Dual IF Receivers with SNRBoost^{3G+} Signal Processing

Check for Samples: ADS58C20 , ADS58C23

FEATURES

- **Differential Analog IF Input, DDR LVDS Digital IF Output**
- **Up to 125-MHz Signal Bandwidth per Receiver**
  - **With 40- and 75-MHz optimized bands**
- **High Dynamic Performance**
- **High Impedance Input**
- **80-Pin TQFP Package with PowerPAD™**

APPLICATIONS

- **ADS58C20: Multi-Carrier GSM/3G/LTE/TDS-CDMA Cellular Base-station Receiver**
- **ADS58C23: Multi-Carrier 3G/LTE/TDS-CDMA Cellular Base-station Receiver**

DESCRIPTION

The ADS58C20 and ADS58C23 are dual IF receivers for wideband, multi-mode cellular infrastructure base stations. Each channel provides high dynamic performance up to 125 MHz of bandwidth, with optimized bands of 40- and 75-MHz. The IF receiver architecture eases front end filter design for wide bandwidth receivers. The receivers have integrated buffers at the analog inputs with benefits of uniform performance and input impedance across a wide frequency range.

The ADS58C20 is a high performance part with superior specifications for single/multi-mode cellular base-station receivers that include multi-carrier GSM. It can also process other cellular protocols such as TDS-CDMA/3G/LTE and prior generation systems.

The ADS58C23 offers the same functionality and pinout as ADS58C20 but with reduced minimum performance specifications for lower cost and performance systems, such as TDS-CDMA/3G/LTE single/multi-mode receivers (when GSM is not required). It can also process prior generation protocols.

The devices are available in a 80-pin TQFP package, and are specified over the full industrial temperature range (–40°C to 85°C).

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package | Pins	Package qty | Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
ADS58C20IPFP	Active	Production	HTQFP (PFP) | 80	96 | JEDEC TRAY (10+1)	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 85	ADS58C20I
ADS58C20IPFP.A	Active	Production	HTQFP (PFP) | 80	96 | JEDEC TRAY (10+1)	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 85	ADS58C20I
ADS58C20IPFPR	Active	Production	HTQFP (PFP) | 80	1000 | LARGE T&R	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 85	ADS58C20I
ADS58C20IPFPR.A	Active	Production	HTQFP (PFP) | 80	1000 | LARGE T&R	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 85	ADS58C20I
ADS58C20IPFPRG4	Active	Production	HTQFP (PFP) | 80	1000 | LARGE T&R	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 85	ADS58C20I
ADS58C20IPFPRG4.A	Active	Production	HTQFP (PFP) | 80	1000 | LARGE T&R	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 85	ADS58C20I
ADS58C23IPFP	Active	Production	HTQFP (PFP) | 80	96 | JEDEC TRAY (10+1)	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 85	ADS58C23I
ADS58C23IPFP.A	Active	Production	HTQFP (PFP) | 80	96 | JEDEC TRAY (10+1)	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 85	ADS58C23I
ADS58C23IPFPR	Active	Production	HTQFP (PFP) | 80	1000 | LARGE T&R	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 85	ADS58C23I
ADS58C23IPFPR.A	Active	Production	HTQFP (PFP) | 80	1000 | LARGE T&R	Yes	NIPDAU	Level-3-260C-168 HR	-40 to 85	ADS58C23I

(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.

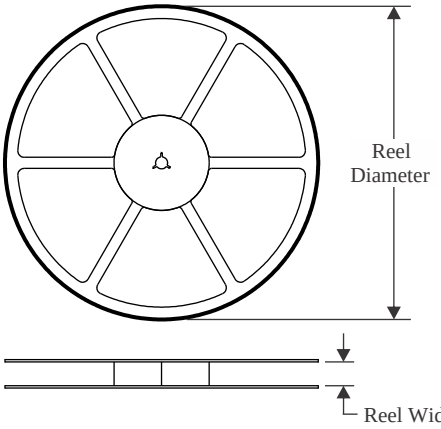
(5) **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will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

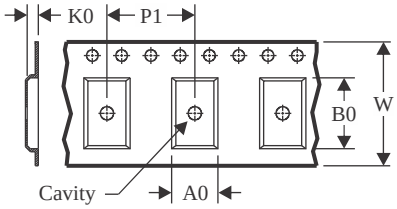
Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

TAPE AND REEL INFORMATION

REEL DIMENSIONS

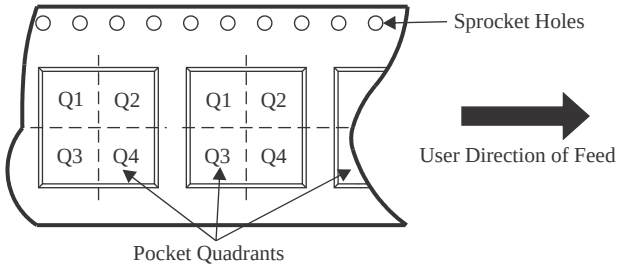


TAPE DIMENSIONS



A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

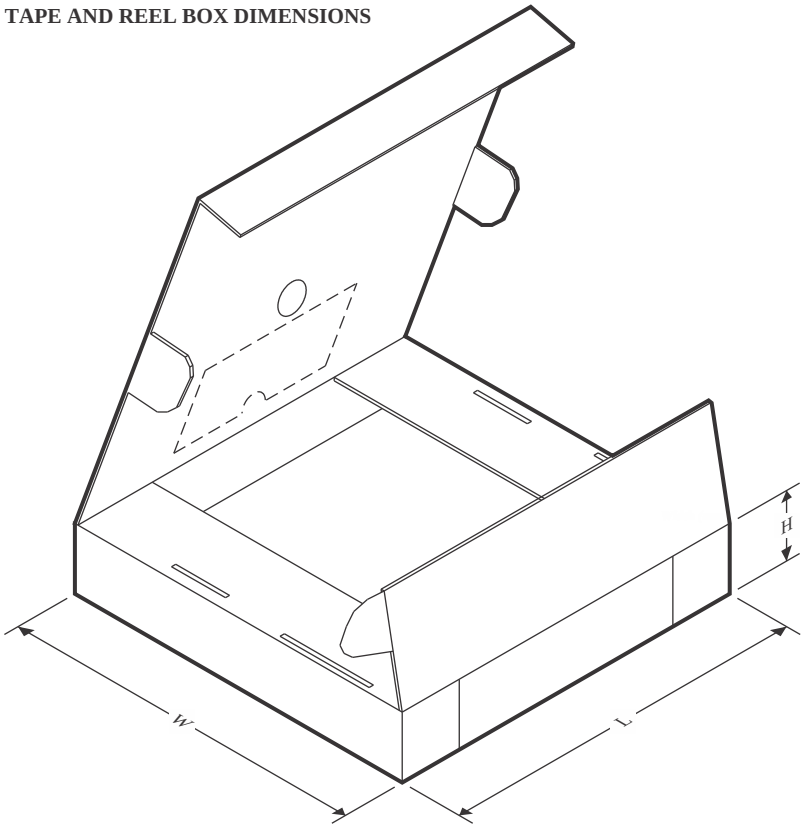
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
ADS58C20IPFPR	HTQFP	PFP	80	1000	330.0	24.4	15.0	15.0	1.5	20.0	24.0	Q2
ADS58C20IPFPRG4	HTQFP	PFP	80	1000	330.0	24.4	15.0	15.0	1.5	20.0	24.0	Q2
ADS58C23IPFPR	HTQFP	PFP	80	1000	330.0	24.4	15.0	15.0	1.5	20.0	24.0	Q2

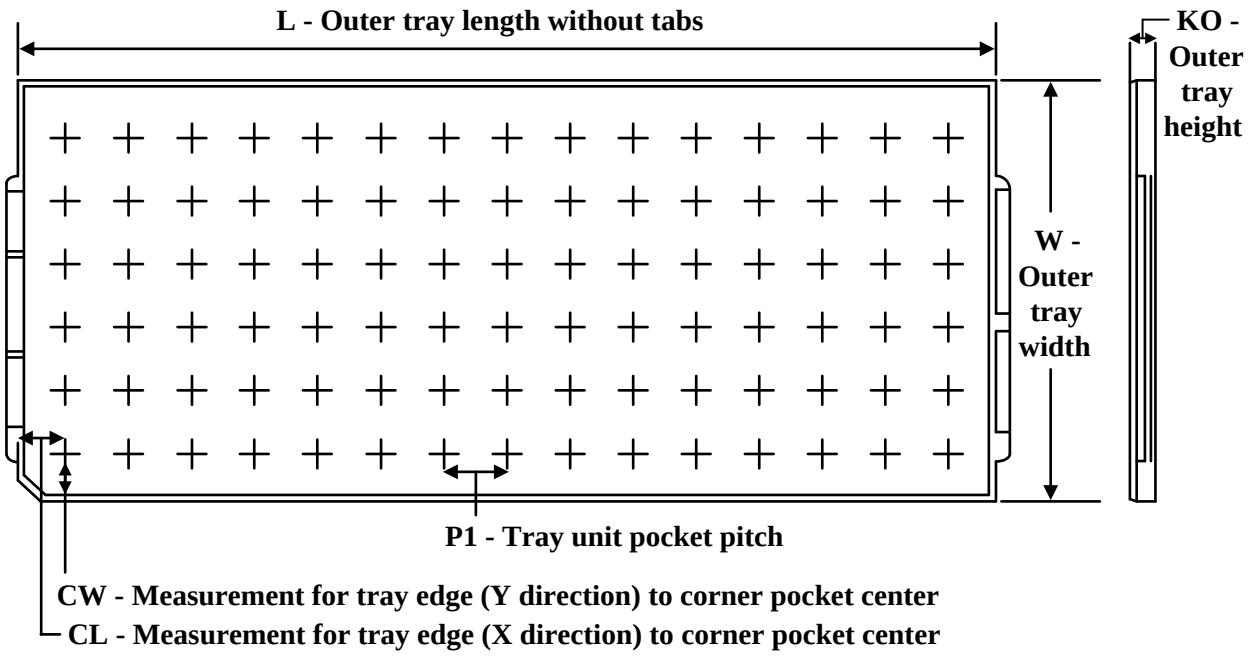
TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
ADS58C20IPFPR	HTQFP	PFP	80	1000	350.0	350.0	43.0
ADS58C20IPFPRG4	HTQFP	PFP	80	1000	350.0	350.0	43.0
ADS58C23IPFPR	HTQFP	PFP	80	1000	350.0	350.0	43.0

TRAY

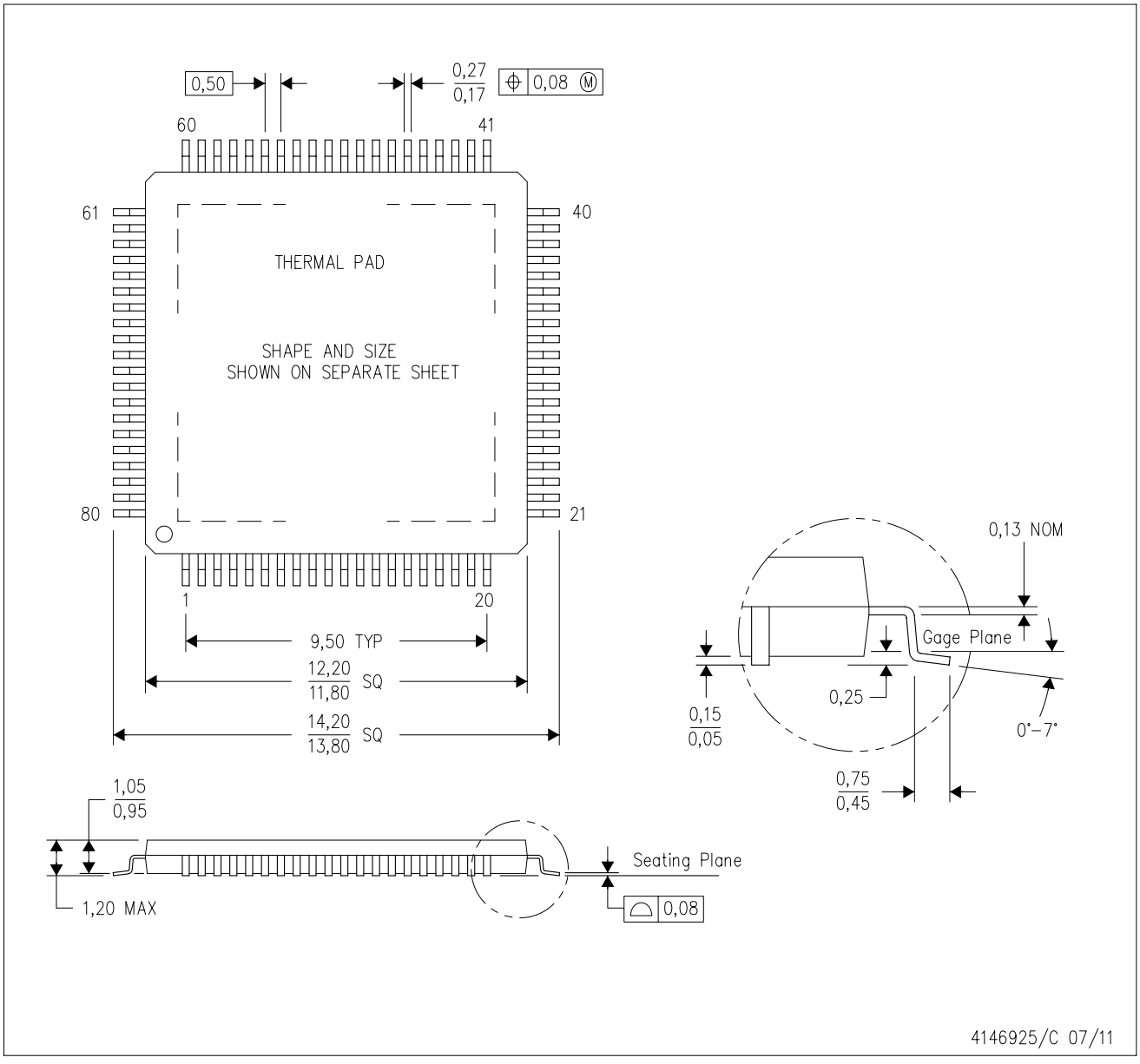


Chamfer on Tray corner indicates Pin 1 orientation of packed units.

*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	Unit array matrix	Max temperature (°C)	L (mm)	W (mm)	K0 (µm)	P1 (mm)	CL (mm)	CW (mm)
ADS58C20IPFP	PFP	HTQFP	80	96	6 x 16	150	315	135.9	7620	18.7	17.25	18.3
ADS58C20IPFP.A	PFP	HTQFP	80	96	6 x 16	150	315	135.9	7620	18.7	17.25	18.3
ADS58C23IPFP	PFP	HTQFP	80	96	6 x 16	150	315	135.9	7620	18.7	17.25	18.3
ADS58C23IPFP.A	PFP	HTQFP	80	96	6 x 16	150	315	135.9	7620	18.7	17.25	18.3

PFP (S–PQFP–G80) PowerPAD™ PLASTIC QUAD FLATPACK



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
D. This package is designed to be soldered to a thermal pad on the board. Refer to Technical Brief, PowerPad Thermally Enhanced Package, Texas Instruments Literature No. SLMA002 for information regarding recommended board layout. This document is available at www.ti.com <http://www.ti.com>.
E. See the additional figure in the Product Data Sheet for details regarding the exposed thermal pad features and dimensions.
F. Falls within JEDEC MS–026

PowerPAD is a trademark of Texas Instruments.

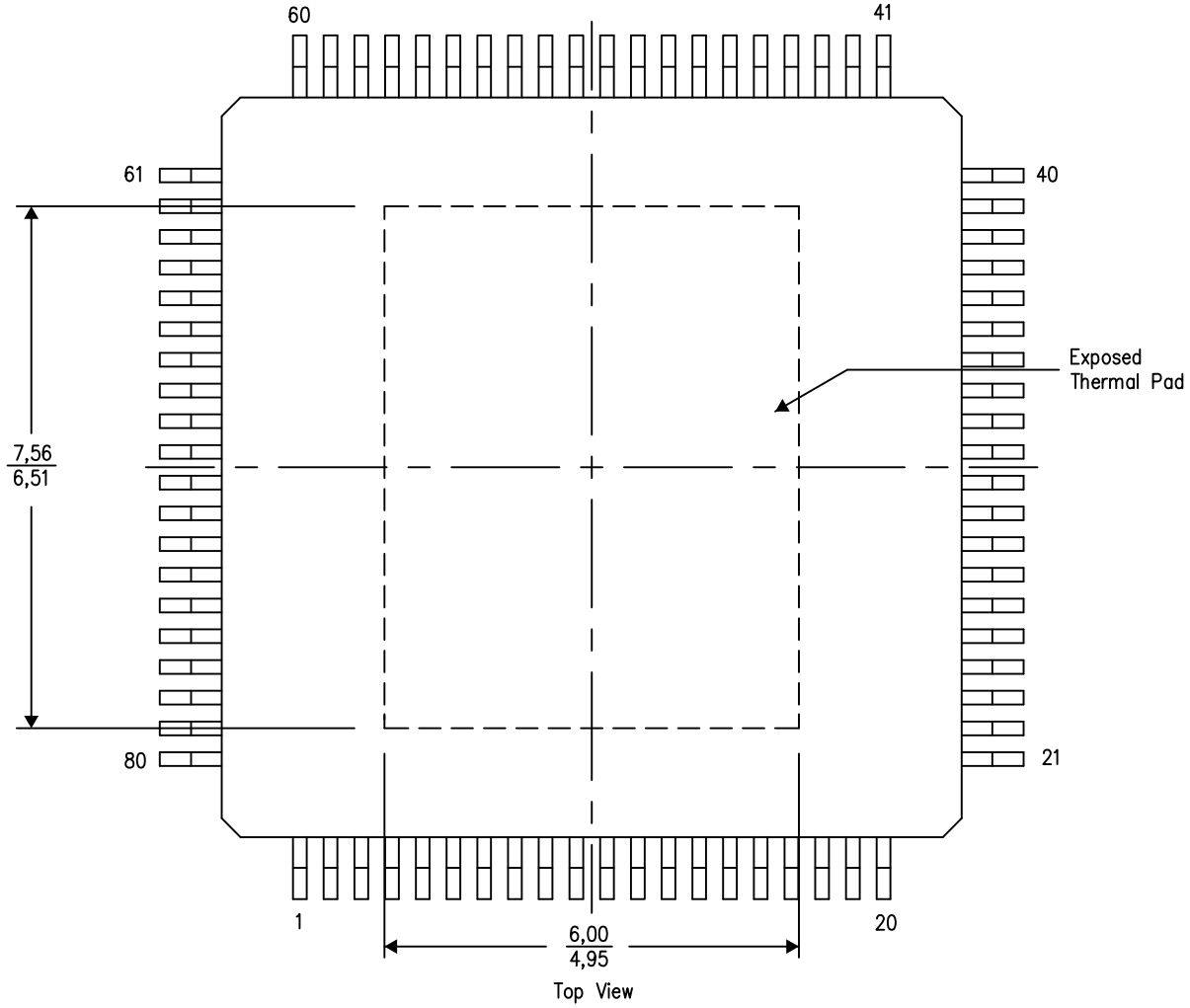
PFP (S–PQFP–G80) PowerPAD™ PLASTIC QUAD FLATPACK

THERMAL INFORMATION

This PowerPAD™ package incorporates an exposed thermal pad that is designed to be attached to a printed circuit board (PCB). The thermal pad must be soldered directly to the 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 additional information on the PowerPAD package and how to take advantage of its heat dissipating abilities, refer to Technical Brief, PowerPAD Thermally Enhanced Package, Texas Instruments Literature No. SLMA002 and Application Brief, PowerPAD Made Easy, Texas Instruments Literature No. SLMA004. Both documents are available at www.ti.com.

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



Exposed Thermal Pad Dimensions

4206327–14/P 05/14

NOTE: A. All linear dimensions are in millimeters

PowerPAD is a trademark of Texas Instruments

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265