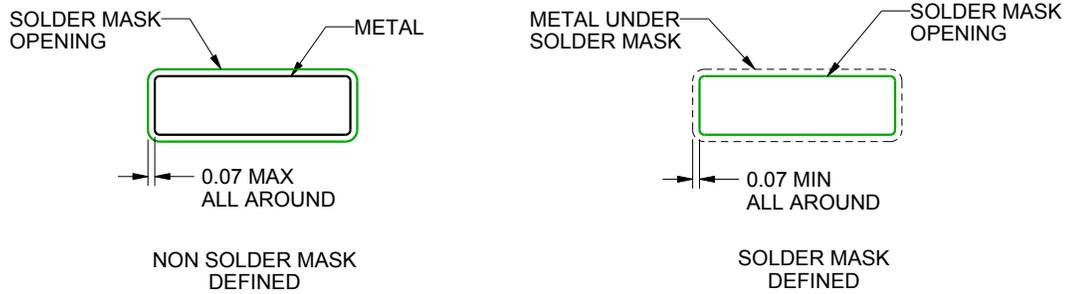
DW0020A

SOIC - 2.65 mm max height

SOIC



LAND PATTERN EXAMPLE  
SCALE:6X



SOLDER MASK DETAILS

4220724/A 05/2016

NOTES: (continued)

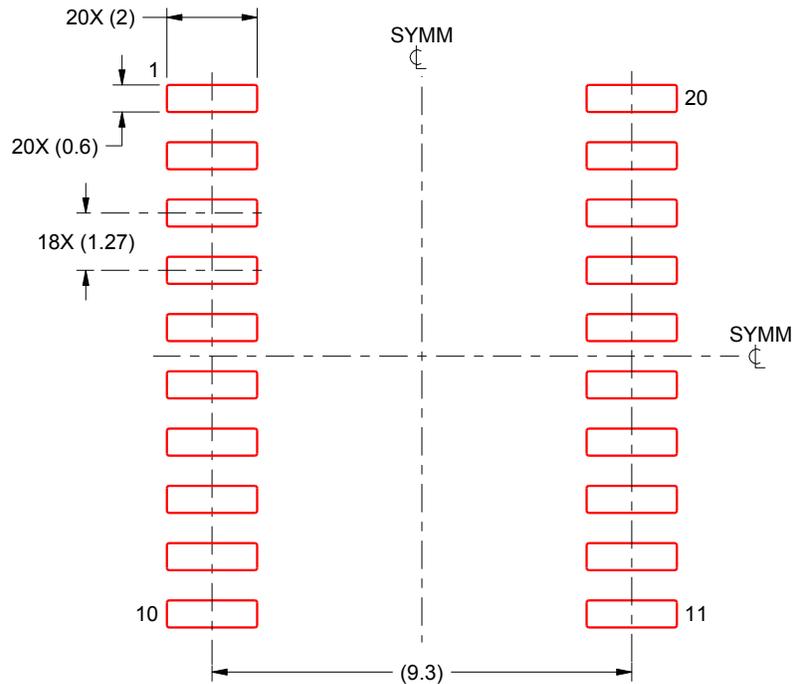
- 6. Publication IPC-7351 may have alternate designs.
- 7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# 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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