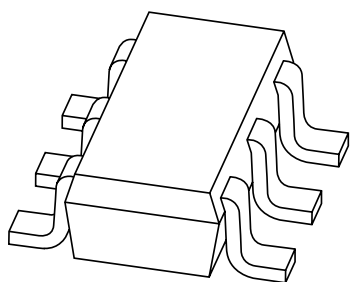


DATA SHEET



BGA2021 MMIC mixer

Objective specification
File under Discrete Semiconductors, SC14

1998 Sep 01

MMIC mixer

BGA2021

FEATURES

- Large frequency range
- Easy to use
- High isolation
- RF and LO input 50 Ω impedance.

APPLICATIONS

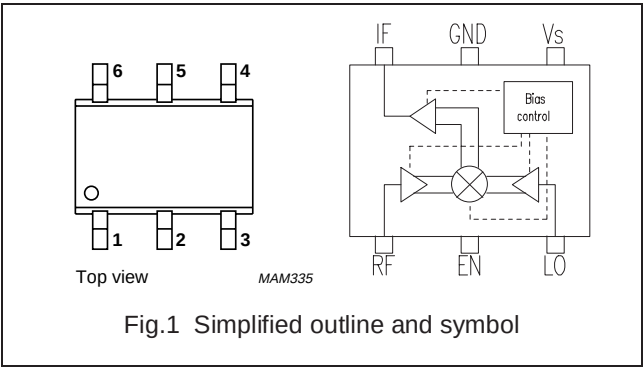
The mixer is primarily intended for application in the receiver side of wireless systems that require high conversion gain at low supply current, like DECT, GSM and DSC1800.

DESCRIPTION

Silicon double poly MMIC in a 6-lead plastic SOT457 package.

PINNING SOT457

PIN	DESCRIPTION
1	RF - signal
2	enable
3	LO - signal
4	V _S
5	ground
6	IF - out



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _S	supply voltage		2.7	3	3.3	V
I _S	supply current		–	6	–	mA
G _C	conversion gain	I _S = 6 mA; f _{RF} = 1.8 GHz	–	9	–	dB
NF	noise figure	I _S = 6 mA; f _{RF} = 1.8 GHz	–	10	–	dB
IP ₃	input third order intercept point	I _S = 6 mA; f _{RF} = 1.8 GHz	–	–8	–	dBm
	LO – RF isolation	I _S = 6 mA; f _{RF} = 1.8 GHz	–	30	–	dB

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _S	supply voltage		–	4	V
I _S	supply current		–	20	mA
P _{LO}	oscillator power	note 1	–	3	dBm
P _{RF}	RF power	note 1	–	3	dBm
P _{tot}	total power dissipation	T _S ≤ tbf °C; note 2	–	60	mW
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C

Note

1. LO and RF signals always AC coupled; no external DC voltage supplied to pin 1 and 3.
2. T_S is the temperature at the soldering point of the ground tab.

MMIC mixer

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-s}$	thermal resistance from junction to solder point	$T_S \leq tbf\ ^\circ C$; $P_{tot} = 18\ mW$	tbf	K/W

CHARACTERISTICS

$f_{RF} = 1.9\ GHz$; $f_{LO} = 2.1\ GHz$; $f_{IF} = 200\ MHz$; $V_S = 3\ V$; $V_{En} = 3\ V$; $I_S = 6\ mA$; $P_{LO} = -6\ dBm$; $T_J = 25\ ^\circ C$; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
f_{LO}	local oscillator frequenc		0.5	–	2.5	GHz
f_{RF}	signal frequency		0.5	–	2.5	GHz
f_{IF}	intermediate frequency		10	–	400	MHz
V_S	supply voltage		2.7	3	3.3	V
I_S	supply current		–	6	–	mA
		$V_{En} = 0$	–	–	10	μA
I_{En}	enable current		–	–	0.1	mA
G_C	conversion power gain		–	9	–	dB
NF	noise figure	SSB	–	10	–	dB
IP_3	intercept point third harmonic	$\Delta f_{RF} = 100\ kHz$	–	–8	–	dBm
	RF – LO isolation		–	26	–	dB
	LO – RF isolation		–	30	–	dB
	LO – IF isolation		–	20	–	dB
	RF – IF isolation		–	29	–	dB
$VSWR_{RF}$	voltage standing wave ratio on RF input		–	1.5	2	
$VSWR_{LO}$	voltage standing wave ratio on LO input		–	1.5	2	
Z_{IF}	IF output impedance		–	1	–	k Ω

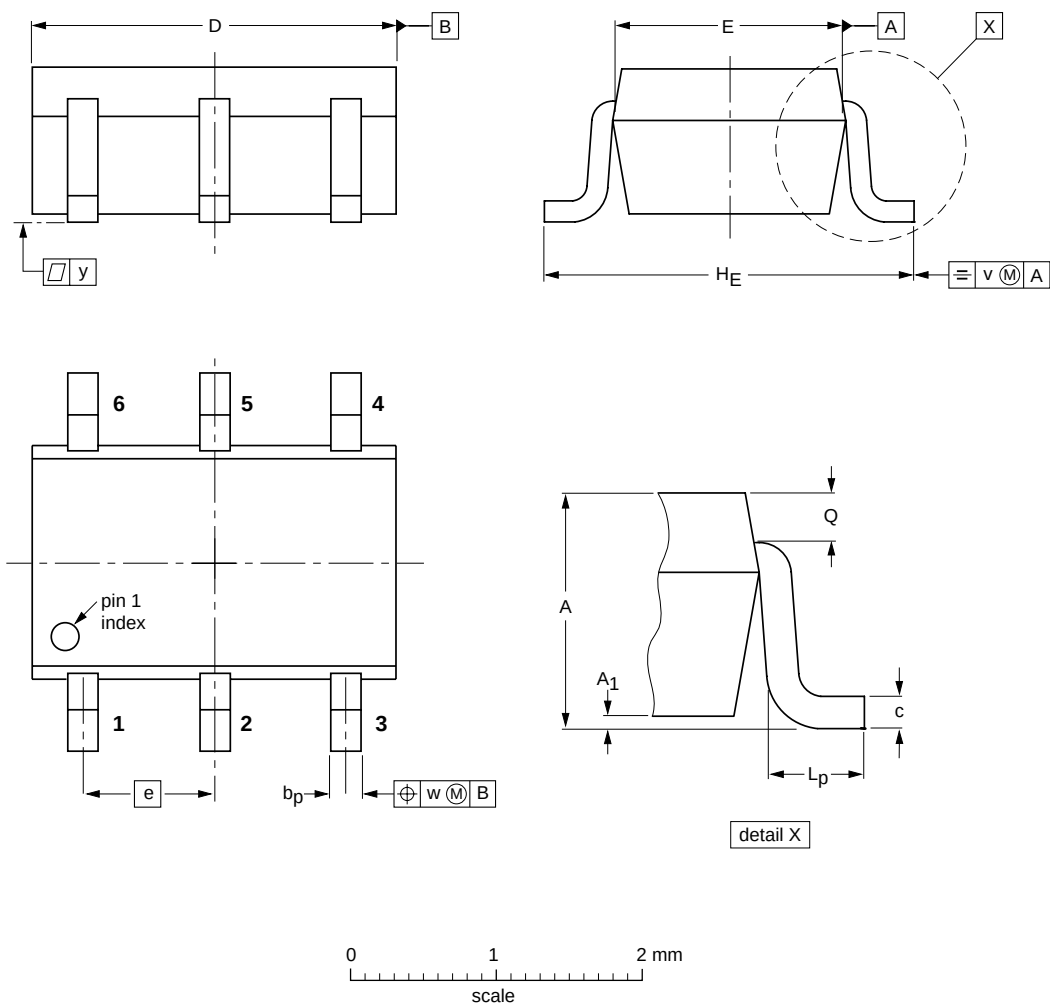
MMIC mixer

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PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT457



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁	b _p	c	D	E	e	H _E	L _p	Q	v	w	y
mm	1.1 0.9	0.1 0.013	0.40 0.25	0.26 0.10	3.1 2.7	1.7 1.3	0.95	3.0 2.5	0.6 0.2	0.33 0.23	0.2	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT457			SC-74			97-02-28

MMIC mixer

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DEFINITIONS

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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