

MAX77178/MAX77179

High-Bandwidth LTE/WCDMA PA Power Management ICs in a 1.75mm x 1.4mm, 0.4mm Pitch WLP

General Description

The MAX77178/MAX77179 step-down converters are optimized for powering the power amplifier (PA) in multimode/multiband handsets for 3G/4G applications such as LTE, WCDMA, as well as other RF PA applications such as Wi-Fi and WiMAX®.

The 2.5V to 5.5V input supply range supports both current and future battery chemistries. The MAX77179 uses an analog input driven by an external DAC to control the output voltage linearly for continuous PA power adjustment. The output voltage range (0.5V to V_{IN}) supports operation with a wide variety of PAs. The MAX77178 uses a 2-bit GPIO interface with four selectable output voltage options to control the output voltage supply for PA power adjustment.

Fast switching frequency (8MHz (typ)) allows the use of low value inductor and small ceramic output capacitors while maintaining low-ripple voltage. Efficiency is enhanced at light loads by switching to skip mode where the converter switches only as needed to service the load. Adaptive smart FET scaling further improves efficiency under all operating conditions.

Other features include overcurrent and overtemperature protection, and a very low-current (0.1 μ A (typ)) shutdown mode.

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Features

- ◆ Meets 3G/4G Timing and RF Spectrum Mask Requirements
 - ◇ 20 μ s (typ) Settling Time for 0.5V to 3.4V Output Voltage Change
 - ◇ 30 μ s (typ) Settling from Enable to 95% Output Voltage Regulation
- ◆ Four Selectable Output Voltages with Logic Inputs (MAX77178 Only)
- ◆ Analog Controlled Output Voltage Settings from 0.5V to V_{IN} (MAX77179 Only)
- ◆ 1A Peak Output Current Capability
- ◆ \pm 3% Output Voltage
- ◆ Accuracy Allows Use of Small (1210) 0.47 μ H Inductor
- ◆ 100% Duty-Cycle Operation
- ◆ Simple Logic On/Off Controls
- ◆ < 1 μ A Shutdown Supply Current
- ◆ 2.5V to 5.5V Supply Voltage Range
- ◆ Overcurrent and Overtemperature Protection

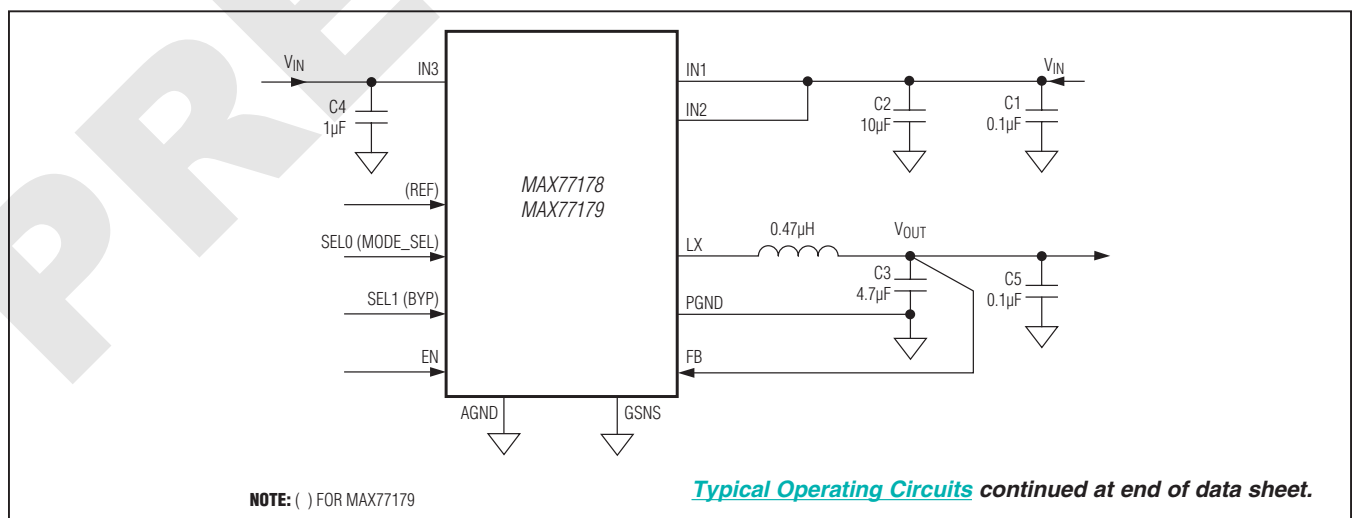
Applications

LTE, WCDMA Cell Phones/Smartphones/Tablets/
Data Cards

Ordering Information appears at end of data sheet.

For related parts and recommended products to use with this part, refer to www.maximintegrated.com/MAX77178.related.

Typical Operating Circuits



For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim's website at www.maximintegrated.com.

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Ordering Information

PART	PIN-PACKAGE	PACKAGE CODE
MAX77178EWC+T	12 WLP, 0.4mm pitch	W121A1+1
MAX77179EWC+T	12 WLP, 0.4mm pitch	W121A1+1

All devices operate over the -40°C to +85°C temperature range.
+Denotes a lead(Pb)-free/RoHS compliant package.
T = Tape and reel. These devices have a minimum order increment of 2500 pieces.

Chip Information

PROCESS: BiCMOS

Package Information

For the latest package outline information and land patterns (footprints), go to www.maximintegrated.com/packages. Note that a "+", "#", or "-" in the package code indicates RoHS status only. Package drawings may show a different suffix character, but the drawing pertains to the package regardless of RoHS status.

PACKAGE TYPE	PACKAGE CODE	DOCUMENT NO.	OUTLINE NO.
12 WLP, 0.4mm pitch	W121A1+1	21-0449	Refer to Application Note 1891