BGU6102

Wideband silicon low-noise amplifier MMIC

Rev. 1 — 21 September 2011 Preliminary data sheet

1. Product profile

1.1 General description

The BGU6102 MMIC is a wideband amplifier in Silicon technology for high speed, low-noise applications in a plastic, leadless 6 pin, small outline SOT1209 package.

1.2 Features and benefits

- Small 6-pin leadless package 1.3 mm × 2.0 mm × 0.35 mm
- Low noise high gain microwave MMIC
- Applicable between 40 MHz and 4 GHz
- Supply voltage 1.5 V to 5 V
- Integrated temperature stabilized bias for easy design
- Bias current configurable with external resistor
- 37 GHz transit frequency - Silicon technology
- Power-down mode current consumption < 6 μA
- ESD protection on all pins

1.3 Applications

- FM radio
- Mobile TV, CMMB
- ISM
- Wireless security
- RKE, TPMS
- AMR, ZigBee, Bluetooth
- WiFi, WLAN, WiMAX
- Low current applications

1.4 Quick reference data

Table 1. Quick reference data

T_{amb} = 25 °C; V_{CC} = 3.0 V; $V_{ENABLE} \geq 1.2$ V; f = 100 MHz unless otherwise specified.

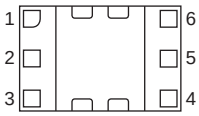
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$\|s_{21}\|^2$	insertion power gain		[1]	-	13	-	dB
MSG	maximum stable gain		[2]	-	31	-	dB
NF_{min}	minimum noise figure		[2]	-	0.7	-	dB
$P_{i(1dB)}$	input power at 1 dB gain compression		[1]	-	−23	-	dBm
$IP3_I$	input third-order intercept point		[1]	-	−15	-	dBm

[1] Measurements done on high-ohmic FM radio application board see Section 10.1; $I_{CC(tot)}$ = 3.1 mA.

[2] Measurements done on characterization board without matching, de-embedded up to the pins; $I_{CC(tot)}$ = 3 mA.

2. Pinning information

2.1 Pinning



Transparent top view

Fig 1. Pin configuration

2.2 Pin description

Table 2. Pin description

Symbol	Pin	Description
V_{CC}	1	supply current
n.c.	2	not connected
RF_IN	3	RF in
RF_OUT	4	RF out
ENABLE	5	enable control
CUR_ADJ	6	current adjust
GND	GND	ground pad; RF and DC ground

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BGU6102	XSON7	plastic extremely thin small outline package; no leads; 6 terminals; body 1.3 × 2.0 × 0.35 mm	SOT1209

4. Marking

Table 4. Marking

Type number	Marking	Description
BGU6102	1B*	* = p : made in Hong Kong
		* = t : made in Malaysia
		* = W : made in China

5. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V_{CC}	supply voltage	RF input AC coupled	-	5.5	V
$I_{CC(tot)}$	total supply current	V_{CC} = 5.0 V	-	40	mA
T_{stg}	storage temperature		–55	+150	°C
T_j	junction temperature		-	150	°C
V_{ESD}	electrostatic discharge voltage	Human Body Model (HBM); According JEDEC standard 22-A114E			
		all pins	-	2000	V
		pin 3	-	3000	V
		Charged Device Model (CDM); According JEDEC standard 22-C101B	-	500	V

6. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-sp)}$	thermal resistance from junction to solder point		110	K/W

7. Static characteristics

Table 7. Static characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{CC}	supply voltage	RF input AC coupled		1.5	-	5.0	V
$I_{CC(tot)}$	total supply current	configurable with external resistor	[1]	2.1	-	21	mA
		$V_{ENABLE} \leq 0.4$ V	[1]	-	-	0.01	mA
T_{amb}	ambient temperature			–40	+25	+85	°C

[1] $I_{CC(tot)} = I_{CC} + I_{RF\_OUT} + I_{R\_BIAS}$.

8. Dynamic characteristics

Table 8. Dynamic characteristics

T_{amb} = 25 °C; V_{CC} = 3.0 V; $V_{ENABLE} \geq 1.2$ V unless otherwise specified. All measurements done on characterization board without matching, de-embedded up to the pins.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
100 MHz frequency						
$\|s_{21}\|^2$	insertion power gain	f = 100 MHz				
		$I_{CC(tot)}$ = 2 mA	-	16.0	-	dB
		$I_{CC(tot)}$ = 3 mA	-	19.5	-	dB
		$I_{CC(tot)}$ = 6 mA	-	14.5	-	dB
		$I_{CC(tot)}$ = 10 mA	-	28.0	-	dB
		$I_{CC(tot)}$ = 20 mA	-	31.5	-	dB
MSG	maximum stable gain	f = 100 MHz				
		$I_{CC(tot)}$ = 2 mA	-	29.0	-	dB
		$I_{CC(tot)}$ = 3 mA	-	31.0	-	dB
		$I_{CC(tot)}$ = 6 mA	-	33.5	-	dB
		$I_{CC(tot)}$ = 10 mA	-	35.5	-	dB
		$I_{CC(tot)}$ = 20 mA	-	37.5	-	dB
NF_{min}	minimum noise figure	f = 100 MHz				
		$I_{CC(tot)}$ = 2 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 3 mA	-	0.7	-	dB
		$I_{CC(tot)}$ = 6 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 10 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 20 mA	-	1.0	-	dB
$P_{L(1dB)}$	output power at 1 dB gain compression	f = 100 MHz				
		$I_{CC(tot)}$ = 2 mA	-	–6.0	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	–4.5	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	0.5	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	4.0	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	9.5	-	dBm
$IP3_O$	output third-order intercept point	f = 100 MHz				
		$I_{CC(tot)}$ = 2 mA	-	0.0	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	3.5	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	10.5	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	14.5	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	19.0	-	dBm

Table 8. Dynamic characteristics *...continued*

T_{amb} = 25 °C; V_{CC} = 3.0 V; $V_{ENABLE} \geq$ 1.2 V unless otherwise specified. All measurements done on characterization board without matching, de-embedded up to the pins.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
150 MHz frequency						
$\|s_{21}\|^2$	insertion power gain	f = 150 MHz				
		$I_{CC(tot)}$ = 2 mA	-	16.0	-	dB
		$I_{CC(tot)}$ = 3 mA	-	19.0	-	dB
		$I_{CC(tot)}$ = 6 mA	-	24.5	-	dB
		$I_{CC(tot)}$ = 10 mA	-	27.5	-	dB
		$I_{CC(tot)}$ = 20 mA	-	31.0	-	dB
MSG	maximum stable gain	f = 150 MHz				
		$I_{CC(tot)}$ = 2 mA	-	27.5	-	dB
		$I_{CC(tot)}$ = 3 mA	-	29.0	-	dB
		$I_{CC(tot)}$ = 6 mA	-	32.0	-	dB
		$I_{CC(tot)}$ = 10 mA	-	34.0	-	dB
		$I_{CC(tot)}$ = 20 mA	-	36.0	-	dB
NF_{min}	minimum noise figure	f = 150 MHz				
		$I_{CC(tot)}$ = 2 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 3 mA	-	0.7	-	dB
		$I_{CC(tot)}$ = 6 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 10 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 20 mA	-	1.0	-	dB
$P_{L(1dB)}$	output power at 1 dB gain compression	f = 150 MHz				
		$I_{CC(tot)}$ = 2 mA	-	−6.5	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	−4.5	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	0.0	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	3.5	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	9.0	-	dBm
$IP3_O$	output third-order intercept point	f = 150 MHz				
		$I_{CC(tot)}$ = 2 mA	-	−0.5	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	3.5	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	10.0	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	14.0	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	19.0	-	dBm

Table 8. Dynamic characteristics *...continued*

T_{amb} = 25 °C; V_{CC} = 3.0 V; $V_{ENABLE} \geq$ 1.2 V unless otherwise specified. All measurements done on characterization board without matching, de-embedded up to the pins.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
450 MHz frequency						
$\|s_{21}\|^2$	insertion power gain	f = 450 MHz				
		$I_{CC(tot)}$ = 2 mA	-	15.5	-	dB
		$I_{CC(tot)}$ = 3 mA	-	18.5	-	dB
		$I_{CC(tot)}$ = 6 mA	-	23.0	-	dB
		$I_{CC(tot)}$ = 10 mA	-	26.0	-	dB
		$I_{CC(tot)}$ = 20 mA	-	29.0	-	dB
MSG	maximum stable gain	f = 450 MHz				
		$I_{CC(tot)}$ = 2 mA	-	22.5	-	dB
		$I_{CC(tot)}$ = 3 mA	-	24.5	-	dB
		$I_{CC(tot)}$ = 6 mA	-	27.0	-	dB
		$I_{CC(tot)}$ = 10 mA	-	29.0	-	dB
		$I_{CC(tot)}$ = 20 mA	-	31.0	-	dB
NF_{min}	minimum noise figure	f = 450 MHz				
		$I_{CC(tot)}$ = 2 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 3 mA	-	0.7	-	dB
		$I_{CC(tot)}$ = 6 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 10 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 20 mA	-	1.0	-	dB
$P_{L(1dB)}$	output power at 1 dB gain compression	f = 450 MHz				
		$I_{CC(tot)}$ = 2 mA	-	−7.0	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	−5.0	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	−0.5	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	3.0	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	9.0	-	dBm
$IP3_O$	output third-order intercept point	f = 450 MHz				
		$I_{CC(tot)}$ = 2 mA	-	0.0	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	4.0	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	10.5	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	14.0	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	19.5	-	dBm

Table 8. Dynamic characteristics *...continued*

T_{amb} = 25 °C; V_{CC} = 3.0 V; $V_{ENABLE} \geq$ 1.2 V unless otherwise specified. All measurements done on characterization board without matching, de-embedded up to the pins.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
900 MHz frequency						
$\|s_{21}\|^2$	insertion power gain	f = 900 MHz				
		$I_{CC(tot)}$ = 2 mA	-	14.0	-	dB
		$I_{CC(tot)}$ = 3 mA	-	16.5	-	dB
		$I_{CC(tot)}$ = 6 mA	-	20.5	-	dB
		$I_{CC(tot)}$ = 10 mA	-	23.0	-	dB
		$I_{CC(tot)}$ = 20 mA	-	25.0	-	dB
MSG	maximum stable gain	f = 900 MHz				
		$I_{CC(tot)}$ = 2 mA	-	19.5	-	dB
		$I_{CC(tot)}$ = 3 mA	-	21.5	-	dB
		$I_{CC(tot)}$ = 6 mA	-	24.0	-	dB
		$I_{CC(tot)}$ = 10 mA	-	26.0	-	dB
		$I_{CC(tot)}$ = 20 mA	-	28.0	-	dB
NF_{min}	minimum noise figure	f = 900 MHz				
		$I_{CC(tot)}$ = 2 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 3 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 6 mA	-	0.7	-	dB
		$I_{CC(tot)}$ = 10 mA	-	0.8	-	dB
		$I_{CC(tot)}$ = 20 mA	-	1.0	-	dB
$P_{L(1dB)}$	output power at 1 dB gain compression	f = 900 MHz				
		$I_{CC(tot)}$ = 2 mA	-	−7.5	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	−5.5	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	−0.5	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	3.5	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	10.0	-	dBm
$IP3_O$	output third-order intercept point	f = 900 MHz				
		$I_{CC(tot)}$ = 2 mA	-	1.0	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	5.0	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	11.5	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	15.0	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	20.5	-	dBm

Table 8. Dynamic characteristics *...continued*

T_{amb} = 25 °C; V_{CC} = 3.0 V; $V_{ENABLE} \geq$ 1.2 V unless otherwise specified. All measurements done on characterization board without matching, de-embedded up to the pins.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
1500 MHz frequency						
$\|s_{21}\|^2$	insertion power gain	f = 1500 MHz				
		$I_{CC(tot)}$ = 2 mA	-	11.5	-	dB
		$I_{CC(tot)}$ = 3 mA	-	14.0	-	dB
		$I_{CC(tot)}$ = 6 mA	-	17.5	-	dB
		$I_{CC(tot)}$ = 10 mA	-	19.5	-	dB
		$I_{CC(tot)}$ = 20 mA	-	21.0	-	dB
MSG	maximum stable gain	f = 1500 MHz				
		$I_{CC(tot)}$ = 2 mA	-	18.0	-	dB
		$I_{CC(tot)}$ = 3 mA	-	19.5	-	dB
		$I_{CC(tot)}$ = 6 mA	-	22.0	-	dB
		$I_{CC(tot)}$ = 10 mA	-	24.0	-	dB
		$I_{CC(tot)}$ = 20 mA	-	25.5	-	dB
NF_{min}	minimum noise figure	f = 1500 MHz				
		$I_{CC(tot)}$ = 2 mA	-	1.0	-	dB
		$I_{CC(tot)}$ = 3 mA	-	1.0	-	dB
		$I_{CC(tot)}$ = 6 mA	-	0.9	-	dB
		$I_{CC(tot)}$ = 10 mA	-	0.9	-	dB
		$I_{CC(tot)}$ = 20 mA	-	1.0	-	dB
$P_{L(1dB)}$	output power at 1 dB gain compression	f = 1500 MHz				
		$I_{CC(tot)}$ = 2 mA	-	−7.5	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	−5.5	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	0.0	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	4.0	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	10.5	-	dBm
$IP3_O$	output third-order intercept point	f = 1500 MHz				
		$I_{CC(tot)}$ = 2 mA	-	2.0	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	6.5	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	12.5	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	16.5	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	22.5	-	dBm

Table 8. Dynamic characteristics *...continued*

T_{amb} = 25 °C; V_{CC} = 3.0 V; $V_{ENABLE} \geq$ 1.2 V unless otherwise specified. All measurements done on characterization board without matching, de-embedded up to the pins.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
1900 MHz frequency						
$\|s_{21}\|^2$	insertion power gain	f = 1900 MHz				
		$I_{CC(tot)}$ = 2 mA	-	10.5	-	dB
		$I_{CC(tot)}$ = 3 mA	-	12.5	-	dB
		$I_{CC(tot)}$ = 6 mA	-	16.0	-	dB
		$I_{CC(tot)}$ = 10 mA	-	17.5	-	dB
		$I_{CC(tot)}$ = 20 mA	-	19.0	-	dB
MSG	maximum stable gain	f = 1900 MHz				
		$I_{CC(tot)}$ = 2 mA	-	17.0	-	dB
		$I_{CC(tot)}$ = 3 mA	-	18.5	-	dB
		$I_{CC(tot)}$ = 6 mA	-	21.5	-	dB
		$I_{CC(tot)}$ = 10 mA	-	23.0	-	dB
		$I_{CC(tot)}$ = 20 mA	-	24.5	-	dB
NF_{min}	minimum noise figure	f = 1900 MHz				
		$I_{CC(tot)}$ = 2 mA	-	1.1	-	dB
		$I_{CC(tot)}$ = 3 mA	-	1.1	-	dB
		$I_{CC(tot)}$ = 6 mA	-	1.0	-	dB
		$I_{CC(tot)}$ = 10 mA	-	1.0	-	dB
		$I_{CC(tot)}$ = 20 mA	-	1.1	-	dB
$P_{L(1dB)}$	output power at 1 dB gain compression	f = 1900 MHz				
		$I_{CC(tot)}$ = 2 mA	-	−7.5	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	−5.5	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	0.0	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	4.5	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	10.5	-	dBm
$IP3_O$	output third-order intercept point	f = 1900 MHz				
		$I_{CC(tot)}$ = 2 mA	-	2.5	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	6.5	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	13.0	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	17.0	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	22.5	-	dBm

Table 8. Dynamic characteristics *...continued*

T_{amb} = 25 °C; V_{CC} = 3.0 V; $V_{ENABLE} \geq$ 1.2 V unless otherwise specified. All measurements done on characterization board without matching, de-embedded up to the pins.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
2400 MHz frequency						
$\|s_{21}\|^2$	insertion power gain	f = 2400 MHz				
		$I_{CC(tot)}$ = 2 mA	-	8.5	-	dB
		$I_{CC(tot)}$ = 3 mA	-	11.0	-	dB
		$I_{CC(tot)}$ = 6 mA	-	14.0	-	dB
		$I_{CC(tot)}$ = 10 mA	-	15.5	-	dB
		$I_{CC(tot)}$ = 20 mA	-	17.0	-	dB
MSG	maximum stable gain	f = 2400 MHz				
		$I_{CC(tot)}$ = 2 mA	-	16.5	-	dB
		$I_{CC(tot)}$ = 3 mA	-	18.0	-	dB
		$I_{CC(tot)}$ = 6 mA	-	20.5	-	dB
		$I_{CC(tot)}$ = 10 mA	-	22.0	-	dB
		$I_{CC(tot)}$ = 20 mA	-	23.0	-	dB
NF_{min}	minimum noise figure	f = 2400 MHz				
		$I_{CC(tot)}$ = 2 mA	-	1.5	-	dB
		$I_{CC(tot)}$ = 3 mA	-	1.3	-	dB
		$I_{CC(tot)}$ = 6 mA	-	1.2	-	dB
		$I_{CC(tot)}$ = 10 mA	-	1.2	-	dB
		$I_{CC(tot)}$ = 20 mA	-	1.3	-	dB
$P_{L(1dB)}$	output power at 1 dB gain compression	f = 2400 MHz				
		$I_{CC(tot)}$ = 2 mA	-	−7.5	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	−5.0	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	0.0	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	4.5	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	10.5	-	dBm
$IP3_O$	output third-order intercept point	f = 2400 MHz				
		$I_{CC(tot)}$ = 2 mA	-	2.5	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	7.0	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	13.0	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	17.5	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	23.0	-	dBm

Table 8. Dynamic characteristics *...continued*

T_{amb} = 25 °C; V_{CC} = 3.0 V; $V_{ENABLE} \geq 1.2$ V unless otherwise specified. All measurements done on characterization board without matching, de-embedded up to the pins.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
3500 MHz frequency						
$\|s_{21}\|^2$	insertion power gain	f = 3500 MHz				
		$I_{CC(tot)}$ = 2 mA	-	5.5	-	dB
		$I_{CC(tot)}$ = 3 mA	-	7.5	-	dB
		$I_{CC(tot)}$ = 6 mA	-	10.5	-	dB
		$I_{CC(tot)}$ = 10 mA	-	12.0	-	dB
		$I_{CC(tot)}$ = 20 mA	-	13.5	-	dB
MSG	maximum stable gain	f = 3500 MHz				
		$I_{CC(tot)}$ = 2 mA	-	16.0	-	dB
		$I_{CC(tot)}$ = 3 mA	-	17.5	-	dB
		$I_{CC(tot)}$ = 6 mA	-	19.0	-	dB
		$I_{CC(tot)}$ = 10 mA	-	18.5	-	dB
		$I_{CC(tot)}$ = 20 mA	-	18.5	-	dB
NF_{min}	minimum noise figure	f = 3500 MHz				
		$I_{CC(tot)}$ = 2 mA	-	2.3	-	dB
		$I_{CC(tot)}$ = 3 mA	-	2.2	-	dB
		$I_{CC(tot)}$ = 6 mA	-	1.9	-	dB
		$I_{CC(tot)}$ = 10 mA	-	1.8	-	dB
		$I_{CC(tot)}$ = 20 mA	-	1.9	-	dB
$P_{L(1dB)}$	output power at 1 dB gain compression	f = 3500 MHz				
		$I_{CC(tot)}$ = 2 mA	-	−7.5	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	−5.5	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	−0.5	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	4.5	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	9.5	-	dBm
$IP3_O$	output third-order intercept point	f = 3500 MHz				
		$I_{CC(tot)}$ = 2 mA	-	1.0	-	dBm
		$I_{CC(tot)}$ = 3 mA	-	5.0	-	dBm
		$I_{CC(tot)}$ = 6 mA	-	11.5	-	dBm
		$I_{CC(tot)}$ = 10 mA	-	17.0	-	dBm
		$I_{CC(tot)}$ = 20 mA	-	23.5	-	dBm

9. Enable control

Table 9. ENABLE (pin 5)

−40 °C ≤ T_{amb} ≤ +85 °C

V_{ENABLE} (V)	State
≤ 0.4	OFF
≥ 1.2	ON

10. Application information

Other applications available. Please contact your local sales representative for more information. Application note(s) available on the NXP website.

10.1 High-ohmic FM radio characteristics

Table 10. AC characteristics[1]

T_{amb} = 25 °C; V_{CC} = 3.0 V; $I_{CC(tot)}$ = 3.1 mA; f = 100 MHz; measurements done on high-ohmic FM radio application board.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$\|s_{21}\|^2$	insertion power gain		-	13	-	dB
RL_{in}	input return loss		-	1	-	dB
RL_{out}	output return loss		-	20	-	dB
NF	noise figure	Z_S = 50 Ω	-	1.0	-	dB
$P_{i(1dB)}$	input power at 1 dB gain compression		-	–23	-	dBm
$IP3_I$	input third-order intercept point		-	–15	-	dBm

[1] See application note AN11091 for details.

10.2 50 ohm FM radio characteristics

Table 11. AC characteristics[1]

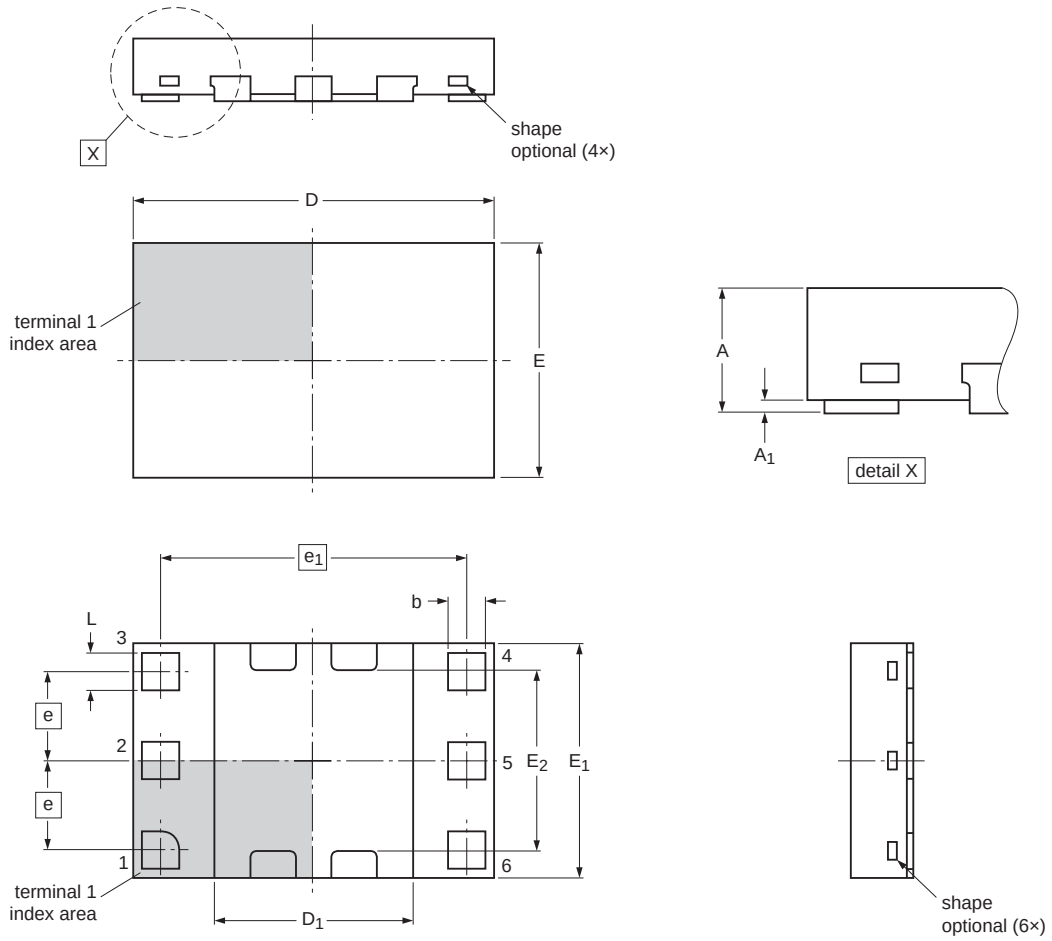
T_{amb} = 25 °C; V_{CC} = 2.8 V; $I_{CC(tot)}$ = 4.3 mA; f = 100 MHz; measurements done on 50 Ω application board.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$\|s_{21}\|^2$	insertion power gain		-	15	-	dB
RL_{in}	input return loss		-	10	-	dB
RL_{out}	output return loss		-	14	-	dB
NF	noise figure	Z_S = 50 Ω	-	1.3	1.8	dB
$P_{i(1dB)}$	input power at 1 dB gain compression		-	–20	-	dBm
$IP3_I$	input third-order intercept point		-	–12	-	dBm

[1] See application note AN11090 for details.

11. Package outline

HXSON6: plastic thermal enhanced super thin small outline package; no leads; 6 terminals; body 2 x 1.3 x 0.35 mm **SOT1209**



Dimensions

Unit		A	A_1	b	D	D_1	E	E_1	E_2	e	e_1	L
mm	max			0.15	1.9	1.0	1.2	1.2	1.0	0.5	1.7	0.15
	nom											
	min	0.35	0.04	0.25	2.1	1.2	1.4	1.4				0.25

Note
1. Dimension A is including plating thickness.

sot1209_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOT1209						~~11-06-10~~ 11-09-15

Fig 2. Package outline SOT1209

12. Abbreviations

Table 12. Abbreviations

Acronym	Description
AC	Alternating Current
AMR	Automated Meter Reading
CMMB	China Mobile Multimedia Broadcasting
DC	Direct Current
ESD	ElectroStatic Discharge
FM	Frequency Modulation
GLONASS	GLObal'naya NAvigatsionnaya Sputnikovaya Sistema
GPS	Global Positioning System
HBM	Human Body Model
ISM	Industrial Scientific Medical
LNA	Low-Noise Amplifier
LNB	Low-Noise Block
LTE	Long Term Evolution
MMIC	Monolithic Microwave Integrated Circuit
RF	Radio Frequency
RKE	Remote Keyless Entry
SDARS	Satellite Digital Audio Radio Service
TPMS	Tire-Pressure Monitoring System
UMTS	Universal Mobile Telecommunications System
UWB	Ultra-WideBand
WiMAX	Worldwide Interoperability for Microwave Access
WLAN	Wireless Local Area Network

13. Revision history

Table 13. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BGU6102 v.1	20110921	Preliminary data sheet	-	-

14. Legal information

14.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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16. Contents

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