

LP3917 CDMA Cellular Phone Power Management Unit

 Check for Samples: [LP3917](#)

FEATURES

- Two High Efficiency Synchronous Magnetic Buck Regulators, I_{OUT} 800 mA and 600 mA
 - High Efficiency PFM Mode @ Low I_{OUT}
 - Auto Mode PFM/PWM Switch
- Low Inductance 2.2 μ H @ 2 MHz Clock
- 9 Low Noise LDOs
 - 3 x 300 mA
 - 5 x 150 mA
 - 1 x 80 mA
- SW Controllable LDO Outputs
- USB 2.0 Compatible Transceiver (12 Mbps)

- Thermal Shutdown with Early Warning Alarm
- Very Low Sleep Mode Current
- Battery Voltage Monitor Output
- Interrupt Request for Reducing SW Polling
- Ultra Small 3.5x3.5 mm Micro SMDxt 49 Bump Package

APPLICATIONS

- CDMA Handsets
Please contact NSC Sales for a full datasheet for the device.

DESCRIPTION

LP3917 is a complete Power Management Unit designed for CDMA cellular phones. LP3917 PMU contains 9 low noise low dropout voltage regulators, 2 buck regulators, an USB Transceiver, two comparators and a high speed serial interface to program on/off conditions and output voltages of individual regulators, and to read status information of the PMU.

Buck regulators have an automatic switch to PFM mode at low load conditions allowing very good efficiency also at low output currents.

LDO regulators provide very low noise, 35 μ V typ, ideally suited for supplying voltage to RF section.

Two comparators can be used for detecting external accessories like ear plug etc.

LP3917 can use interrupt for alerting BB processor of status changes instead of using inefficient status polling.



These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

Table 1. Key Specifications

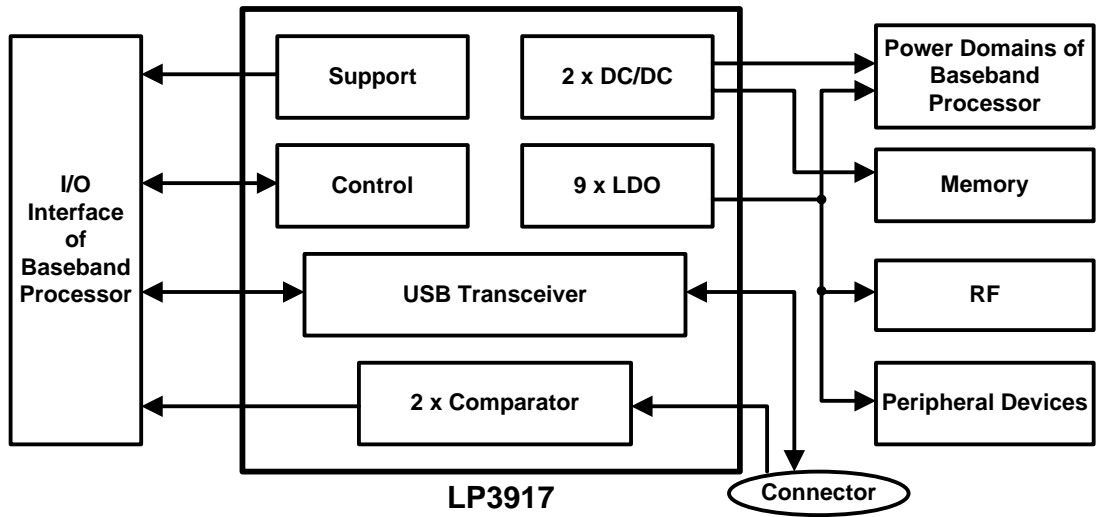
	VALUE	UNIT
Input Voltage Range	3.0–5.5	V
170 mV typ Dropout Voltage on LDOs @ 300 mA		
2% (typ) Output Voltage accuracy on LDOs		
Noise on LDOs	35	μ V
Buck regulators with 3% (typ)	800/600	mA
Accuracy and up to 90% efficiency		



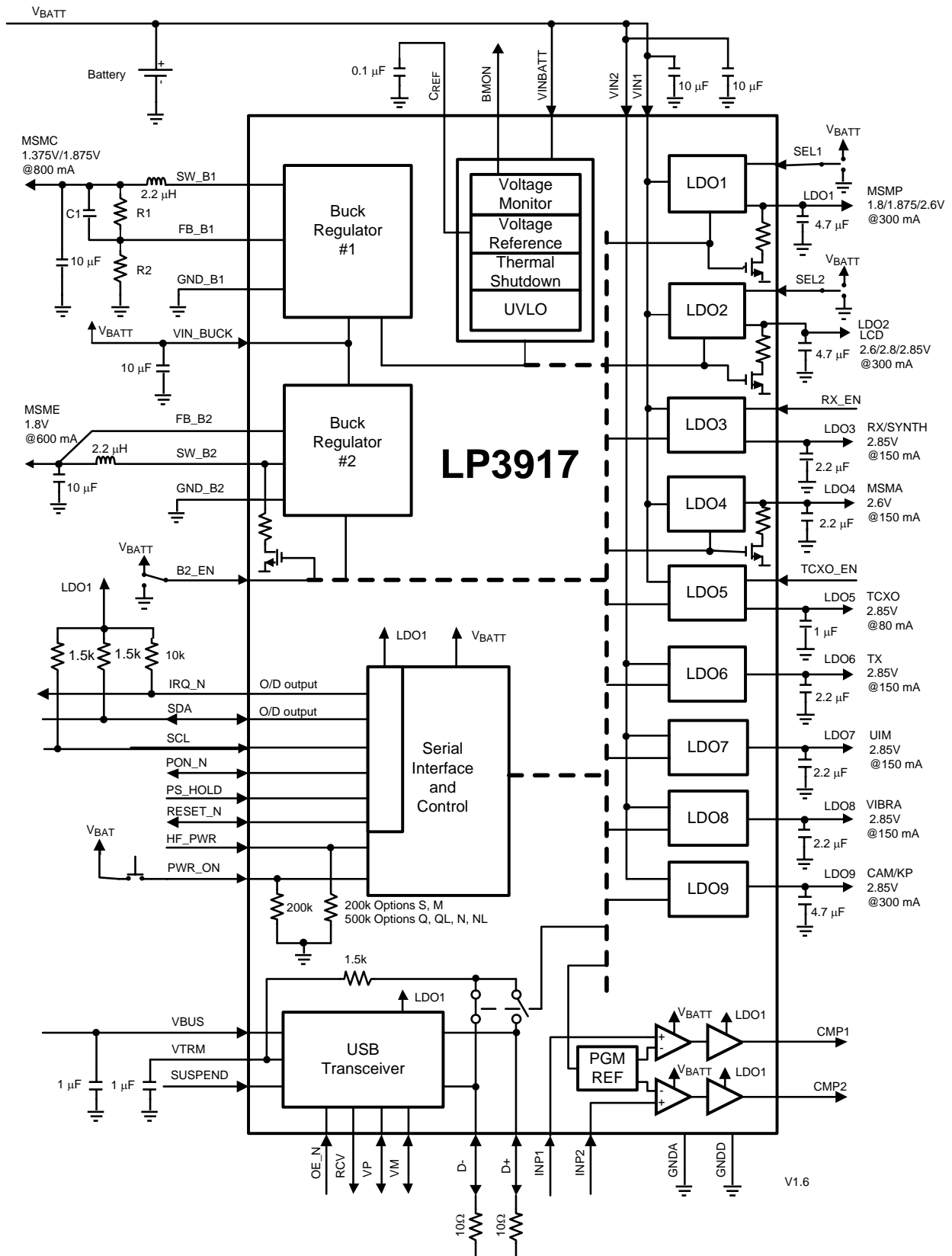
Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

All trademarks are the property of their respective owners.

SYSTEM DIAGRAM



TYPICAL APPLICATION DIAGRAM



DEVICE PIN DIAGRAM

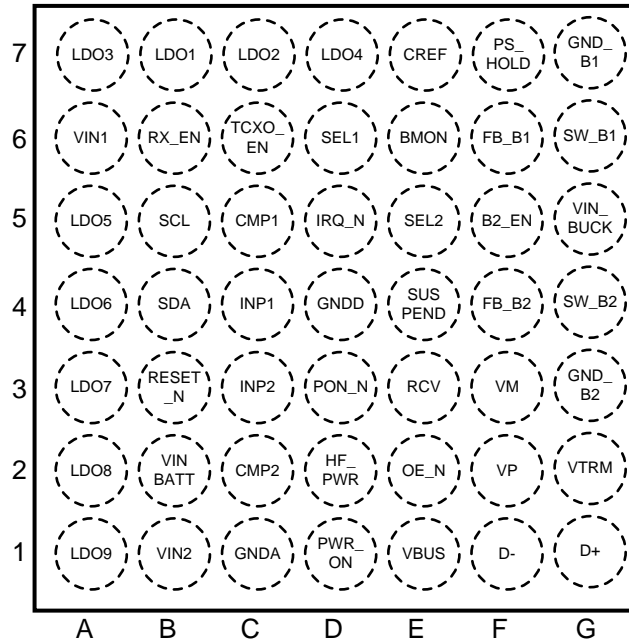
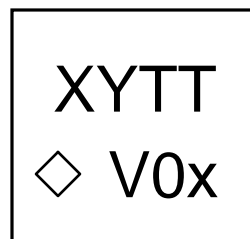


Figure 1. TOP VIEW

PACKAGE MARKING INFORMATION



XY = 2 Digit Date Code
 TT = Die Traceability
 V0x = LP3917 Product ID
 ◊ = Pin 1A

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Top-Side Markings (4)	Samples
LP3917RL-M/NOPB	ACTIVE	DSBGA	YPG	49	250	Green (RoHS & no Sb/Br)	SNAG	Level-1-260C-UNLIM		V05	Samples
LP3917RL-N/NOPB	ACTIVE	DSBGA	YPG	49	250	Green (RoHS & no Sb/Br)	SNAG	Level-1-260C-UNLIM		V03	Samples
LP3917RL-Q/NOPB	ACTIVE	DSBGA	YPG	49	250	Green (RoHS & no Sb/Br)	SNAG	Level-1-260C-UNLIM		V04	Samples
LP3917RL-S/NOPB	ACTIVE	DSBGA	YPG	49	250	Green (RoHS & no Sb/Br)	SNAG	Level-1-260C-UNLIM		V01	Samples
LP3917RLX-M/NOPB	ACTIVE	DSBGA	YPG	49	1000	Green (RoHS & no Sb/Br)	SNAG	Level-1-260C-UNLIM		V05	Samples
LP3917RLX-N/NOPB	ACTIVE	DSBGA	YPG	49	1000	Green (RoHS & no Sb/Br)	SNAG	Level-1-260C-UNLIM		V03	Samples
LP3917RLX-Q/NOPB	ACTIVE	DSBGA	YPG	49	1000	Green (RoHS & no Sb/Br)	SNAG	Level-1-260C-UNLIM		V04	Samples
LP3917RLX-S/NOPB	ACTIVE	DSBGA	YPG	49	1000	Green (RoHS & no Sb/Br)	SNAG	Level-1-260C-UNLIM		V01	Samples

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) 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.

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.

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.

⁽⁴⁾ Only one of markings shown within the brackets will appear on the physical device.

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.

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

TAPE AND REEL INFORMATION

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE


*All dimensions are nominal

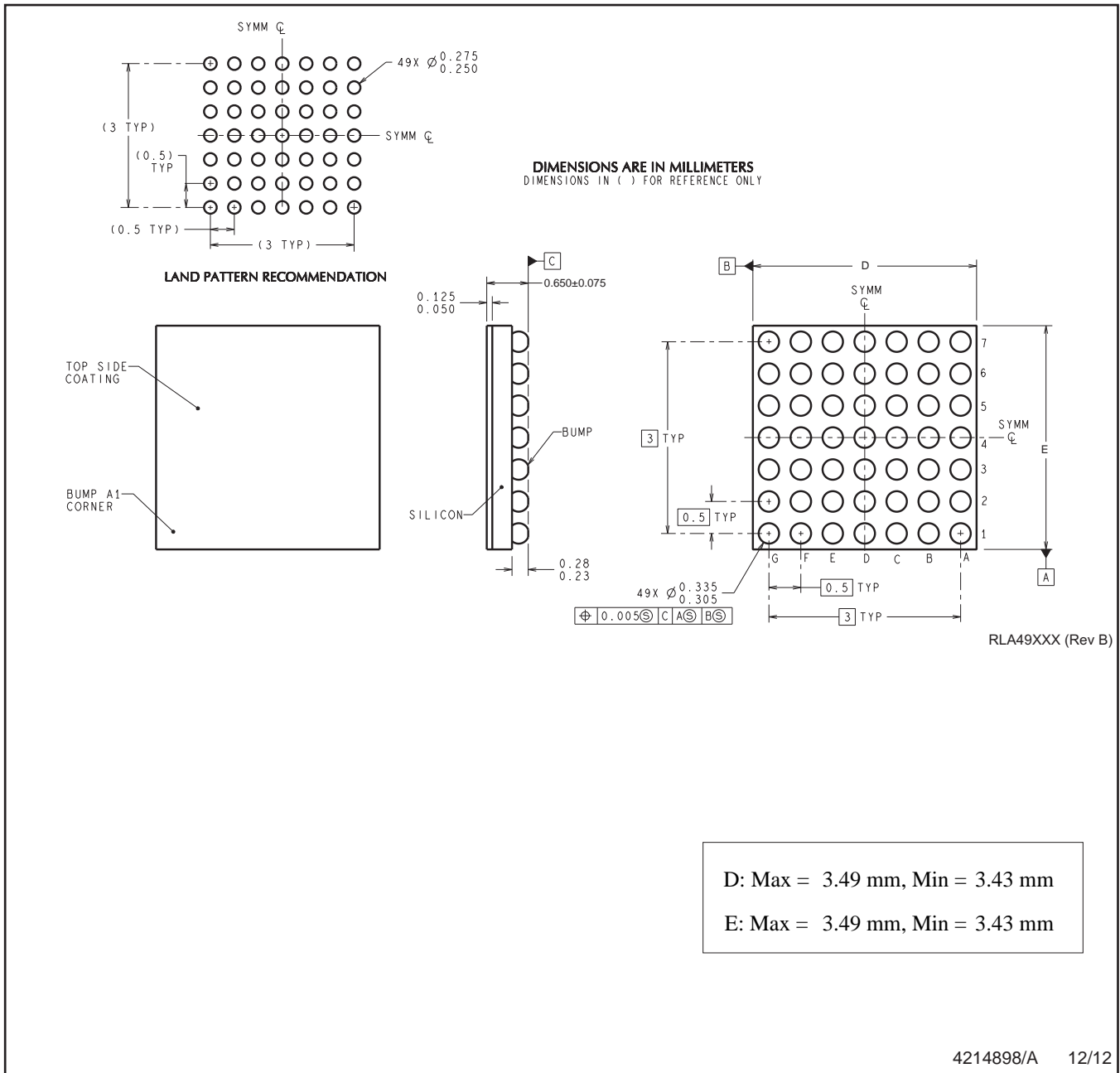
Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
LP3917RL-M/NOPB	DSBGA	YPG	49	250	178.0	12.4	3.63	3.63	0.76	8.0	12.0	Q1
LP3917RL-N/NOPB	DSBGA	YPG	49	250	178.0	12.4	3.63	3.63	0.76	8.0	12.0	Q1
LP3917RL-Q/NOPB	DSBGA	YPG	49	250	178.0	12.4	3.63	3.63	0.76	8.0	12.0	Q1
LP3917RL-S/NOPB	DSBGA	YPG	49	250	178.0	12.4	3.63	3.63	0.76	8.0	12.0	Q1
LP3917RLX-M/NOPB	DSBGA	YPG	49	1000	178.0	12.4	3.63	3.63	0.76	8.0	12.0	Q1
LP3917RLX-N/NOPB	DSBGA	YPG	49	1000	178.0	12.4	3.63	3.63	0.76	8.0	12.0	Q1
LP3917RLX-Q/NOPB	DSBGA	YPG	49	1000	178.0	12.4	3.63	3.63	0.76	8.0	12.0	Q1
LP3917RLX-S/NOPB	DSBGA	YPG	49	1000	178.0	12.4	3.63	3.63	0.76	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)
LP3917RL-M/NOPB	DSBGA	YPG	49	250	210.0	185.0	35.0
LP3917RL-N/NOPB	DSBGA	YPG	49	250	210.0	185.0	35.0
LP3917RL-Q/NOPB	DSBGA	YPG	49	250	210.0	185.0	35.0
LP3917RL-S/NOPB	DSBGA	YPG	49	250	210.0	185.0	35.0
LP3917RLX-M/NOPB	DSBGA	YPG	49	1000	210.0	185.0	35.0
LP3917RLX-N/NOPB	DSBGA	YPG	49	1000	210.0	185.0	35.0
LP3917RLX-Q/NOPB	DSBGA	YPG	49	1000	210.0	185.0	35.0
LP3917RLX-S/NOPB	DSBGA	YPG	49	1000	210.0	185.0	35.0

YPG0049



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.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of significant portions of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI components or services with statements different from or beyond the parameters stated by TI for that component or service voids all express and any implied warranties for the associated TI component or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have **not** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

Products

Audio	www.ti.com/audio
Amplifiers	amplifier.ti.com
Data Converters	dataconverter.ti.com
DLP® Products	www.dlp.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
OMAP Applications Processors	www.ti.com/omap
Wireless Connectivity	www.ti.com/wirelessconnectivity

Applications

Automotive and Transportation	www.ti.com/automotive
Communications and Telecom	www.ti.com/communications
Computers and Peripherals	www.ti.com/computers
Consumer Electronics	www.ti.com/consumer-apps
Energy and Lighting	www.ti.com/energy
Industrial	www.ti.com/industrial
Medical	www.ti.com/medical
Security	www.ti.com/security
Space, Avionics and Defense	www.ti.com/space-avionics-defense
Video and Imaging	www.ti.com/video

TI E2E Community

e2e.ti.com