2.4-2.5 GHz Front-End Module with Internally Matched Power Amplifier, LNA & SP3T Switch

PRODUCTION DATA SHEET

DESCRIPTION

LX5553 is a high-integration, high-performance WLAN front-end module (FEM) for 802.11b/g/n and other applications in the 2.4-2.5GHz frequency range. LX5553 integrates an advanced InGaP/GaAs Hetero-junction Bipolar Transistor (HBT) power amplifier with on chip impedance matching, a fully matched low noise amplifier based on InGaAs Enhancement mode pseudo-morphic high electron mobility transistor (E-pHEMT) technology, and a Depletion mode pHEMT (D-pHEMT) single-pole triple-throw (SP3T) switch, all into a single package with 3x3mm footprint. LX5553 provides capability of sharing a single antenna between WLAN and Bluetooth systems through the SP3T switch.

The Tx path of LX5553 features a two-stage monolithic microwave integrated circuit (MMIC) power amplifier with active bias circuitry, on-chip output power detector, and 50Ω input/output matching inside the package. With 3.6V supply voltage and 82mA bias current, the Tx path provides about 25dB power gain, and +17dBm linear output power, with EVM (<3%) for 64QAM/ 54Mbps OFDM. Both gain and power are readily measured at antenna port, with the insertion loss of the SP3T switch included.

The Rx path of LX5553 features 13dB small-signal gain, noise figure of 2.1dB, and high input referred third-order harmonic intercept point (IIP3) of +5dBm, including the SP3T switch loss. The LNA consumes about 11mA current with a single 3.6V supply.

The Bluetooth path of LX5553 features low insertion loss of 0.9dB and high input referred 1dB gain compression point (IP_{1dB}) of +29dBm.

LX5553 is available in a 16-pin, low profile of 0.55mm, $3x3mm^2$ micro-lead package (MLPQ-16L) in very low profile of 0.55mm. With its high level of functional integration, best-class performance, compact footprint and low profile, LX5553 offers an ideal front-end solution for the ever demanding design requirements of today's highly integrated mobile equipments, including 802.11b/g/n and Bluetooth applications.

IMPORTANT: For the most current data, consult *MICROSEMI*'s website: http://www.microsemi.com

KEY FEATURES

- 2.4-2.5GHz 802.11b/g/n Front-End Solution in a Single MLP Package
- SP3T for Sharing Antenna between WLAN and Bluetooth systems
- All RF I/O Matched to 50 Ω
- Single-Supply Voltage 3.0V to 4.2V
- Small Footprint: $3x3mm^2$
- Low Profile: 0.55mm
- RoHS Compliant & Pb-Free

TX Features :

- Power Gain ~ 25 dB*
- Pout ~ +17 dBm* for 3% EVM at Antenna
- Current ~145 mA at +17 dBm*
- Pout ~ +21 dBm* for 11b 1Mbps DSSS Mask Compliance
- Quiescent Current ~ 82 mA

RX Features :

- Gain ~ 13 dB*
- Noise Figure ~ 2.1 dB*
- IIP3 ~ +5 dBm*

Bluetooth Path :

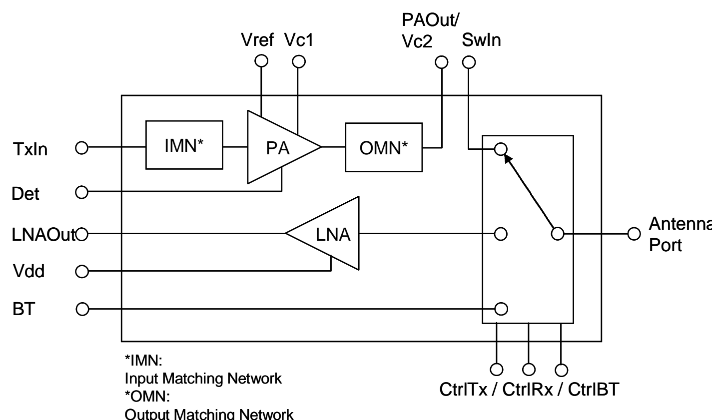
- Insertion Loss ~ 0.9 dB
- IP1dB ~ +29 dBm

* Including SP3T switch loss

APPLICATIONS

- IEEE 802.11b/g/n
- Mobile Phone WLAN module

BLOCK DIAGRAM



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Analog Mixed Signal Group
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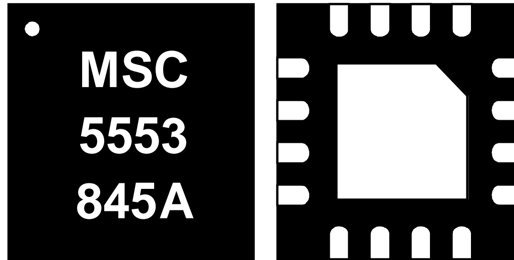
PRODUCT HIGHLIGHT



PACKAGE ORDER INFO

LU	Plastic MLPQ 16 pin 3x3mm RoHS Compliant /Pb-Free
	LX5553LU

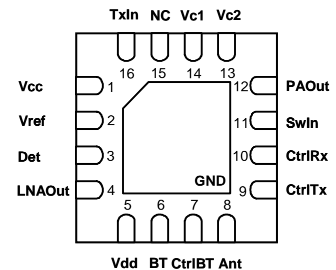
Note: Available in Tape & Reel.
Append the letters "TR" to the part number.
(i.e. LX5553LU-TR)

ABSOLUTE MAXIMUM RATINGS

DC Supply Voltage, RF off.......5V
Collector Current (PA).......500mA
Drain Current (LNA).......40mA
Total Power Dissipation.......2W
RF Input Power (TxIn).......+10 dBm
RF Input Power (Ant, SwIn, BT).......+25 dBm
Maximum Junction Temperature (Tj max).......+150°C
Operation Ambient Temperature.......-40°C to +85°C
Storage Temperature.......-65°C to +150°C
RoHS/Pb-Free Peak Package Temp. for Solder Reflow
(40 seconds maximum exposure).......260°C (+0, -5)

Note: Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of specified terminal.

PACKAGE PIN OUT



LQ PACKAGE
("See-Through" View from Top)

RoHS/Pb-free 100% Matte Tin Lead finish

THERMAL DATA

LU **Plastic MLPQ 16-Pin**

THERMAL RESISTANCE-JUNCTION TO CASE, θ_{JC}	10 C/W
THERMAL RESISTANCE-JUNCTION TO AMBIENT, θ_{JA}	50 C/W

Junction Temperature Calculation: $T_J = T_A + (P_D \times \theta_{JA})$.
The θ_{JA} numbers are guidelines for the thermal performance of the device/pc-board system. All of the above assume no ambient airflow.

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Thank you for your interest in Microsemi® Analog Mixed Signal products.

The full data sheet for this device contains proprietary information.

To obtain a copy, please contact your local Microsemi sales representative. The name of your local representative can be obtained at the following link http://www.microsemi.com/contact/contactfind.asp

or

Contact us directly by sending an email to: IPGdatasheets@microsemi.com

Be sure to specify the data sheet you are requesting and include your company name and contact information and or vcard.

We look forward to hearing from you.

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