# 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 uH @ 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 uV typ, ideally suited for supplying voltage to RF section.

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

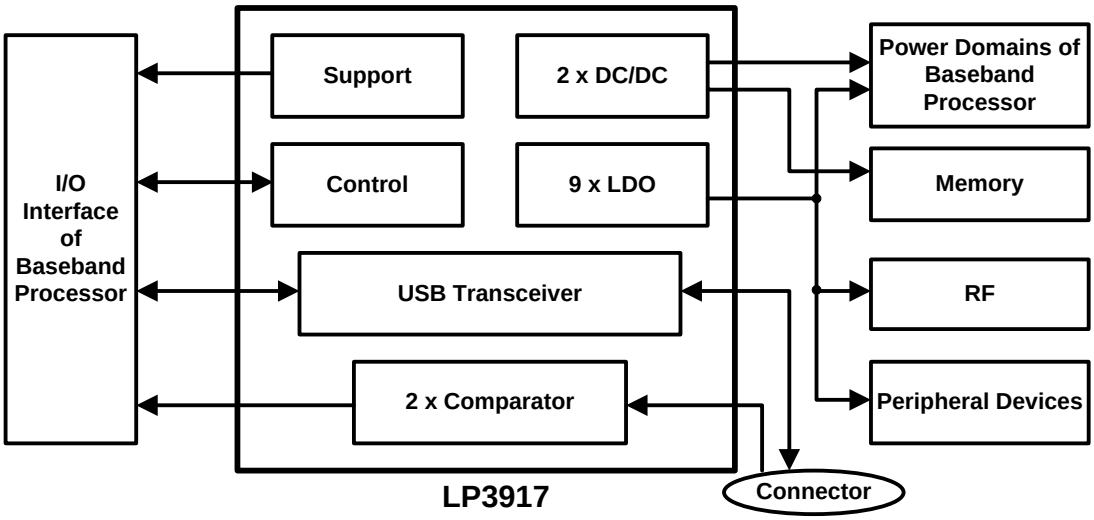
LP3917 can use interrupt for alerting BB processor of status changes instead of using inefficient status polling.

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.

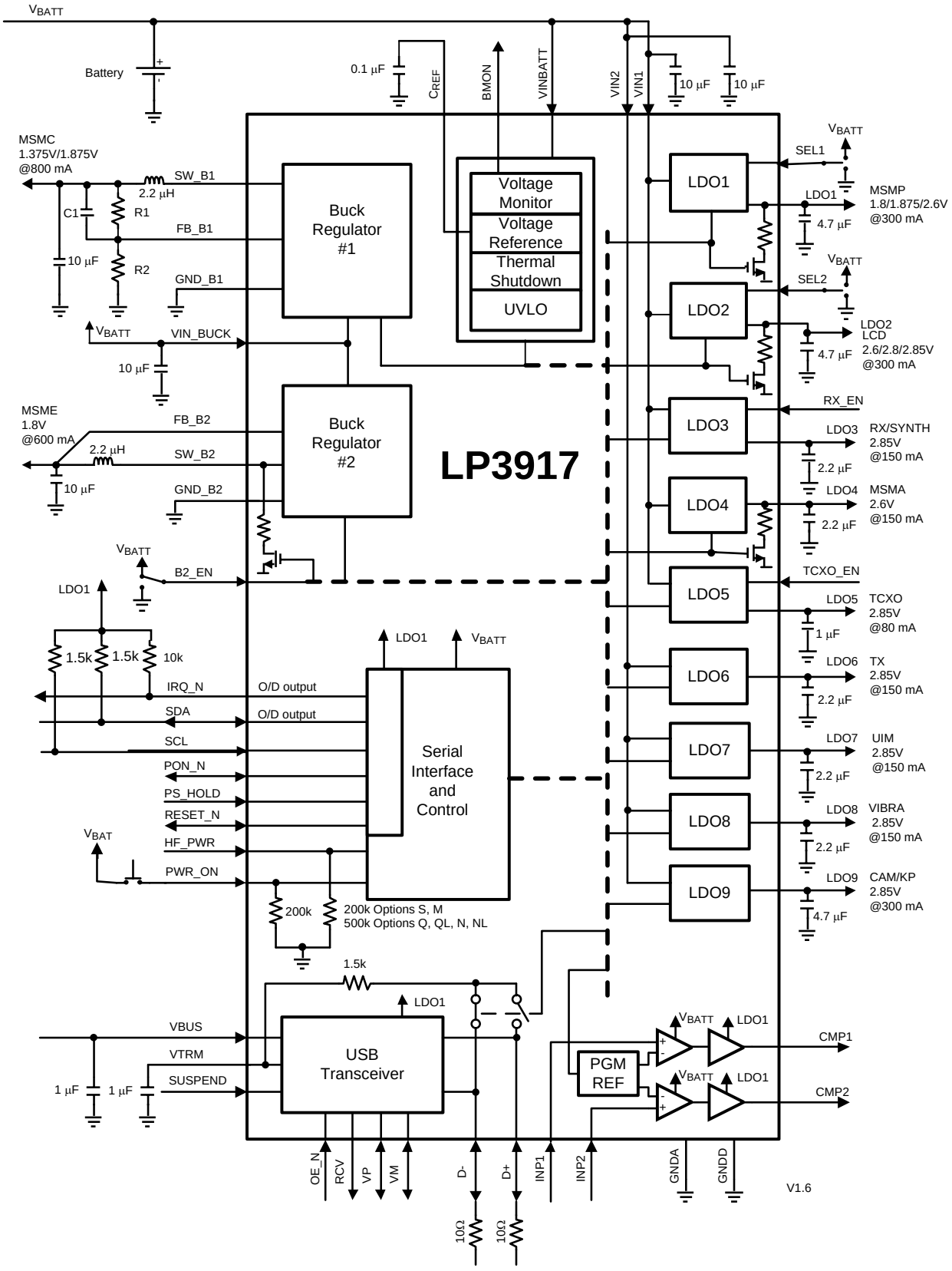
**Table 1. Key Specifications**

| | 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 | µV |
| Buck regulators with 3% (typ) | 800/600 | mA |
| Accuracy and up to 90% efficiency | | |

## SYSTEM DIAGRAM



## TYPICAL APPLICATION DIAGRAM



## DEVICE PIN DIAGRAM

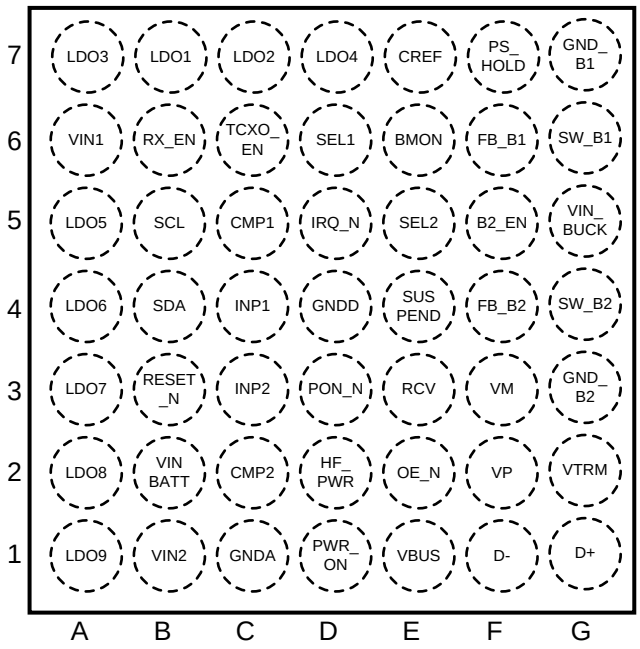
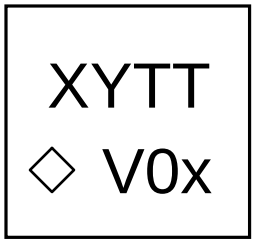



**Figure 1. TOP VIEW**

## 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 (6) | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LP3917RL-M/NOPB | ACTIVE | DSBGA | YPG | 49 | | TBD | Call TI | Call TI | | V05 | Samples |
| LP3917RL-N/NOPB | ACTIVE | DSBGA | YPG | 49 | | TBD | Call TI | Call TI | | V03 | Samples |
| LP3917RL-Q/NOPB | ACTIVE | DSBGA | YPG | 49 | | TBD | Call TI | Call TI | | V04 | Samples |
| LP3917RL-S/NOPB | ACTIVE | DSBGA | YPG | 49 | | TBD | Call TI | Call TI | | V01 | Samples |
| LP3917RLX-M/NOPB | ACTIVE | DSBGA | YPG | 49 | | TBD | Call TI | Call TI | | V05 | Samples |
| LP3917RLX-N/NOPB | ACTIVE | DSBGA | YPG | 49 | | TBD | Call TI | Call TI | | V03 | Samples |
| LP3917RLX-Q/NOPB | ACTIVE | DSBGA | YPG | 49 | | TBD | Call TI | Call TI | | V04 | Samples |
| LP3917RLX-S/NOPB | ACTIVE | DSBGA | YPG | 49 | | TBD | Call TI | Call TI | | 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)

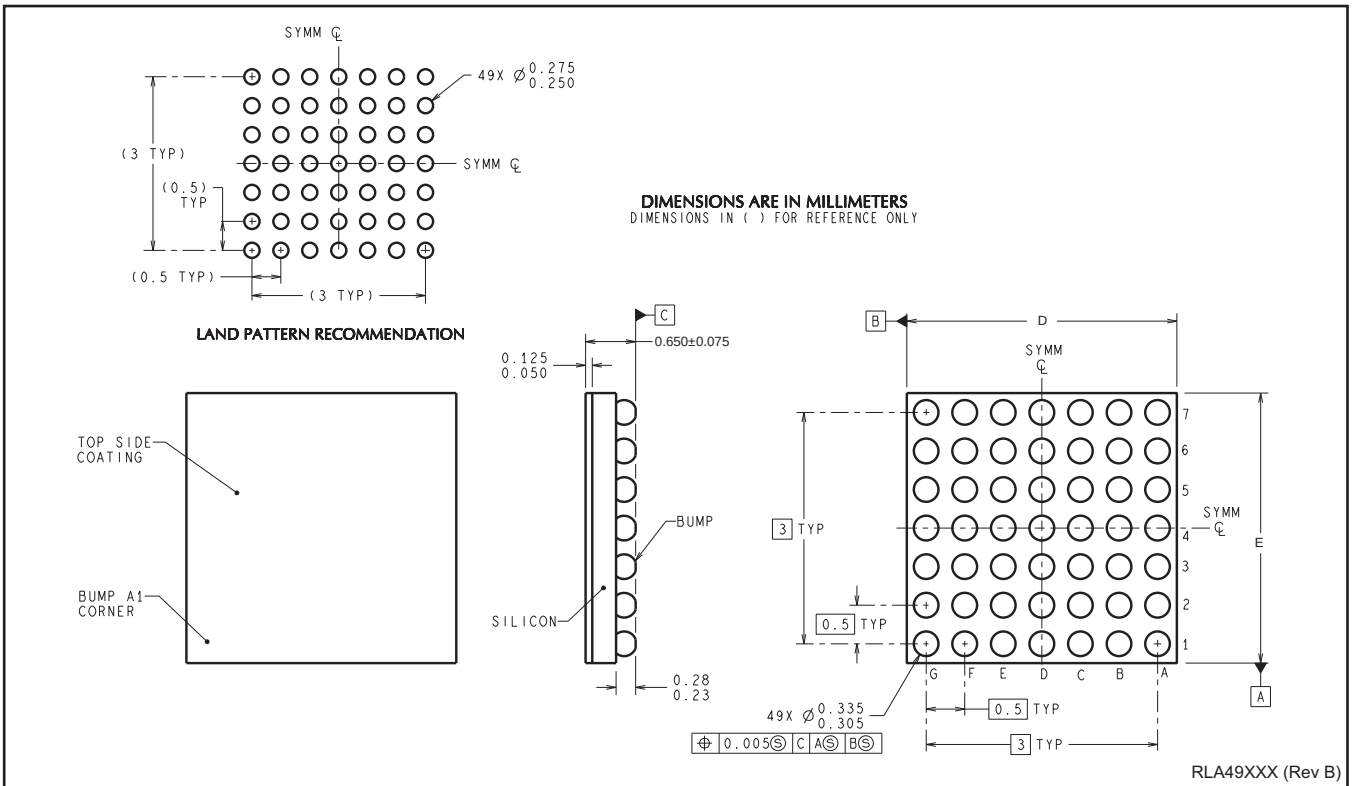
(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

**(5)** Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

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

# YPG0049

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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.

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