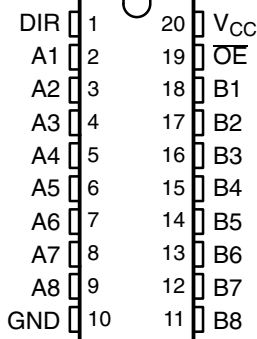


# SN54ABT245A, SN74ABT245B OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

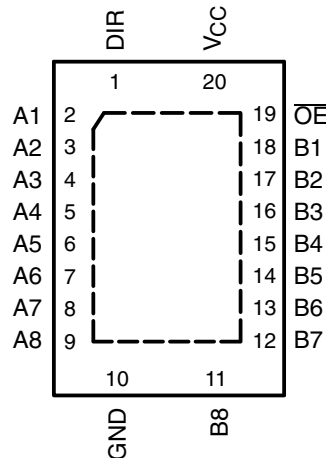
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- Typical  $V_{OLP}$  (Output Ground Bounce)  $<1$  V at  $V_{CC} = 5$  V,  $T_A = 25^\circ\text{C}$
- $I_{off}$  and Power-Up 3-State Support Hot Insertion
- High-Drive Outputs ( $-32\text{-mA } I_{OH}$ ,  $64\text{-mA } I_{OL}$ )
- Latch-Up Performance Exceeds 500 mA Per JEDEC Standard JESD 17
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)

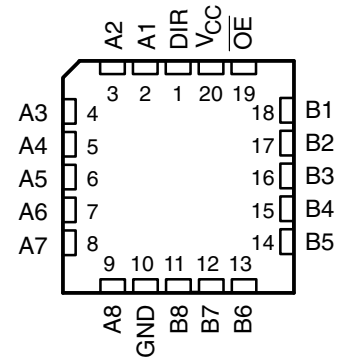
SN54ABT245A . . . J OR W PACKAGE  
SN74ABT245B . . . DB, DGV, DW, N, NS,  
OR PW PACKAGE  
(TOP VIEW)



SN74ABT245B . . . RGY PACKAGE  
(TOP VIEW)



SN54ABT245B . . . FK PACKAGE  
(TOP VIEW)



## description/ordering information

These octal bus transceivers are designed for asynchronous communication between data buses. The devices transmit data from the A bus to the B bus or from the B bus to the A bus, depending on the logic level at the direction-control (DIR) input. The output-enable ( $\overline{OE}$ ) input can be used to disable the device so the buses are effectively isolated.

## ORDERING INFORMATION

| $T_A$          | PACKAGE†      |                 | ORDERABLE PART NUMBER | TOP-SIDE MARKING |
|----------------|---------------|-----------------|-----------------------|------------------|
| -40°C to 85°C  | PDIP – N      | Tube            | SN74ABT245BN          | SN74ABT245BN     |
|                | QFN – RGY     | Tape and reel   | SN74ABT245BRGYR       | AB245B           |
|                | SOIC – DW     | Tube            | SN74ABT245BDW         | ABT245B          |
|                |               | Tape and reel   | SN74ABT245BDWR        |                  |
|                | SOP – NS      | Tape and reel   | SN74ABT245BNSR        | ABT245B          |
|                | SSOP – DB     | Tape and reel   | SN74ABT245BDBR        | AB245B           |
|                | TSSOP – PW    | Tube            | SN74ABT245BPW         | AB245B           |
|                |               | Tape and reel   | SN74ABT245BPWR        |                  |
|                | TVSOP – DGV   | Tape and reel   | SN74ABT245BDGVR       | AB245B           |
| VFBGA – GQN    | Tape and reel | SN74ABT245BGQNR | AB245B                |                  |
|                |               | SN74ABT245BZQNR |                       |                  |
| -55°C to 125°C | CDIP – J      | Tube            | SNJ54ABT245AJ         | SNJ54ABT245AJ    |
|                | CFP – W       | Tube            | SNJ54ABT245AW         | SNJ54ABT245AW    |
|                | LCCC – FK     | Tube            | SNJ54ABT245AFK        | SNJ54ABT245AFK   |

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



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

 **TEXAS  
INSTRUMENTS**

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On products compliant to MIL-PRF-38535, all parameters are tested unless otherwise noted. On all other products, production processing does not necessarily include testing of all parameters.

# SN54ABT245A, SN74ABT245B OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

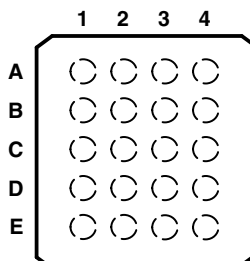
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## description/ordering information (continued)

To ensure the high-impedance state during power up or power down,  $\overline{OE}$  should 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.

This device is fully specified for hot-insertion applications using  $I_{off}$  and power-up 3-state. The  $I_{off}$  circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down. The power-up 3-state circuitry places the outputs in the high-impedance state during power up and power down, which prevents driver conflict.

SN74ABT245B . . . GQN OR ZQN PACKAGE  
(TOP VIEW)



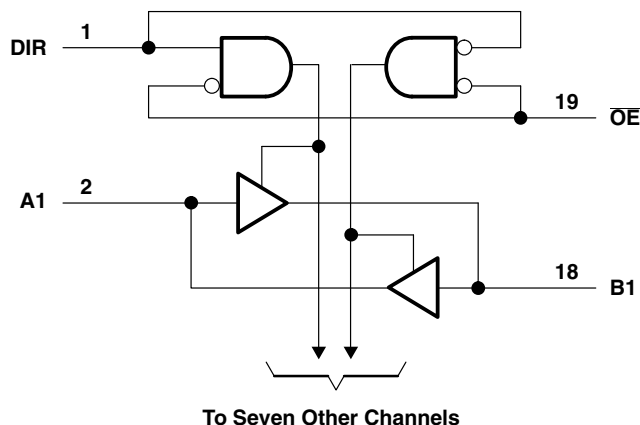
## terminal assignments

|   | 1   | 2   | 3        | 4               |
|---|-----|-----|----------|-----------------|
| A | A1  | DIR | $V_{CC}$ | $\overline{OE}$ |
| B | A3  | B2  | A2       | B1              |
| C | A5  | A4  | B4       | B3              |
| D | A7  | B6  | A6       | B5              |
| E | GND | A8  | B8       | B7              |

## FUNCTION TABLE

| INPUTS          |     | OPERATION       |
|-----------------|-----|-----------------|
| $\overline{OE}$ | DIR |                 |
| L               | L   | B data to A bus |
| L               | H   | A data to B bus |
| H               | X   | Isolation       |

## logic diagram (positive logic)



Pin numbers shown are for the DB, DGV, DW, FK, J, N, NS, PW, RGY, and W packages.

# SN54ABT245A, SN74ABT245B OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

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

|   |                 |
|---|-----------------|
| Supply voltage range, $V_{CC}$  | –0.5 V to 7 V   |
| Input voltage range, $V_I$ (except I/O ports) (see Note 1)                | –0.5 V to 7 V   |
| Voltage range applied to any output in the high or power-off state, $V_O$ | –0.5 V to 5.5 V |
| Current into any output in the low state, $I_O$ : SN54ABT245A             | 96 mA           |
| SN74ABT245B   | 128 mA          |
| Input clamp current, $I_{IK}$ ( $V_I < 0$ )                               | –18 mA          |
| Output clamp current, $I_{OK}$ ( $V_O < 0$ )                              | –50 mA          |
| Package thermal impedance, $\theta_{JA}$ (see Note 2): DB package         | 70°C/W          |
| (see Note 2): DGV package   | 92°C/W          |
| (see Note 2): DW package  | 58°C/W          |
| (see Note 2): GQN/ZQN package   | 78°C/W          |
| (see Note 2): N package   | 69°C/W          |
| (see Note 2): NS package  | 60°C/W          |
| (see Note 2): PW package  | 83°C/W          |
| (see Note 3): RGY package   | 37°C/W          |
| Storage temperature range, $T_{stg}$                                      | –65°C to 150°C  |

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

- NOTES: 1. The input and output negative-voltage ratings may be exceeded if the input and output clamp-current ratings are observed.  
 2. The package thermal impedance is calculated in accordance with JESD 51-7.  
 3. The package thermal impedance is calculated in accordance with JESD 51-5.

## recommended operating conditions (see Note 4)

|  | SN54ABT245A |          | SN74ABT245B |          | UNIT      |
|--|-------------|----------|-------------|----------|-----------|
|  | MIN         | MAX      | MIN         | MAX      |           |
| $V_{CC}$ Supply voltage                                | 4.5         | 5.5      | 4.5         | 5.5      | V         |
| $V_{IH}$ High-level input voltage                      | 2           |          | 2           |          | V         |
| $V_{IL}$ Low-level input voltage                       |             | 0.8      |             | 0.8      | V         |
| $V_I$ Input voltage                                    | 0           | $V_{CC}$ | 0           | $V_{CC}$ | V         |
| $I_{OH}$ High-level output current                     |             | –24      |             | –32      | mA        |
| $I_{OL}$ Low-level output current                      |             | 48       |             | 64       | mA        |
| $\Delta t/\Delta v$ Input transition rise or fall rate |             | 5        |             | 5        | ns/V      |
| $\Delta t/\Delta V_{CC}$ Power-up ramp rate            |             |          |             | 200      | $\mu$ s/V |
| $T_A$ Operating free-air temperature                   | –55         | 125      | –40         | 85       | °C        |

NOTE 4: All unused inputs of the device must be held at  $V_{CC}$  or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number SCBA004.



# SN54ABT245A, SN74ABT245B OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

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

| PARAMETER                | TEST CONDITIONS  | T <sub>A</sub> = 25°C  |                  |      | SN54ABT245A |      | SN74ABT245B |      | UNIT |      |    |
|--------------------------|--|--|------------------|------|-------------|------|-------------|------|------|------|----|
|                          |  | MIN  | TYP†             | MAX  | MIN         | MAX  | MIN         | MAX  |      |      |    |
| V <sub>IK</sub>          | V <sub>CC</sub> = 4.5 V, I <sub>I</sub> = -18 mA                                   |  |                  | -1.2 |             | -1.2 |             | -1.2 | V    |      |    |
| V <sub>OH</sub>          | V <sub>CC</sub> = 4.5 V, I <sub>OH</sub> = -3 mA                                   |  | 2.5              |      | 2.5         |      | 2.5         |      | V    |      |    |
|                          | V <sub>CC</sub> = 5 V, I <sub>OH</sub> = -3 mA                                     |  | 3                |      | 3           |      | 3           |      |      |      |    |
|                          | V <sub>CC</sub> = 4.5 V  | I <sub>OH</sub> = -24 mA   |                  | 2    |             | 2    |             |      |      |      |    |
| I <sub>OH</sub> = -32 mA |  |  | 2*               |      |             |      | 2           |      |      |      |    |
| V <sub>OL</sub>          | V <sub>CC</sub> = 4.5 V  | I <sub>OL</sub> = 48 mA  |                  |      | 0.55        |      | 0.55        |      | V    |      |    |
|                          |  | I <sub>OL</sub> = 64 mA  |                  |      | 0.55*       |      | 0.55        |      |      |      |    |
| V <sub>hys</sub>         |  |  | 100              |      |             |      |             |      | mV   |      |    |
| I <sub>I</sub>           | Control inputs   | V <sub>CC</sub> = 0 to 5.5 V, V <sub>I</sub> = V <sub>CC</sub> or GND                |                  |      | ±1          |      | ±1          |      | ±1   |      |    |
|                          | A or B ports   | V <sub>CC</sub> = 2.1 V to 5.5 V, V <sub>I</sub> = V <sub>CC</sub> or GND            |                  |      | ±20         |      | ±100        |      | ±20  |      |    |
| I <sub>OZPU</sub>        | V <sub>CC</sub> = 0 to 2.1 V, V <sub>O</sub> = 0.5 V to 2.7 V, $\overline{OE}$ = X |  |                  | ±50  |             | ±50  |             | ±50  | μA   |      |    |
| I <sub>OZPD</sub>        | V <sub>CC</sub> = 2.1 V to 0, V <sub>O</sub> = 0.5 V to 2.7 V, $\overline{OE}$ = X |  |                  | ±50  |             | ±50  |             | ±50  | μA   |      |    |
| I <sub>OZH</sub> ‡       | V <sub>CC</sub> = 2.1 V to 5.5 V, V <sub>O</sub> = 2.7 V, $\overline{OE}$ ≥ 2 V    |  |                  | 10   |             | 10   |             | 10   | μA   |      |    |
| I <sub>OZL</sub> ‡       | V <sub>CC</sub> = 2.1 V to 5.5 V, V <sub>O</sub> = 0.5 V, $\overline{OE}$ ≥ 2 V    |  |                  | -10  |             | -10  |             | -10  | μA   |      |    |
| I <sub>off</sub>         | V <sub>CC</sub> = 0, V <sub>I</sub> or V <sub>O</sub> ≤ 5.5 V                      |  |                  | ±100 |             |      |             | ±100 | μA   |      |    |
| I <sub>CEX</sub>         | V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 5.5 V                                    | Outputs high   |                  |      | 50          |      | 50          |      | 50   | μA   |    |
| I <sub>O</sub> §         | V <sub>CC</sub> = 5.5 V, V <sub>O</sub> = 2.5 V                                    |  | -50              | -140 | -180        |      | -50         | -180 | -50  | -180 | mA |
| I <sub>CC</sub>          | A or B ports   | V <sub>CC</sub> = 5.5 V, I <sub>O</sub> = 0, V <sub>I</sub> = V <sub>CC</sub> or GND | Outputs high     |      | 5           | 250  |             | 250  |      | 250  | μA |
|                          |  |  | Outputs low      |      | 22          | 30   |             | 30   |      | 30   | mA |
|                          |  |  | Outputs disabled |      | 1           | 250  |             | 250  |      | 250  | μA |
| ΔI <sub>CC</sub> ¶       | Data inputs  | V <sub>CC</sub> = 5.5 V, One input at 3.4 V, Other inputs at V <sub>CC</sub> or GND  | Outputs enabled  |      |             | 1.5  |             | 1.5  |      | 1.5  | mA |
|                          |  |  | Outputs disabled |      |             | 50   |             | 50   |      | 50   | μA |
|                          | Control inputs   | V <sub>CC</sub> = 5.5 V, One input at 3.4 V, Other inputs at V <sub>CC</sub> or GND  |                  |      | 1.5         |      | 1.5         |      | 1.5  | mA   |    |
| C <sub>i</sub>           | Control inputs   | V <sub>I</sub> = 2.5 V or 0.5 V  |                  |      | 4           |      |             |      | 4    | pF   |    |
| C <sub>io</sub>          | A or B ports   | V <sub>O</sub> = 2.5 V or 0.5 V  |                  |      | 8           |      |             |      | 8    | pF   |    |

\* On products compliant to MIL-PRF-38535, this parameter does not apply.

† All typical values are at V<sub>CC</sub> = 5 V.

‡ The parameters I<sub>OZH</sub> and I<sub>OZL</sub> include the input leakage current.

§ Not more than one output should be tested at a time, and the duration of the test should not exceed one second.

¶ This is the increase in supply current for each input that is at the specified TTL voltage level, rather than V<sub>CC</sub> or GND.



**SN54ABT245A, SN74ABT245B  
OCTAL BUS TRANSCEIVERS  
WITH 3-STATE OUTPUTS**

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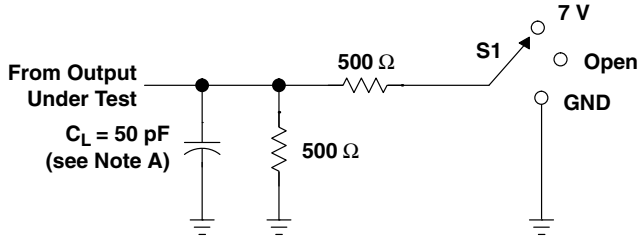
switching characteristics over recommended ranges of supply voltage and operating free-air temperature,  $C_L = 50$  pF (unless otherwise noted) (see Figure 1)

| PARAMETER   | FROM<br>(INPUT) | TO<br>(OUTPUT) | $V_{CC} = 5$ V,<br>$T_A = 25^\circ$ C |     |     | SN54ABT245A |     | SN74ABT245B |     | UNIT |
|-------------|-----------------|----------------|---------------------------------------|-----|-----|-------------|-----|-------------|-----|------|
|             |                 |                | MIN                                   | TYP | MAX | MIN         | MAX | MIN         | MAX |      |
| $t_{PLH}$   | A or B          | B or A         | 1                                     | 2   | 3.2 | 0.8         | 3.8 | 1           | 3.6 | ns   |
| $t_{PHL}$   |                 |                | 1                                     | 2.6 | 3.5 | 1           | 4.2 | 1           | 3.9 |      |
| $t_{PZH}$   | $\overline{OE}$ | A or B         | 2                                     | 3.5 | 4.5 | 1.2         | 6.2 | 2           | 5.6 | ns   |
| $t_{PZL}$   |                 |                | 1.9                                   | 4   | 5.3 | 1.3         | 6.8 | 1.9         | 6.2 |      |
| $t_{PHZ}$   | $\overline{OE}$ | A or B         | 2.2                                   | 4.4 | 5.4 | 2.2         | 6.1 | 2.2         | 5.9 | ns   |
| $t_{PLZ}$   |                 |                | 1.5                                   | 3   | 4   | 1.0         | 4.9 | 1.5         | 4.5 |      |
| $t_{sk(o)}$ |                 |                |                                       |     | 0.5 |             |     | 0.5         | ns  |      |

**SN54ABT245A, SN74ABT245B**  
**OCTAL BUS TRANSCEIVERS**  
**WITH 3-STATE OUTPUTS**

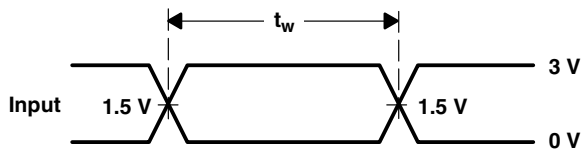
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**PARAMETER MEASUREMENT INFORMATION**

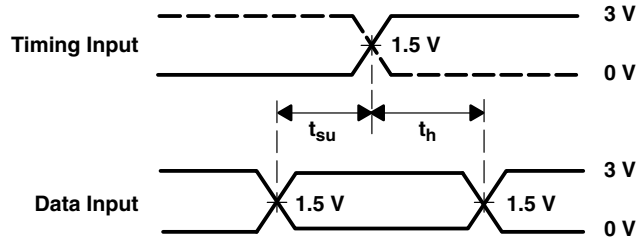


**LOAD CIRCUIT**

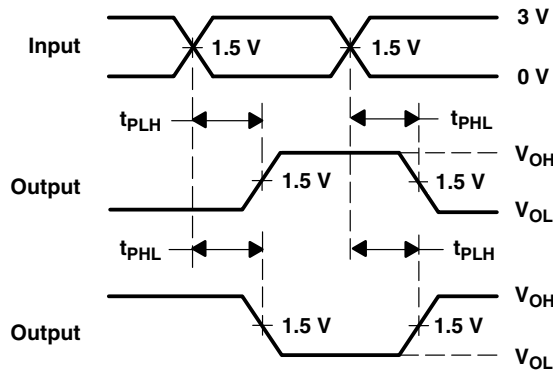
| TEST              | S1   |
|-------------------|------|
| $t_{PLH}/t_{PHL}$ | Open |
| $t_{PLZ}/t_{PZL}$ | 7 V  |
| $t_{PHZ}/t_{PZH}$ | Open |



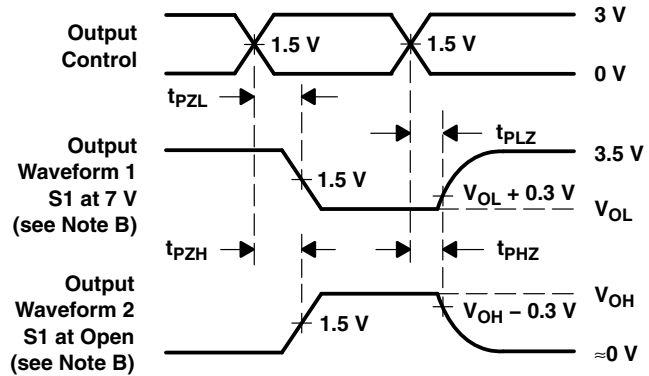
**VOLTAGE WAVEFORMS**  
**PULSE DURATION**



**VOLTAGE WAVEFORMS**  
**SETUP AND HOLD TIMES**



**VOLTAGE WAVEFORMS**  
**PROPAGATION DELAY TIMES**  
**INVERTING AND NONINVERTING OUTPUTS**



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

- NOTES: A.  $C_L$  includes probe and jig 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. All input pulses are supplied by generators having the following characteristics:  $PRR \leq 10 \text{ MHz}$ ,  $Z_O = 50 \Omega$ ,  $t_r \leq 2.5 \text{ ns}$ ,  $t_f \leq 2.5 \text{ ns}$ .  
 D. The outputs are measured one at a time, with one transition per measurement.  
 E. All parameters and waveforms are not applicable to all devices.

**Figure 1. Load Circuit and Voltage Waveforms**

**PACKAGING INFORMATION**

| Orderable part number           | Status<br>(1) | Material type<br>(2) | Package   Pins   | Package qty   Carrier | RoHS<br>(3) | Lead finish/<br>Ball material<br>(4) | MSL rating/<br>Peak reflow<br>(5) | Op temp (°C) | Part marking<br>(6)                       |
|---------------------------------|---------------|----------------------|------------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|---|
| <a href="#">5962-9214802Q2A</a> | Active        | Production           | LCCC (FK)   20   | 55   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-<br>9214802Q2A<br>SNJ54ABT<br>245AFK |
| <a href="#">5962-9214802QRA</a> | Active        | Production           | CDIP (J)   20    | 20   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9214802QR<br>A<br>SNJ54ABT245AJ      |
| <a href="#">5962-9214802QSA</a> | Active        | Production           | CFP (W)   20     | 25   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9214802QS<br>A<br>SNJ54ABT245AW      |
| <a href="#">SN74ABT245BDBR</a>  | Active        | Production           | SSOP (DB)   20   | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                                    |
| SN74ABT245BDBR.B                | Active        | Production           | SSOP (DB)   20   | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                                    |
| SN74ABT245BDBRG4                | Active        | Production           | SSOP (DB)   20   | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                                    |
| <a href="#">SN74ABT245BDGVR</a> | Active        | Production           | TVSOP (DGV)   20 | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                                    |
| SN74ABT245BDGVR.B               | Active        | Production           | TVSOP (DGV)   20 | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                                    |
| SN74ABT245BDGVRG4               | Active        | Production           | TVSOP (DGV)   20 | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                                    |
| SN74ABT245BDGVRG4.B             | Active        | Production           | TVSOP (DGV)   20 | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                                    |
| <a href="#">SN74ABT245BDW</a>   | Active        | Production           | SOIC (DW)   20   | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | ABT245B                                   |
| SN74ABT245BDW.B                 | Active        | Production           | SOIC (DW)   20   | 25   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | ABT245B                                   |
| <a href="#">SN74ABT245BDWR</a>  | Active        | Production           | SOIC (DW)   20   | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | ABT245B                                   |
| SN74ABT245BDWR.B                | Active        | Production           | SOIC (DW)   20   | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | ABT245B                                   |
| SN74ABT245BDWRG4                | Active        | Production           | SOIC (DW)   20   | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | ABT245B                                   |
| <a href="#">SN74ABT245BN</a>    | Active        | Production           | PDIP (N)   20    | 20   TUBE             | Yes         | NIPDAU                               | N/A for Pkg Type                  | -40 to 85    | SN74ABT245BN                              |
| SN74ABT245BN.B                  | Active        | Production           | PDIP (N)   20    | 20   TUBE             | Yes         | NIPDAU                               | N/A for Pkg Type                  | -40 to 85    | SN74ABT245BN                              |
| SN74ABT245BNE4                  | Active        | Production           | PDIP (N)   20    | 20   TUBE             | Yes         | NIPDAU                               | N/A for Pkg Type                  | -40 to 85    | SN74ABT245BN                              |
| <a href="#">SN74ABT245BNSR</a>  | Active        | Production           | SOP (NS)   20    | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | ABT245B                                   |
| SN74ABT245BNSR.B                | Active        | Production           | SOP (NS)   20    | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | ABT245B                                   |
| SN74ABT245BNSRG4                | Active        | Production           | SOP (NS)   20    | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | ABT245B                                   |
| SN74ABT245BNSRG4.B              | Active        | Production           | SOP (NS)   20    | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | ABT245B                                   |
| <a href="#">SN74ABT245BPW</a>   | Active        | Production           | TSSOP (PW)   20  | 70   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                                    |
| SN74ABT245BPW.B                 | Active        | Production           | TSSOP (PW)   20  | 70   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                                    |

| Orderable part number           | Status<br>(1) | Material type<br>(2) | Package   Pins  | Package qty   Carrier | RoHS<br>(3) | Lead finish/<br>Ball material<br>(4) | MSL rating/<br>Peak reflow<br>(5) | Op temp (°C) | Part marking<br>(6)                  |
|---------------------------------|---------------|----------------------|-----------------|-----------------------|-------------|--------------------------------------|-----------------------------------|--------------|--------------------------------------|
| SN74ABT245BPWG4                 | Active        | Production           | TSSOP (PW)   20 | 70   TUBE             | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                               |
| <a href="#">SN74ABT245BPWR</a>  | Active        | Production           | TSSOP (PW)   20 | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                               |
| SN74ABT245BPWR.B                | Active        | Production           | TSSOP (PW)   20 | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                               |
| SN74ABT245BPWRE4                | Active        | Production           | TSSOP (PW)   20 | 2000   LARGE T&R      | Yes         | NIPDAU                               | Level-1-260C-UNLIM                | -40 to 85    | AB245B                               |
| <a href="#">SN74ABT245BRGYR</a> | Active        | Production           | VQFN (RGY)   20 | 3000   LARGE T&R      | Yes         | NIPDAU                               | Level-2-260C-1 YEAR               | -40 to 85    | AB245B                               |
| SN74ABT245BRGYR.B               | Active        | Production           | VQFN (RGY)   20 | 3000   LARGE T&R      | Yes         | NIPDAU                               | Level-2-260C-1 YEAR               | -40 to 85    | AB245B                               |
| <a href="#">SNJ54ABT245AFK</a>  | Active        | Production           | LCCC (FK)   20  | 55   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9214802Q2A<br>SNJ54ABT245AFK    |
| <a href="#">SNJ54ABT245AJ</a>   | Active        | Production           | CDIP (J)   20   | 20   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9214802QR<br>A<br>SNJ54ABT245AJ |
| <a href="#">SNJ54ABT245AW</a>   | Active        | Production           | CFP (W)   20    | 25   TUBE             | No          | SNPB                                 | N/A for Pkg Type                  | -55 to 125   | 5962-9214802QS<br>A<br>SNJ54ABT245AW |

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

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

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

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

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

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

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

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**OTHER QUALIFIED VERSIONS OF SN74ABT245B :**

- Enhanced Product : [SN74ABT245B-EP](#)

NOTE: Qualified Version Definitions:

- Enhanced Product - Supports Defense, Aerospace and Medical 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 |
|-------------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74ABT245BDBR    | SSOP         | DB              | 20   | 2000 | 330.0              | 16.4               | 8.2     | 7.5     | 2.5     | 12.0    | 16.0   | Q1            |
| SN74ABT245BDGVR   | TVSOP        | DGV             | 20   | 2000 | 330.0              | 12.4               | 6.9     | 5.6     | 1.6     | 8.0     | 12.0   | Q1            |
| SN74ABT245BDGVRG4 | TVSOP        | DGV             | 20   | 2000 | 330.0              | 12.4               | 6.9     | 5.6     | 1.6     | 8.0     | 12.0   | Q1            |
| SN74ABT245BDWR    | SOIC         | DW              | 20   | 2000 | 330.0              | 24.4               | 10.8    | 13.3    | 2.7     | 12.0    | 24.0   | Q1            |
| SN74ABT245BNSR    | SOP          | NS              | 20   | 2000 | 330.0              | 24.4               | 8.4     | 13.0    | 2.5     | 12.0    | 24.0   | Q1            |
| SN74ABT245BNSRG4  | SOP          | NS              | 20   | 2000 | 330.0              | 24.4               | 8.4     | 13.0    | 2.5     | 12.0    | 24.0   | Q1            |
| SN74ABT245BPWR    | TSSOP        | PW              | 20   | 2000 | 330.0              | 16.4               | 6.95    | 7.1     | 1.6     | 8.0     | 16.0   | Q1            |
| SN74ABT245BRGYR   | VQFN         | RGY             | 20   | 3000 | 330.0              | 12.4               | 3.8     | 4.8     | 1.6     | 8.0     | 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) |
|-------------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74ABT245BDBR    | SSOP         | DB              | 20   | 2000 | 356.0       | 356.0      | 35.0        |
| SN74ABT245BDGVR   | TVSOP        | DGV             | 20   | 2000 | 356.0       | 356.0      | 35.0        |
| SN74ABT245BDGVRG4 | TVSOP        | DGV             | 20   | 2000 | 356.0       | 356.0      | 35.0        |
| SN74ABT245BDWR    | SOIC         | DW              | 20   | 2000 | 367.0       | 367.0      | 45.0        |
| SN74ABT245BNSR    | SOP          | NS              | 20   | 2000 | 367.0       | 367.0      | 45.0        |
| SN74ABT245BNSRG4  | SOP          | NS              | 20   | 2000 | 367.0       | 367.0      | 45.0        |
| SN74ABT245BPWR    | TSSOP        | PW              | 20   | 2000 | 356.0       | 356.0      | 35.0        |
| SN74ABT245BRGYR   | VQFN         | RGY             | 20   | 3000 | 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) |
|-----------------|--------------|--------------|------|-----|--------|--------|--------|--------|
| 5962-9214802Q2A | FK           | LCCC         | 20   | 55  | 506.98 | 12.06  | 2030   | NA     |
| 5962-9214802QSA | W            | CFP          | 20   | 25  | 506.98 | 26.16  | 6220   | NA     |
| SN74ABT245BDW   | DW           | SOIC         | 20   | 25  | 507    | 12.83  | 5080   | 6.6    |
| SN74ABT245BDW.B | DW           | SOIC         | 20   | 25  | 507    | 12.83  | 5080   | 6.6    |
| SN74ABT245BN    | N            | PDIP         | 20   | 20  | 506    | 13.97  | 11230  | 4.32   |
| SN74ABT245BN.B  | N            | PDIP         | 20   | 20  | 506    | 13.97  | 11230  | 4.32   |
| SN74ABT245BNE4  | N            | PDIP         | 20   | 20  | 506    | 13.97  | 11230  | 4.32   |
| SN74ABT245BPW   | PW           | TSSOP        | 20   | 70  | 530    | 10.2   | 3600   | 3.5    |
| SN74ABT245BPW.B | PW           | TSSOP        | 20   | 70  | 530    | 10.2   | 3600   | 3.5    |
| SN74ABT245BPWG4 | PW           | TSSOP        | 20   | 70  | 530    | 10.2   | 3600   | 3.5    |
| SNJ54ABT245AFK  | FK           | LCCC         | 20   | 55  | 506.98 | 12.06  | 2030   | NA     |
| SNJ54ABT245AW   | 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



# EXAMPLE BOARD LAYOUT

PW0020A

TSSOP - 1.2 mm max height

SMALL OUTLINE PACKAGE



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.

# 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.

# DB0020A



# PACKAGE OUTLINE

## SSOP - 2 mm max height

SMALL OUTLINE PACKAGE



4214851/B 08/2019

### 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



4214851/B 08/2019

NOTES: (continued)

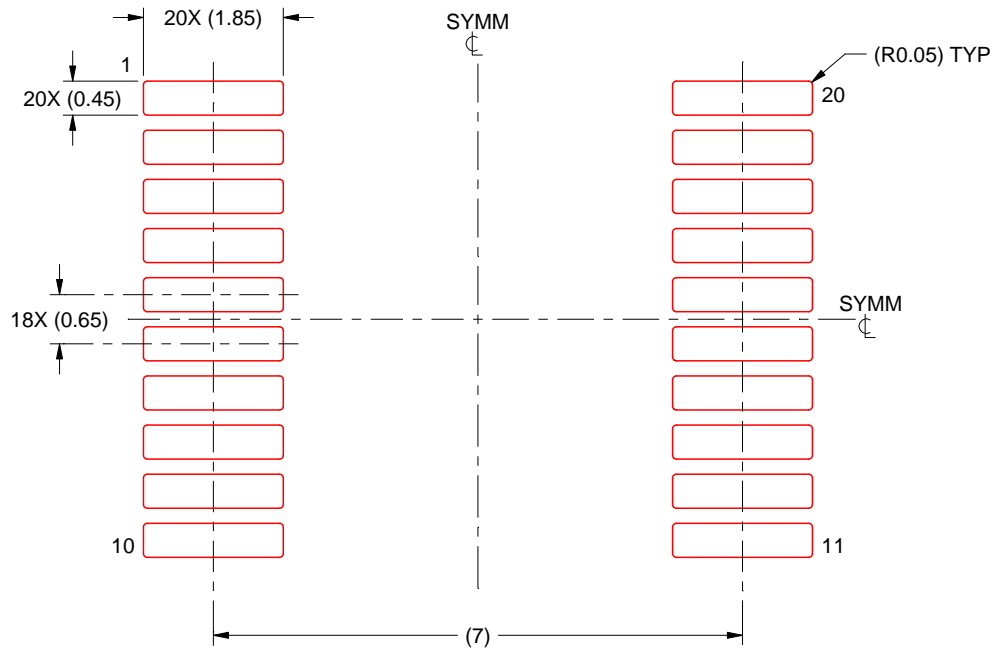
- 6. Publication IPC-7351 may have alternate designs.
- 7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

# 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.

# 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



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



4040083/F 03/03

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

DGV (R-PDSO-G\*\*)

PLASTIC SMALL-OUTLINE

24 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 per side.  
 D. Falls within JEDEC: 24/48 Pins – MO-153  
 14/16/20/56 Pins – MO-194

## GENERIC PACKAGE VIEW

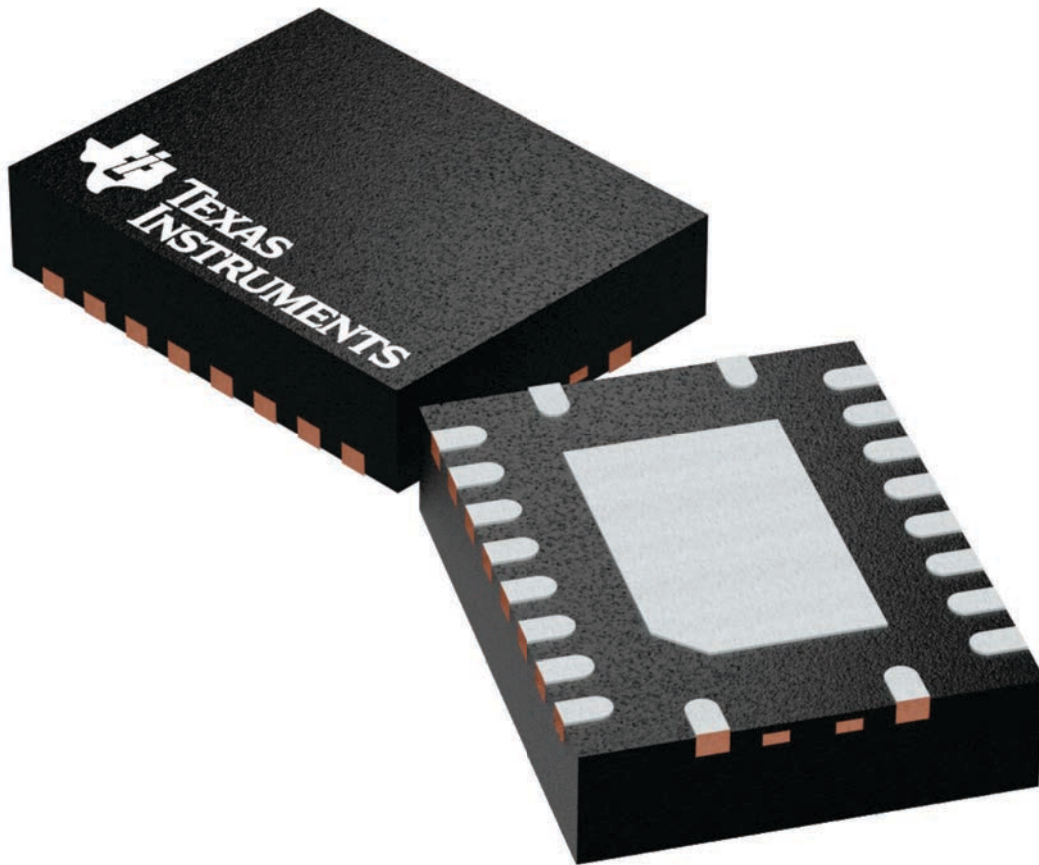
**RGY 20**

**VQFN - 1 mm max height**

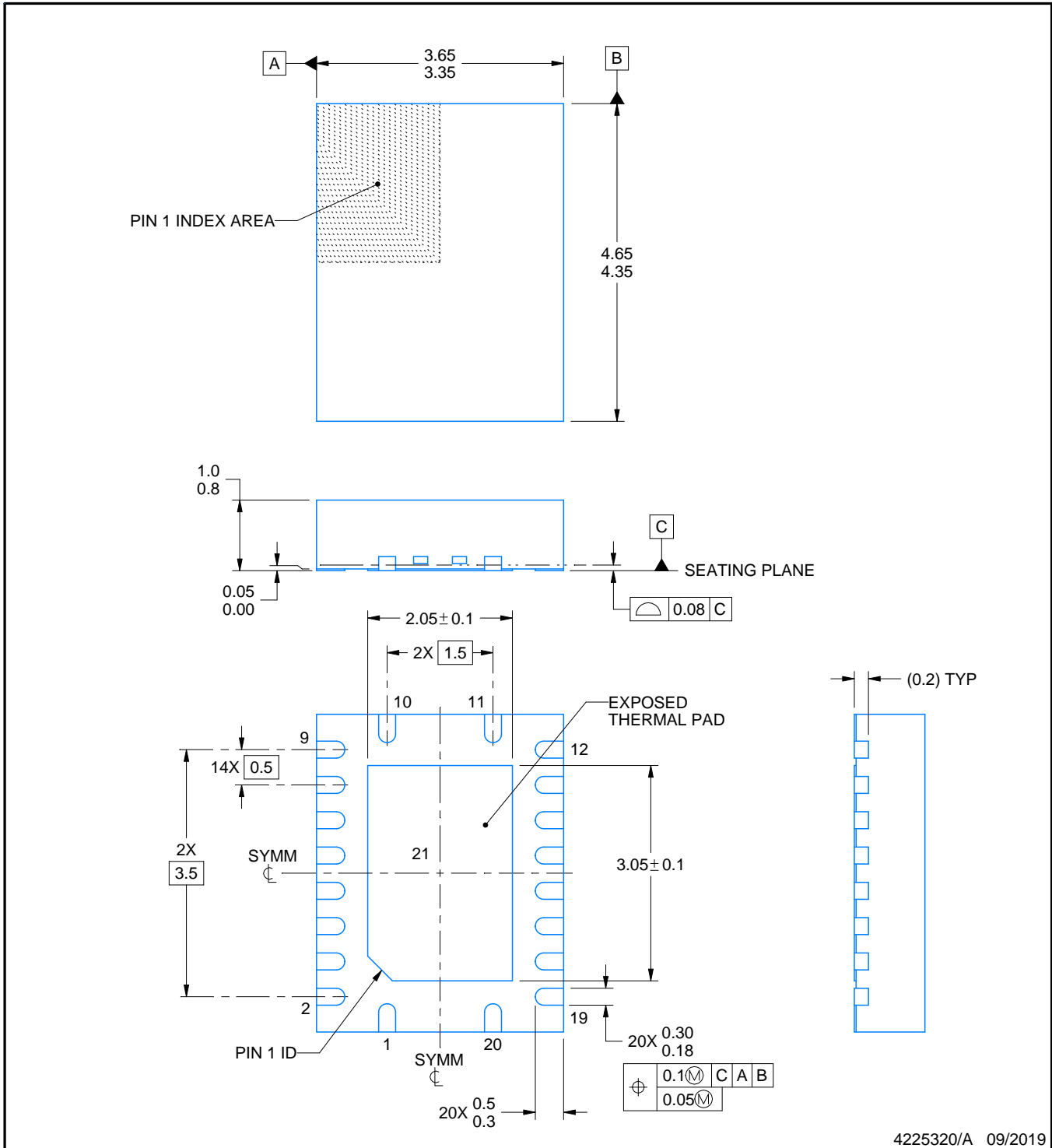
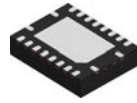
3.5 x 4.5, 0.5 mm pitch

PLASTIC QUAD FGLATPACK - NO LEAD

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



4225264/A



4225320/A 09/2019

NOTES:

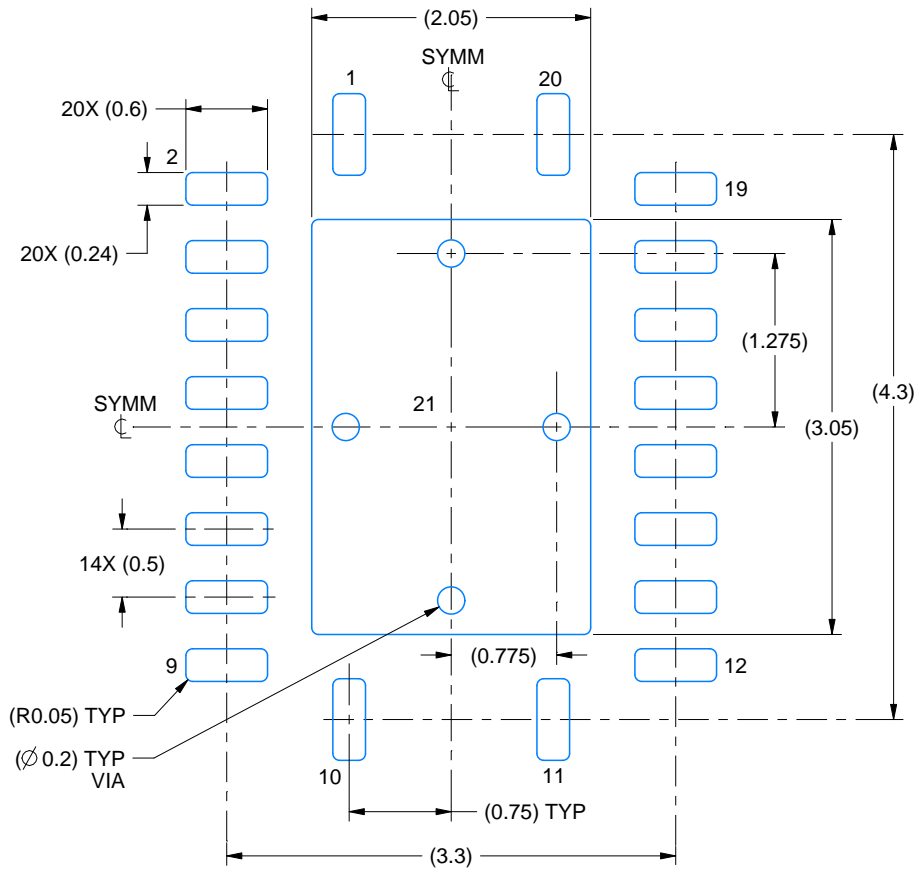
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. The package thermal pad must be soldered to the printed circuit board for thermal and mechanical performance.

# EXAMPLE BOARD LAYOUT

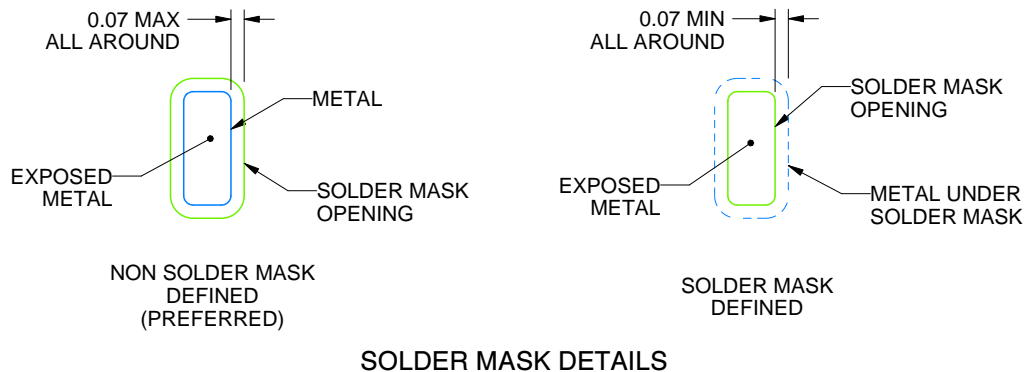
RGY0020A

VQFN - 1 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



LAND PATTERN EXAMPLE  
EXPOSED METAL SHOWN  
SCALE:18X



SOLDER MASK DETAILS

4225320/A 09/2019

NOTES: (continued)

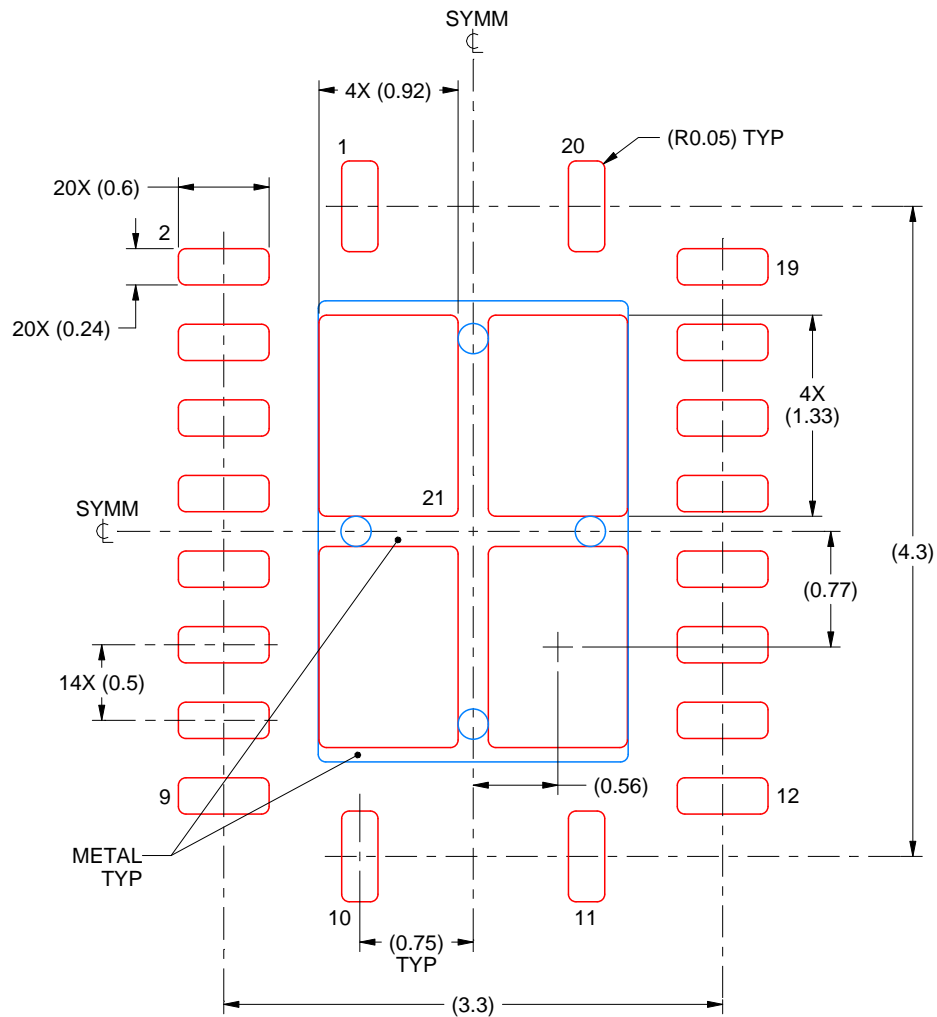
- This package is designed to be soldered to a thermal pad on the board. For more information, see Texas Instruments literature number SLUA271 ([www.ti.com/lit/sl原因271](http://www.ti.com/lit/sl原因271)).
- Vias are optional depending on application, refer to device data sheet. If any vias are implemented, refer to their locations shown on this view. It is recommended that vias under paste be filled, plugged or tented.

# EXAMPLE STENCIL DESIGN

RGY0020A

VQFN - 1 mm max height

PLASTIC QUAD FLATPACK - NO LEAD



**SOLDER PASTE EXAMPLE**  
BASED ON 0.125 mm THICK STENCIL

EXPOSED PAD 21  
78% PRINTED SOLDER COVERAGE BY AREA UNDER PACKAGE  
SCALE:20X

4225320/A 09/2019

NOTES: (continued)

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

## 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



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

4040049/E 12/2002

# DW0020A



# PACKAGE OUTLINE

## SOIC - 2.65 mm max height

SOIC



4220724/A 05/2016

### 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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