

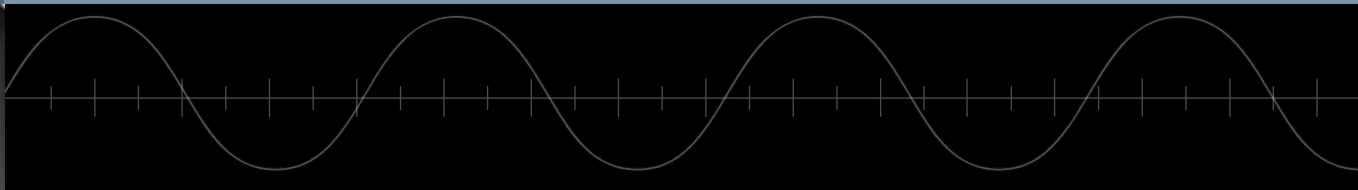
Linear Technology Corporation

LTC3588-1 Presentation

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LTC3588-1: What Is It?

Piezoelectric Energy Harvesting Power Supply

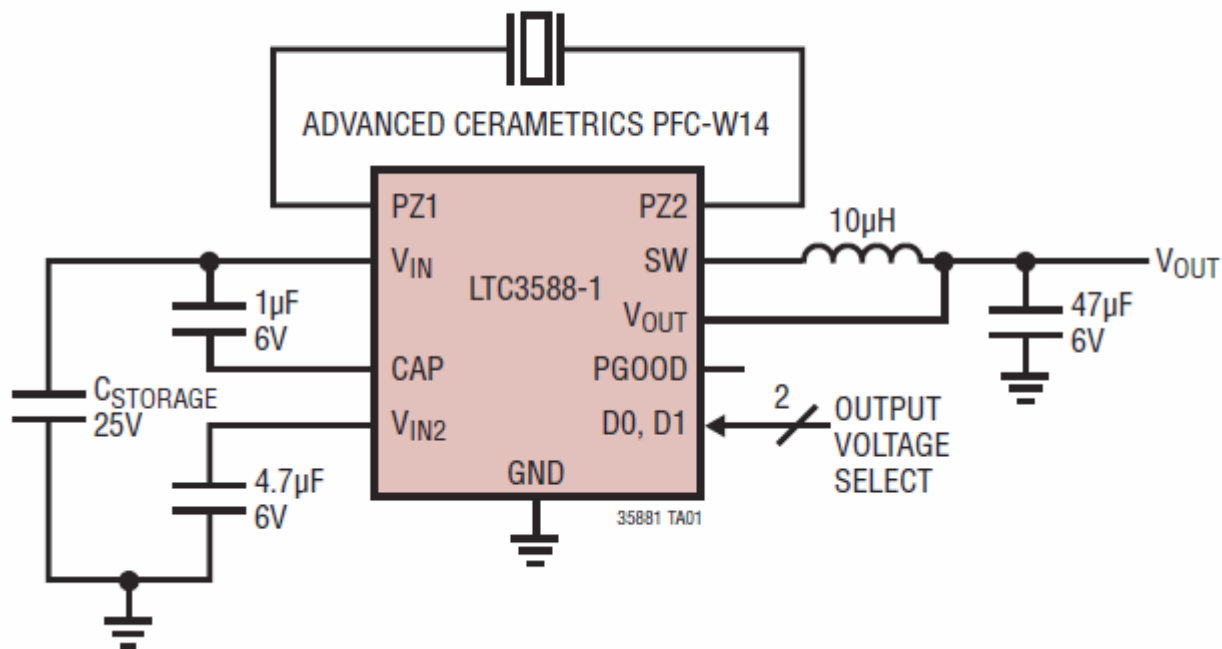
- High Efficiency Integrated Hysteretic Buck DC/DC
- Collects Energy from Piezoelectric Transducer and Delivers Regulated Outputs up to 100mA
- Integrated Low-Loss Full-Wave Bridge Rectifier
- Requires Only 950nA of Quiescent Current (in Regulation) and 450nA in UVLO (Initial Charge of Input Capacitor)

LTC3588-1 : Key Features

- 950nA Input Quiescent Current (Output in Regulation – No Load)
- 450nA Input Quiescent Current in UVLO
- 2.7V to 20V Input Operating Range
- Integrated Low-Loss Full-Wave Bridge Rectifier
- Up to 100mA of Output Current
- Selectable Output Voltages of 1.8V, 2.5V, 3.3V, 3.6V
- High Efficiency Integrated Hysteretic Buck DC/DC
- Input Protective Shunt – Up to 25mA Pull-Down at $V_{IN} \geq 20V$
- Wide Input Undervoltage Lockout (UVLO) Range
- Available in 10-Lead MSE and 3mm \times 3mm DFN Packages

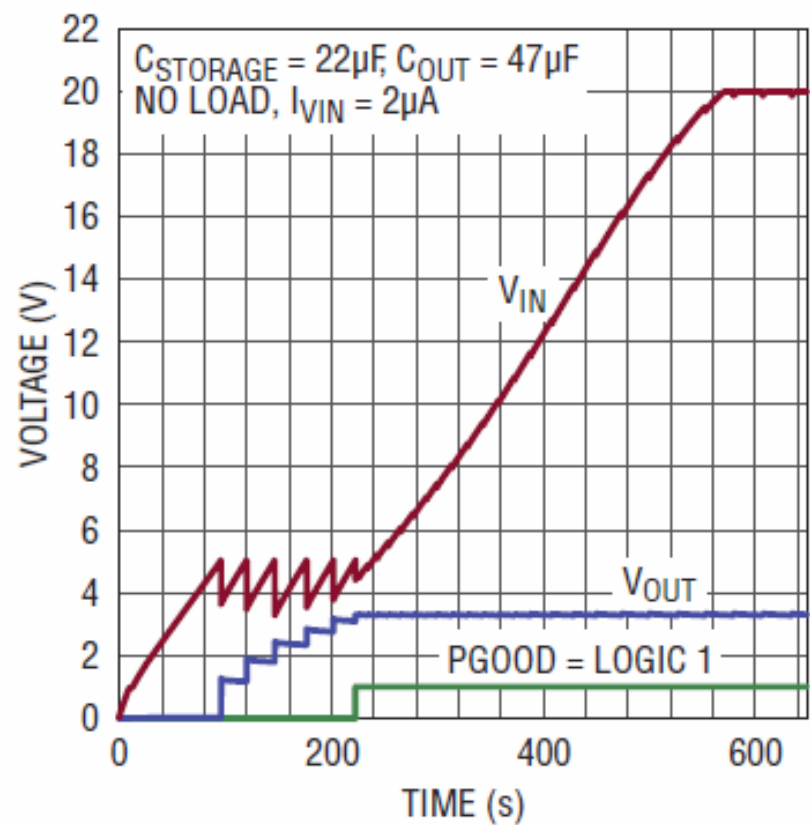
LTC3588-1 – Typical Application

100mA Piezoelectric Energy Harvesting Power Supply



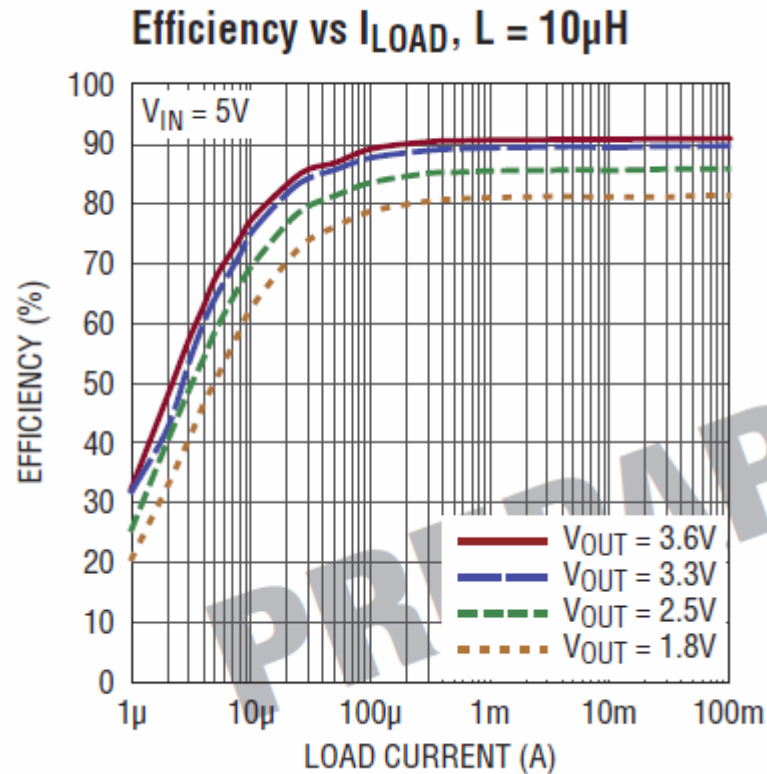
LTC3588-1 – Typical Application Start - Up

LTC3588-1 3.3V Regulator Start-Up Profile



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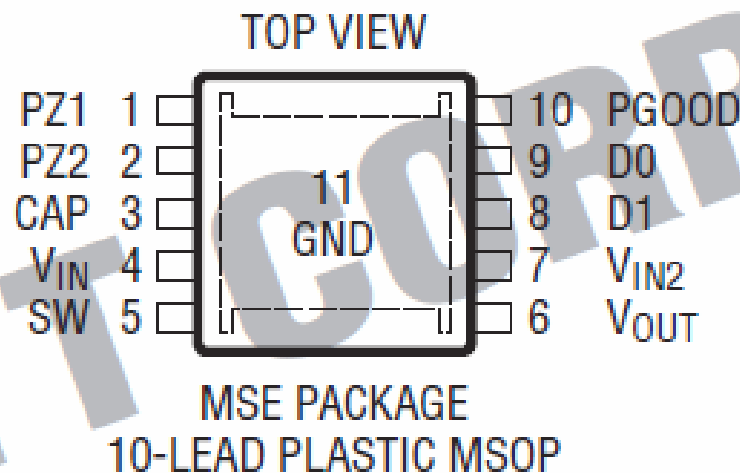
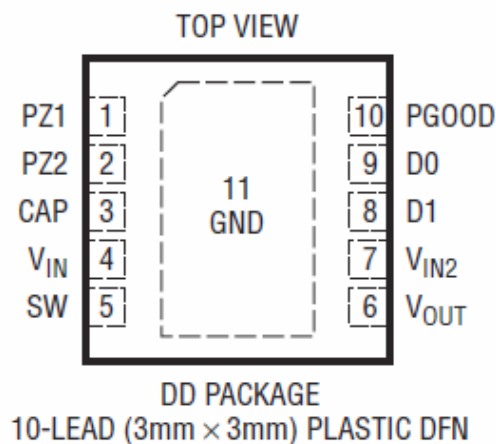
LTC3588-1 – Efficiency of Typical Application



LTC3588-1 Positioning

Vendor	Linear Tech	Discrete
Topology	Piezo Electric Energy Harvesting Power Supply	Discrete Full Wave Rectifier + Buck Regulator + Additional Discretes
Part #	LTC3588-1	Various
Integrated Low-Loss Full-Wave Bridge Rectifier	Yes	Discrete-Higher Losses
Input Voltage Range	2.7V to 20V	2.7V to 20V
Output Current (Switcher)	100mA	100mA
Efficiency ($V_{IN}=5V$, $V_{OUT}=3.3V$ @ 100uA)	90%	60-70%
Switching Frequency	Hysteretic	PFM
ULVO	Yes	Yes-Per Discrete Diode
PowerGood	Yes	No-Comp/Ref. Rqd.
Output Voltage (Switcher)	1.8V, 2.5V, 3.3V or 3.6V	1.8V to 5V
I_Q (No Load)	950nA	~30uA
I_Q (UVLO)	450nA	<10uA
Component Count	6	30+
Package (Dimensions)	3x3 DFN-10/MSOP-10E	Multiple

LTC3588-1 Package Options



Typical Market Applications

- Wireless Power Metering
- Industrial Sensors
- Wireless HVAC Sensors
- Mechanical Stress Sensors
- Battery Replacement for Low Power Instruments

