

Applications

- DSSS 2.4 GHz WLAN (IEEE802.11b)
- OFDM 2.4 GHz WLAN (IEEE802.11g)
- Access Points, PCMCIA, PC cards

Features

- Single 3.3 V Supply Operation
- Integrated matching: Input, Interstage and Output
- Integrated power amplifier enable pin (VEN)
- Buffered, temperature compensated power detector
- 17.5 dBm, EVM = 3 %, 802.11g, OFDM 54 Mbps
- Low quiescent current of 48 mA
- 30 dB Gain
- Lead Free and RoHS compliant package
- 16 pin 3 mm x 3 mm x 0.9 mm QFN

Ordering Information

Part Number	Package	Remark
SE2582L	16 Pin QFN	Samples
SE2582L-R	16 Pin QFN	Tape and Reel
SE2582L-EK1	Evaluation Kit	Standard

Product Description

The SE2582L is a 2.4 GHz power amplifier designed for use in the 2.4 GHz ISM band for wireless LAN applications.

The SE2582L is completely integrated including all RF matching (input, output and interstage) as well as a high performance power detector for closed loop monitoring of the output power.

The SE2582L includes a digital enable control for device on/off control. This functionality allows for a seamless interface with CMOS transceivers, without the use of external logic or reference voltages.

The SE2582L temperature compensated power detector has is highly immune to mismatch at its output with less than 1.5 dB of variation with a 2:1 mismatch.

The part operates at a low quiescent current making it ideal for low power applications such as mobile phone and PDA devices.

Functional Block Diagram

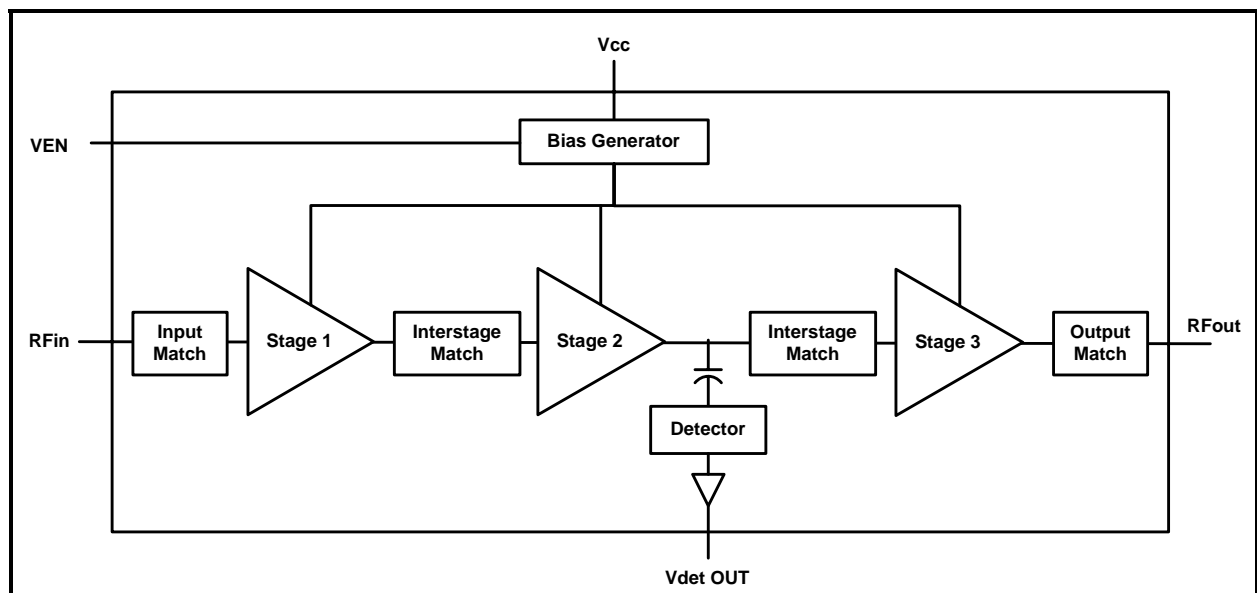


Figure 1: Functional Block Diagram

Pin Out Diagram

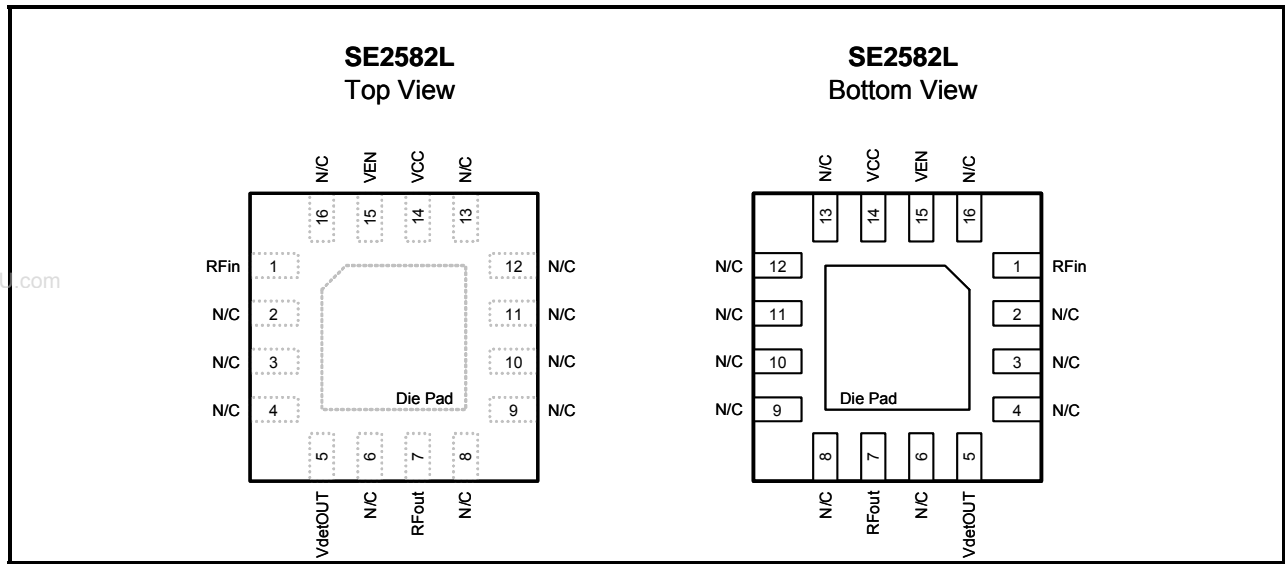


Figure 2: SE2582L Pin-Out Diagram

Pin Out Description

Pin No.	Name	Description
1	RFin	Power Amplifier RF input, DC block required
2	N/C	No Connect
3	N/C	No Connect
4	N/C	No Connect
5	Vdet OUT	Analog Power Detector Output
6	N/C	No Connect
7	RFout	Power Amplifier RF Output, DC block required
8	N/C	No Connect
9	N/C	No Connect
10	N/C	No Connect
11	N/C	No Connect
12	N/C	No Connect
13	N/C	No Connect
14	Vcc	Supply Voltage
15	VEN	Digital pin used to power up and power down the IC
16	N/C	No Connect

Absolute Maximum Ratings

These are stress ratings only. Exposure to stresses beyond these maximum ratings for a long period of time may cause permanent damage to, or affect the reliability of the device. Avoid operating the device outside the recommended operating conditions defined below. This device is ESD sensitive. Handling and assembly of this device should be at ESD protected workstations.

Symbol	Definition	Min.	Max.	Unit
V _{CC}	Supply Voltage on pin V _{CC}	-0.3	4	V
V _{EN}	Power Amplifier Enable	-0.3	4	V
RF _{IN}	RF Input Power, RF _{OUT} terminated in 50Ω match	-	10	dBm
T _{STG}	Storage Temperature Range	-40	150	°C
T _J	Maximum Junction Temperature	-	150	°C

Recommended Operating Conditions

Symbol	Parameter	Min.	Max.	Unit
V _{CC}	Supply Voltage	2.9	3.6	V
T _A	Ambient Temperature	-10	85	°C

DC Electrical Characteristics

Conditions: V_{CC} = V_{EN} = 3.3 V, T_A = 25 °C, as measured on SiGe Semiconductor's SE2582L-EV1 evaluation board, unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _{CC-802.11b}	Supply Current	P _{OUT} = 20 dBm, 11 Mbps CCK signal, BT = 0.45,	-	134	-	mA
I _{CC-802.11g}	Supply Current	P _{OUT} = 17.5 dBm, 54 Mbps OFDM signal, 64 QAM	-	105	-	mA
I _{QC}	Quiescent Current	No RF	-	48	-	mA
I _{OFF}	Supply Current	V _{EN} = 0 V, No RF	-	0.5	10	μA
V _{ENH}	Logic High Voltage	-	1.3	-	V _{CC}	V
V _{ENL}	Logic Low Voltage	-	0	-	0.5	V

AC Electrical Characteristics

802.11b/g AC Electrical Characteristics

Conditions: $V_{CC} = V_{EN} = 3.3\text{ V}$, $f = 2.45\text{ GHz}$, $T_A = 25\text{ }^\circ\text{C}$, as measured on SiGe Semiconductor's SE2582L-EV1 evaluation board, unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
f _{L-U}	Frequency Range	-	2400	-	2500	MHz
P _{1dB}	Output 1dB compression point	No modulation	-	24	-	dBm
S ₂₁	Small Signal Gain	P _{IN} = -25 dBm	-	30	-	dB
ΔS ₂₁	Gain Variation over band	P _{IN} = -25 dBm, f _{IN} = 2400 to 2500 MHz	-	1	-	dB
ACPR	Adjacent Channel Power Ratio ±11 MHz offsets from carrier ±22 MHz offsets from carrier	P _{OUT} = 20 dBm, 11 Mbps CCK signal, BT = 0.45	-	-37 -52	-	dBc
2f	Harmonic	P _{OUT} = 20 dBm, CW	-	-48	-	dBc
3f			-	-50	-	dBc
EVM	Error Vector Magnitude	P _{OUT} = 17.5 dBm, 54 Mbps OFDM signal, 64 QAM	-	3.0	-	%
t _r , t _f	Rise and Fall Time	-	-	0.5	-	us
STAB	Stability	P _{OUT} = 17.5 dBm, 54 Mbps OFDM, 64 QAM, VSWR = 6:1, all phases	All non-harmonically related outputs less than -50 dBc/100 kHz			
VSWR	Tolerance to output load mismatching	P _{OUT} = 17.5 dBm, 54 Mbps OFDM, 64 QAM, VSWR = 3:1, all phases	No damage			

Power Detector

Conditions: $V_{CC} = V_{EN} = 3.3\text{ V}$, $f = 2.45\text{ GHz}$, $T_A = 25\text{ }^\circ\text{C}$, as measured on SiGe Semiconductor's SE2582L-EV1 evaluation board, unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
PDR	P_{OUT} detect range	-	0	-	P_{1dB}	dBm
VDET	Detector voltage	$P_{OUT} = 20\text{ dBm}$	-	0.8	-	V
VDET	Detector voltage	$P_{OUT} = 17.5\text{ dBm}$	-	0.65	-	V
VDET	Detector voltage	$P_{OUT} = \text{NO RF}$	-	0.3	-	V
PDZ _{OUT}	Output Impedance	-	250	-	700	Ω
PDZ _{LOAD}	DC load impedance	-	10	-	-	k Ω

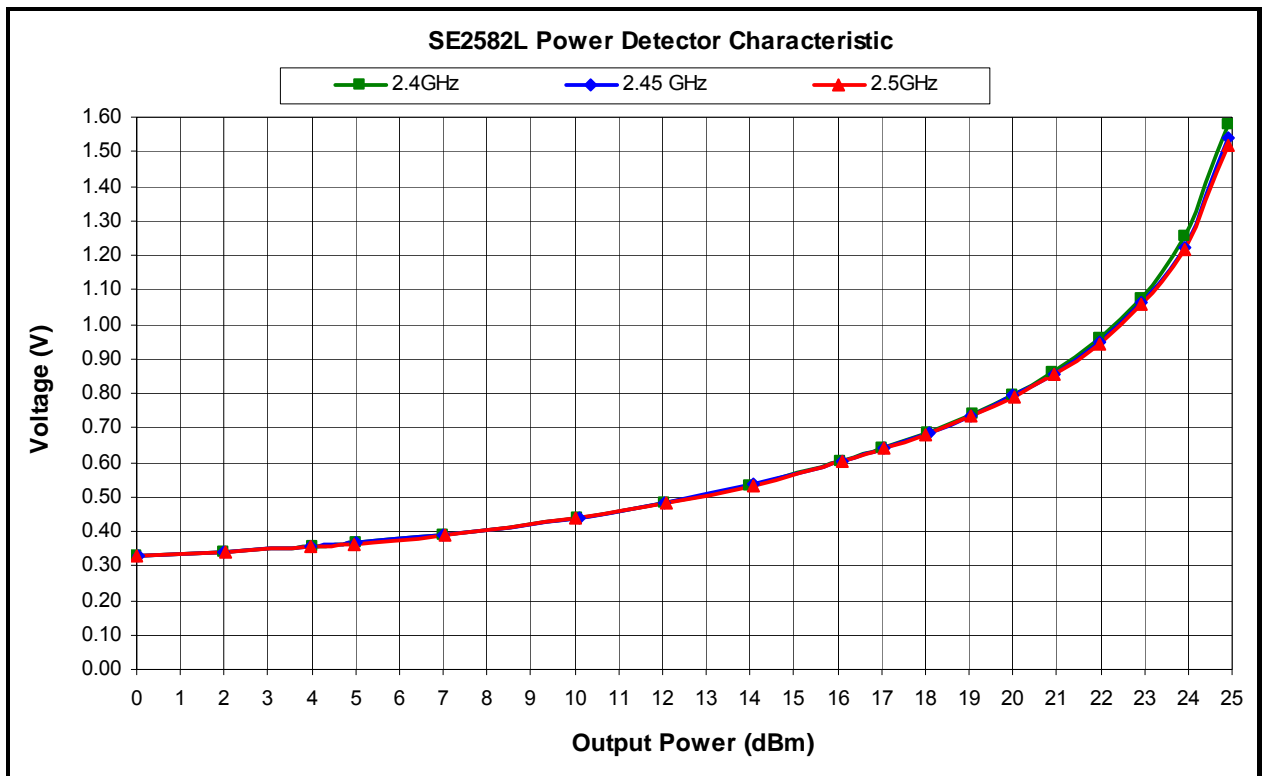


Figure 3: SE2582L Power Detector Characteristic over Frequency

Typical Application Circuit

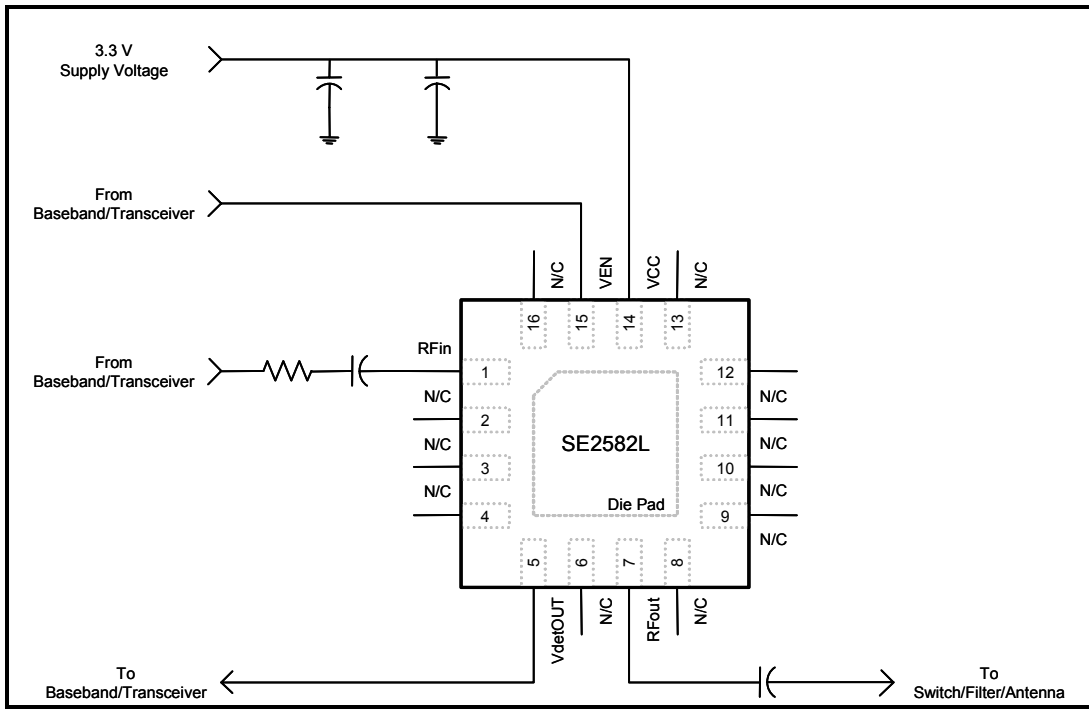


Figure 4: Typical Application Circuit

Package Diagram

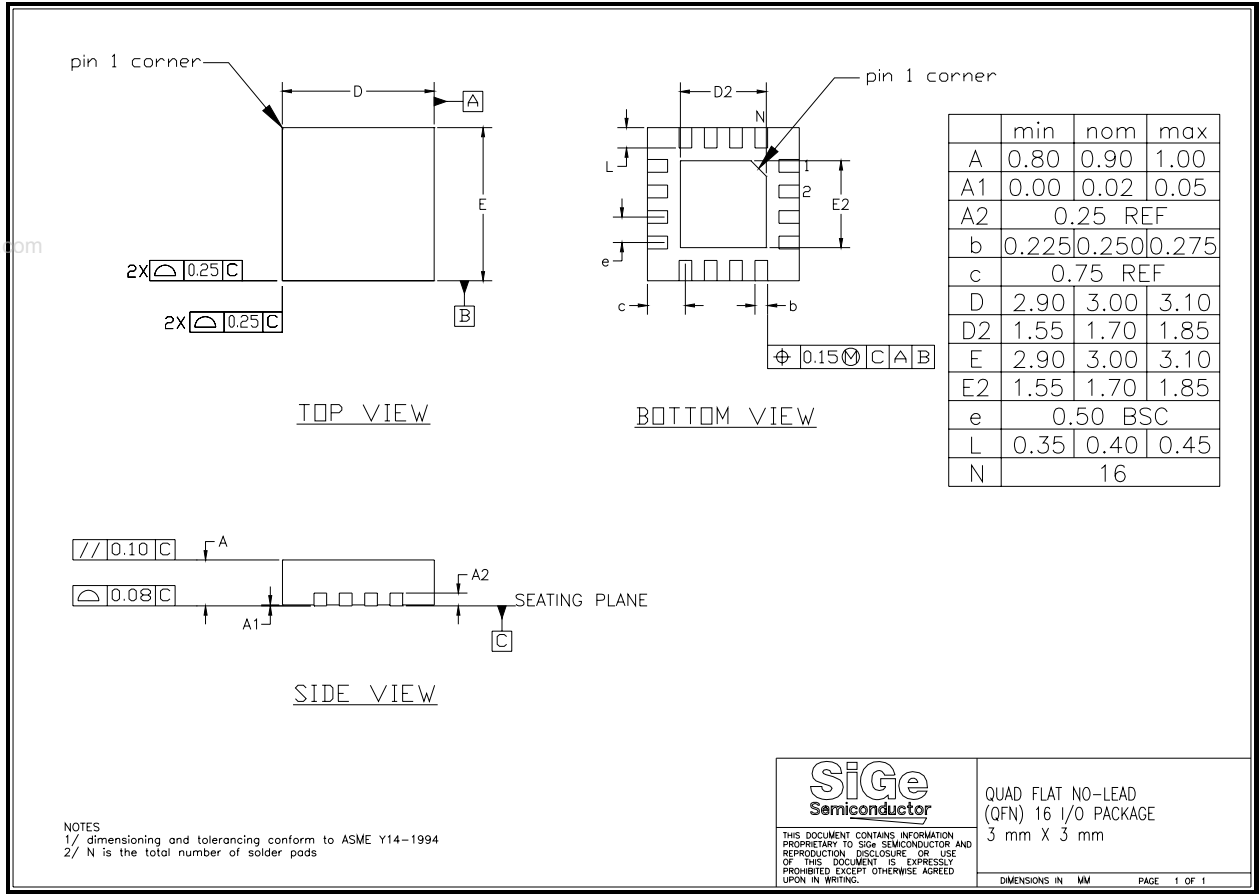


Figure 5: SE2582L Package Diagram

Branding

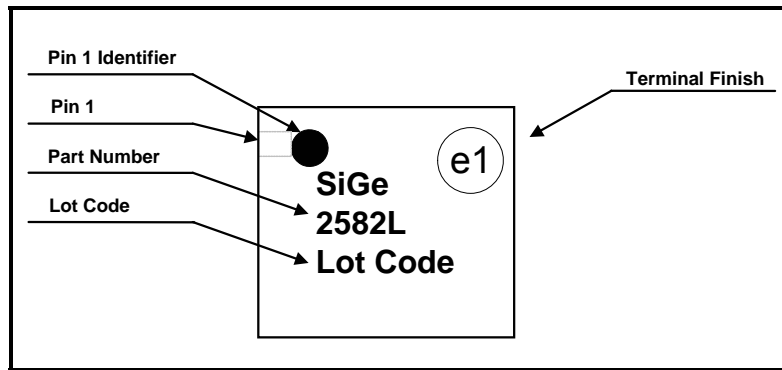


Figure 6: SE2582L Branding

<http://www.sige.com>

Email: sales@sige.com

Customer Service Locations

North America
1050 Morrison Drive, Suite 100
Ottawa ON K2H 8K7 Canada

Phone: +1 613 820 9244
Fax: +1 613 820 4933

Hong Kong
Phone: +852 3428 7222
Fax: +852 3579 5450

San Diego
Phone: +1 858 668 3541
Fax: +1 858 668 3546

United Kingdom
Phone: +44 1264 850754
Fax: +44 1264 852601

Product Preview

The datasheet contains information from the product concept specification. SiGe Semiconductor, Inc. reserves the right to change information at any time without notification.

Preliminary Information

The datasheet contains information from the design target specification. SiGe Semiconductor, Inc. reserves the right to change information at any time without notification.

Production testing may not include testing of all parameters.

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