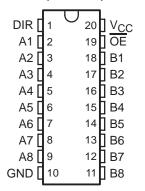
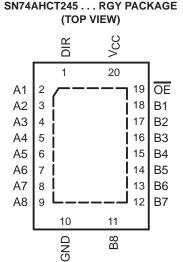
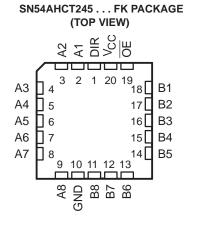
SCLS233N - OCTOBER 1995 - REVISED MARCH 2005

- Inputs Are TTL-Voltage Compatible
- Latch-Up Performance Exceeds 250 mA Per JESD 17
- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 200-V Machine Model (A115-A)
 - 1000-V Charged-Device Model (C101)

SN54AHCT245...J OR W PACKAGE SN74AHCT245...DB, DGV, DW, N, NS, OR PW PACKAGE (TOP VIEW)







description/ordering information

These octal bus transceivers are designed for asynchronous two-way communication between data buses. The control-function implementation minimizes external timing requirements.

The 'AHCT245 devices allow data transmission 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 that the buses effectively are isolated.

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.

ORDERING INFORMATION

TA	PACK	AGE†	ORDERABLE PART NUMBER	TOP-SIDE MARKING
	PDIP – N	Tube	SN74AHCT245N	SN74AHCT245N
	QFN – RGY	Tape and reel	SN74AHCT245RGYR	HB245
−40°C to 85°C	COIC DW	Tube	SN74AHCT245DW	ALIOTO 45
	SOIC – DW	Tape and reel	SN74AHCT245DWR	AHCT245
	SOP - NS	Tape and reel	SN74AHCT245NSR	AHCT245
	SSOP – DB	Tape and reel	SN74AHCT245DBR	HB245
	TOOOD DW	Tube	SN74AHCT245PW	LIDOAS
	TSSOP - PW	Tape and reel	SN74AHCT245PWR	HB245
	TVSOP - DGV	Tape and reel	SN74AHCT245DGVR	HB245
	CDIP – J	Tube	SNJ54AHCT245J	SNJ54AHCT245J
-55°C to 125°C	CFP – W	Tube	SNJ54AHCT245W	SNJ54AHCT245W
	LCCC - FK	Tube	SNJ54AHCT245FK	SNJ54AHCT245FK

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



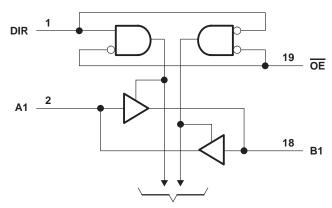
Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.



FUNCTION TABLE (each transceiver)

INP	UTS	ODED ATION
OE	DIR	OPERATION
L	L	B data to A bus
L	Н	A data to B bus
Н	Χ	Isolation

logic diagram (positive logic)



To Seven Other Channels

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

Supply voltage range, V_{CC} Input voltage range, V_{I} (see Note 1): Control inputs I/O, Output voltage range, V_{O} (see Note 1)	-0.5 V to 7 V 0.5 V to V _{CC} + 0.5 V -20 mA +20 mA +25 mA -70°C/W 92°C/W 58°C/W 69°C/W 60°C/W 83°C/W
(see Note 3): RGY package Storage temperature range, T _{stg}	

[†] 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 voltage ratings may be exceeded if the input and output 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.



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recommended operating conditions (see Note 4)

		SN54AH	CT245	SN74AH	CT245	LINUT
		MIN	MAX	MIN	MAX	UNIT
VCC	Supply voltage	4.5	5.5	4.5	5.5	V
VIH	High-level input voltage	2		2		V
VIL	Low-level input voltage		0.8		0.8	V
٧ _I	Input voltage	0	5.5	0	5.5	V
٧o	Output voltage	0	VCC	0	VCC	V
loh	High-level output current		-8		-8	mA
loL	Low-level output current		8		8	mA
Δt/Δν	Input transition rise or fall rate		20	·	20	ns/V
TA	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.

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

			.,	T	λ = 25°C	;	SN54AH	CT245	SN74AH	CT245	
PA	ARAMETER	TEST CONDITIONS	VCC	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
.,		I _{OH} = -50 μA	4.5 V	4.4	4.5		4.4		4.4		V
VOH		I _{OH} = -8 mA	4.5 V	3.94			3.8		3.8		V
		I _{OL} = 50 μA	451/			0.1		0.1		0.1	V
VOL		$I_{OL} = 8 \text{ mA}$	4.5 V	0.3		0.36		0.44	0.44		V
II	OE or DIR	V _I = 5.5 V or GND	0 V to 5.5 V			±0.1		±1*		±1	μΑ
loz	A or B inputs†	$V_O = V_{CC}$ or GND	5.5 V			±0.25		±2.5		±2.5	μΑ
ICC		$V_I = V_{CC}$ or GND, $I_O = 0$	5.5 V			4		40		40	μΑ
ΔICC		One input at 3.4 V, Other inputs at V _{CC} or GND	5.5 V			1.35		1.5		1.5	mA
Ci	OE or DIR	$V_I = V_{CC}$ or GND	5 V		2.5	10				10	pF
C _{io}	A or B inputs	$V_I = V_{CC}$ or GND	5 V		4			•			pF

^{*} On products compliant to MIL-PRF-38535, this parameter is not production tested at $V_{CC} = 0 \text{ V}$.



 $^{^{\}dagger}$ For I/O ports, the parameter IOZ includes the input leakage current.

[‡]This is the increase in supply current for each input at one of the specified TTL voltage levels, rather than 0 V or V_{CC}.

SN54AHCT245, SN74AHCT245 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

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switching characteristics over recommended operating free-air temperature range, V_{CC} = 5 V \pm 0.5 V (unless otherwise noted) (see Figure 1)

DADAMETER	FROM	то	LOAD	Τ _Δ	\ = 25°(3	SN54AH	ICT245	SN74AH	CT245	
PARAMETER	(INPUT)	(OUTPUT)	CAPACITANCE	MIN	TYP	MAX	MIN	MAX	MIN	MAX	UNIT
t _{PLH}	A D	D. o. r. A	0. 45 = 5		4.5**	7.7**	1**	10**	1	8.5	
t _{PHL}	A or B	B or A	C _L = 15 pF		4.5**	7.7**	1**	10**	1	8.5	ns
^t PZH	ŌĒ	A or B	0. 455		8.9**	13.8**	1**	16**	1	15	
t _{PZL}	OE	A or B	C _L = 15 pF		8.9**	13.8**	1**	16**	1	15	ns
t _{PHZ}	<u>OE</u>	A or B	C _L = 15 pF		9.2**	14.4**	1**	16.5**	1	15.5	15.5 ns
tPLZ	OE	AOIB	OL = 13 pi		9.2**	14.4**	1**	16.5**	1	15.5	
t _{PLH}	A - :: D	D A	0 50 5		5.3	8.7	1	11	1	9.5	
tPHL	A or B	B or A	C _L = 50 pF		5.3	8.7	1	11	1	9.5	ns
^t PZH	ŌĒ		0 50 5		9.7	14.8	1	17	1	16	
tPZL	OE	A or B	C _L = 50 pF		9.7	14.8	1	17	1	16	ns
t _{PHZ}	ŌĒ	A 0* D	C		10	15.4	1	17.5	1	16.5	20
tPLZ	OE	A or B	$C_L = 50 pF$		10	15.4	1	17.5	1	16.5	ns
t _{sk(o)}			C _L = 50 pF			1***				1	ns

^{**} On products compliant to MIL-PRF-38535, this parameter is not production tested.

noise characteristics, $V_{CC} = 5 \text{ V}$, $C_L = 50 \text{ pF}$, $T_A = 25^{\circ}\text{C}$ (see Note 5)

	DADAMETED	SN7	SN74AHCT245				
	PARAMETER	MIN	TYP	MAX	UNIT		
VOH(V)	Quiet output, minimum dynamic VOH		4		V		
VIH(D)	High-level dynamic input voltage	2			V		
V _{IL(D)}	Low-level dynamic input voltage			0.8	V		

NOTE 5: Characteristics are for surface-mount packages only.

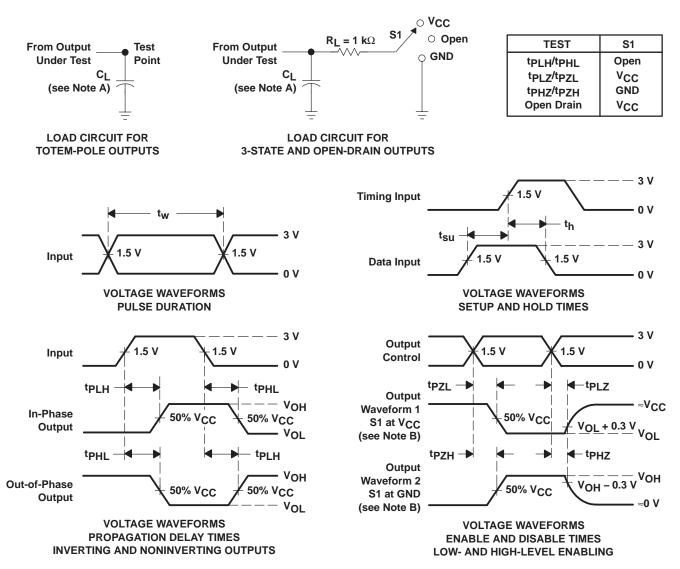
operating characteristics, $V_{CC} = 5 \text{ V}$, $T_A = 25^{\circ}\text{C}$

	PARAMETER	TEST C	ONDITIONS	TYP	UNIT
C _{pd}	Power dissipation capacitance	No load,	f = 1 MHz	13	pF



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

PARAMETER MEASUREMENT INFORMATION



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 1 MHz, $Z_Q = 50 \Omega$, $t_f \leq 3$ ns, $t_f \leq 3$ ns.
- D. The outputs are measured one at a time with one input transition per measurement.
- E. All parameters and waveforms are not applicable to all devices.

Figure 1. Load Circuit and Voltage Waveforms



5-Sep-2011

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
5962-9681901Q2A	ACTIVE	LCCC	FK	20	1	TBD	Call TI	Call TI	
5962-9681901QRA	ACTIVE	CDIP	J	20	1	TBD	Call TI	Call TI	
5962-9681901QSA	ACTIVE	CFP	W	20	1	TBD	Call TI	Call TI	
SN74AHCT245DBLE	OBSOLETE	SSOP	DB	20		TBD	Call TI	Call TI	
SN74AHCT245DBR	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245DBRE4	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245DBRG4	ACTIVE	SSOP	DB	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245DGVR	ACTIVE	TVSOP	DGV	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245DGVRE4	ACTIVE	TVSOP	DGV	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245DGVRG4	ACTIVE	TVSOP	DGV	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245DW	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245DWE4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245DWG4	ACTIVE	SOIC	DW	20	25	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245DWR	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245DWRG4	ACTIVE	SOIC	DW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245N	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	
SN74AHCT245NE4	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	
SN74AHCT245NSR	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245NSRE4	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	





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Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
SN74AHCT245NSRG4	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245PW	ACTIVE	TSSOP	PW	20	70	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245PWE4	ACTIVE	TSSOP	PW	20	70	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245PWG4	ACTIVE	TSSOP	PW	20	70	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245PWLE	OBSOLETE	TSSOP	PW	20		TBD	Call TI	Call TI	
SN74AHCT245PWR	ACTIVE	TSSOP	PW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245PWRE4	ACTIVE	TSSOP	PW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245PWRG4	ACTIVE	TSSOP	PW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
SN74AHCT245RGYR	ACTIVE	VQFN	RGY	20	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	
SN74AHCT245RGYRG4	ACTIVE	VQFN	RGY	20	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR	
SNJ54AHCT245FK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	
SNJ54AHCT245J	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	
SNJ54AHCT245W	ACTIVE	CFP	W	20	1	TBD	Call TI	N / A for Pkg Type	

⁽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.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.



PACKAGE OPTION ADDENDUM

5-Sep-2011

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

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

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

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OTHER QUALIFIED VERSIONS OF SN54AHCT245, SN74AHCT245:

Catalog: SN74AHCT245

Military: SN54AHCT245

NOTE: Qualified Version Definitions:

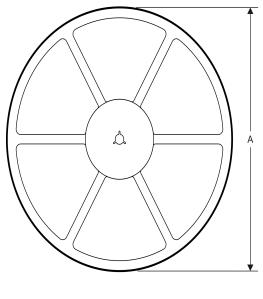
- Catalog TI's standard catalog product
- Military QML certified for Military and Defense Applications

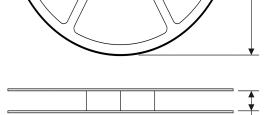
PACKAGE MATERIALS INFORMATION

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TAPE AND REEL INFORMATION

REEL DIMENSIONS





TAPE DIMENSIONS



A0	Dimension designed to accommodate the component width
В0	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

TAPE AND REEL INFORMATION

*All dimensions are nominal

Device	Package Type	Package Drawing		SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74AHCT245DBR	SSOP	DB	20	2000	330.0	16.4	8.2	7.5	2.5	12.0	16.0	Q1
SN74AHCT245DGVR	TVSOP	DGV	20	2000	330.0	12.4	6.9	5.6	1.6	8.0	12.0	Q1
SN74AHCT245DWR	SOIC	DW	20	2000	330.0	24.4	10.8	13.0	2.7	12.0	24.0	Q1
SN74AHCT245NSR	SO	NS	20	2000	330.0	24.4	8.2	13.0	2.5	12.0	24.0	Q1
SN74AHCT245PWR	TSSOP	PW	20	2000	330.0	16.4	6.95	7.1	1.6	8.0	16.0	Q1
SN74AHCT245PWR	TSSOP	PW	20	2000	330.0	16.4	6.95	7.1	1.6	8.0	16.0	Q1
SN74AHCT245RGYR	VQFN	RGY	20	3000	330.0	12.4	3.8	4.8	1.6	8.0	12.0	Q1

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*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74AHCT245DBR	SSOP	DB	20	2000	346.0	346.0	33.0
SN74AHCT245DGVR	TVSOP	DGV	20	2000	346.0	346.0	29.0
SN74AHCT245DWR	SOIC	DW	20	2000	346.0	346.0	41.0
SN74AHCT245NSR	SO	NS	20	2000	346.0	346.0	41.0
SN74AHCT245PWR	TSSOP	PW	20	2000	364.0	364.0	27.0
SN74AHCT245PWR	TSSOP	PW	20	2000	346.0	346.0	33.0
SN74AHCT245RGYR	VQFN	RGY	20	3000	346.0	346.0	29.0

14 LEADS SHOWN



- 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.

W (R-GDFP-F20)

CERAMIC DUAL FLATPACK



- 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



FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



- 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 metal lid.
- D. Falls within JEDEC MS-004



N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- 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.



DGV (R-PDSO-G**)

24 PINS SHOWN

PLASTIC SMALL-OUTLINE



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 DW (R-PDSO-G20)

PLASTIC SMALL OUTLINE



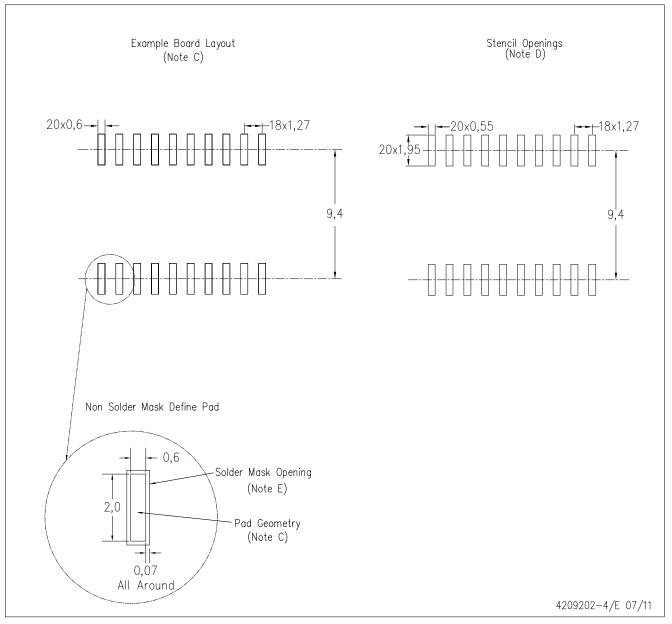
NOTES: A. All linear dimensions are in inches (millimeters). Dimensioning and tolerancing per ASME Y14.5M-1994.

- B. This drawing is subject to change without notice.
- C. Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
- D. Falls within JEDEC MS-013 variation AC.



DW (R-PDSO-G20)

PLASTIC SMALL OUTLINE



- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Refer to IPC7351 for alternate board design.
- D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC—7525
- E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.



PW (R-PDSO-G20)

PLASTIC SMALL OUTLINE



- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M—1994.
- B. This drawing is subject to change without notice.
- Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0,15 each side.
- Body width does not include interlead flash. Interlead flash shall not exceed 0,25 each side.
- E. Falls within JEDEC MO-153





NOTES: A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.

- B. This drawing is subject to change without notice.
- C. QFN (Quad Flatpack No-Lead) package configuration.
- D. The package thermal pad must be soldered to the board for thermal and mechanical performance.
- E. See the additional figure in the Product Data Sheet for details regarding the exposed thermal pad features and dimensions.
- Pin 1 identifiers are located on both top and bottom of the package and within the zone indicated. The Pin 1 identifiers are either a molded, marked, or metal feature.
- G. Package complies to JEDEC MO-241 variation BA.



RGY (R-PVQFN-N20)

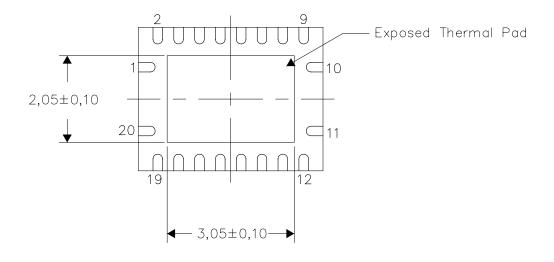
PLASTIC QUAD FLATPACK NO-LEAD

THERMAL INFORMATION

This package incorporates an exposed thermal pad that is designed to be attached directly to an external heatsink. The thermal pad must be soldered directly to the printed circuit board (PCB). After soldering, the PCB can be used as a heatsink. In addition, through the use of thermal vias, the thermal pad can be attached directly to the appropriate copper plane shown in the electrical schematic for the device, or alternatively, can be attached to a special heatsink structure designed into the PCB. This design optimizes the heat transfer from the integrated circuit (IC).

For information on the Quad Flatpack No-Lead (QFN) package and its advantages, refer to Application Report, QFN/SON PCB Attachment, Texas Instruments Literature No. SLUA271. This document is available at www.ti.com.

The exposed thermal pad dimensions for this package are shown in the following illustration.



Bottom View

Exposed Thermal Pad Dimensions

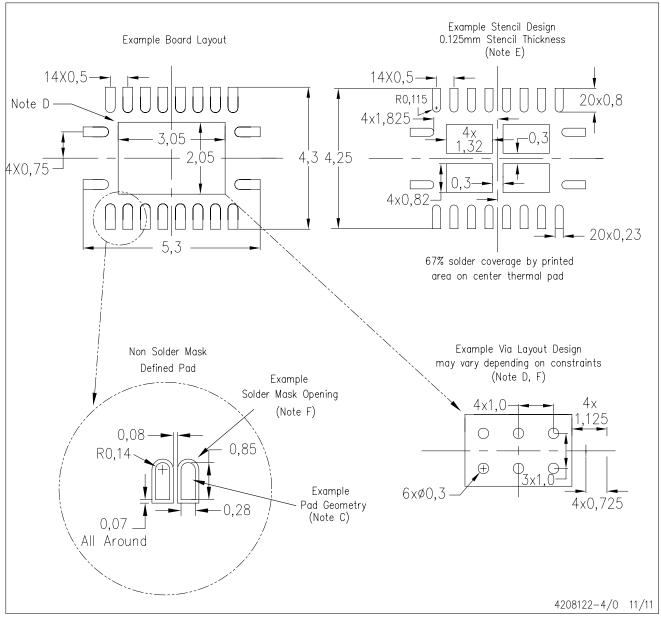
4206353-4/0 11/11

NOTE: All linear dimensions are in millimeters



RGY (R-PVQFN-N20)

PLASTIC QUAD FLATPACK NO-LEAD



- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Publication IPC-7351 is recommended for alternate designs.
- D. This package is designed to be soldered to a thermal pad on the board. Refer to Application Note, Quad Flat—Pack QFN/SON PCB Attachment, Texas Instruments Literature No. SLUA271, and also the Product Data Sheets for specific thermal information, via requirements, and recommended board layout. These documents are available at www.ti.com http://www.ti.com.
- E. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC 7525 for stencil design considerations.
- F. Customers should contact their board fabrication site for minimum solder mask web tolerances between signal pads.



MECHANICAL DATA

NS (R-PDSO-G**)

14-PINS SHOWN

PLASTIC SMALL-OUTLINE PACKAGE



- 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.



DB (R-PDSO-G**)

PLASTIC SMALL-OUTLINE

28 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.

D. Falls within JEDEC MO-150

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