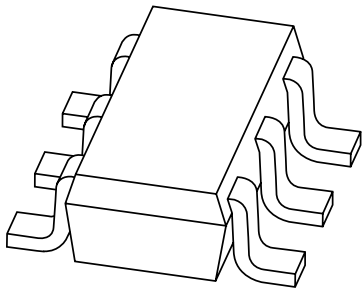


DATA SHEET



BGA2450 MMIC power amplifier

Objective specification

2000 July 14

MMIC power amplifier

BGA2450

FEATURES

- Low-voltage operation (3 V)
- High power-added efficiency (35 %)
- Power control pin (20 dB gain control)
- Small package (SOT457)
- Straightforward application (no interstage matching required).

APPLICATIONS

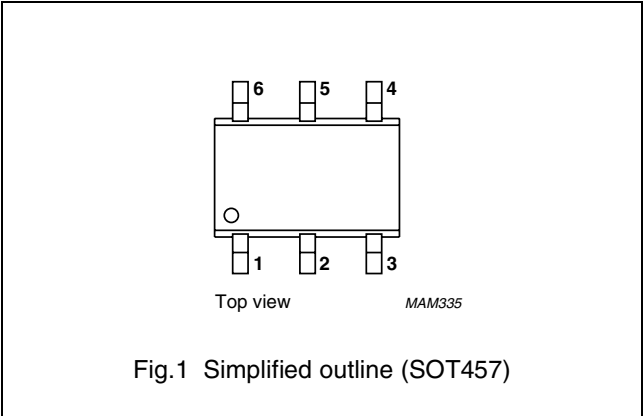
- Bluetooth class I (+20 dBm) PA
- ISM2400 PA
- Home RF driver
- W-LAN driver.

DESCRIPTION

Silicon bipolar MMIC power amplifier for operation in the 2.45 GHz band. It has a power control pin specifically to comply with Bluetooth Class I, but can also be used for other applications. The device is designed for low-voltage operation (3 V), high power-added efficiency (typ. 35 %) for extended battery life and for ease of application. Impedance matching is only required on the input and output pins, not at an intermediate point. The package is a space-saving 6-pin SOT457.

PINNING

PIN	DESCRIPTION
1	supply voltage
2, 5	ground
3	RF input
4	control voltage
6	RF output



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _S	supply voltage		–	3	–	V
I _Q	quiescent current		–	50	–	mA
P _O	output power		–	22	–	dBm
G _P	power gain		–	20	–	dB
	gain control range		–	20	–	dB
η	power-added efficiency		–	35	–	%

CAUTION
This product is supplied in anti-static packing to prevent damage caused by electrostatic discharge during transport and handling. For further information, refer to Philips specs.: SNW-EQ-608, SNW-FQ-302A and SNW-FQ-302B.

MMIC power amplifier

BGA2450

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f	frequency		2400	2500	MHz
V _S	supply voltage		–	3.5	V
V _{ctrl}	control pin voltage		–	3.5	V
P _{tot}	total power dissipation	T _s ≤ 100 °C	–	250	mW
P _D	drive power		–	10	dBm
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
R _{th j-s}	thermal resistance from junction to solder point	200	K/W

DC CHARACTERISTICS

V_S = 3 V; T_j = 25 °C; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _Q	quiescent current	P _D = –30 dBm; V _{ctrl} = 2 V	–	–	30	mA
		P _D < –30 dBm; V _{ctrl} < 1 V	–	–	1	mA
I _{ctrl}	control current	V _{ctrl} = 2 V	–	–	100	μA

AC CHARACTERISTICS

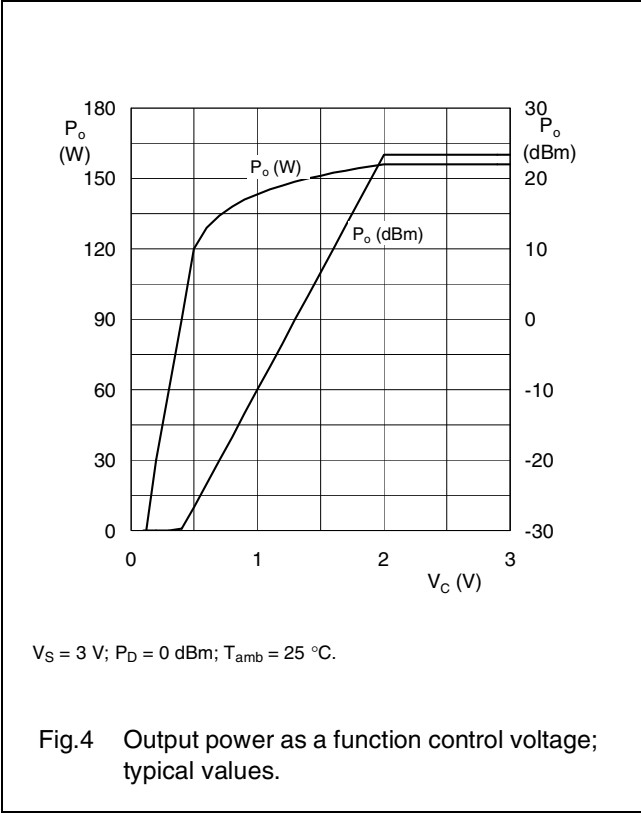
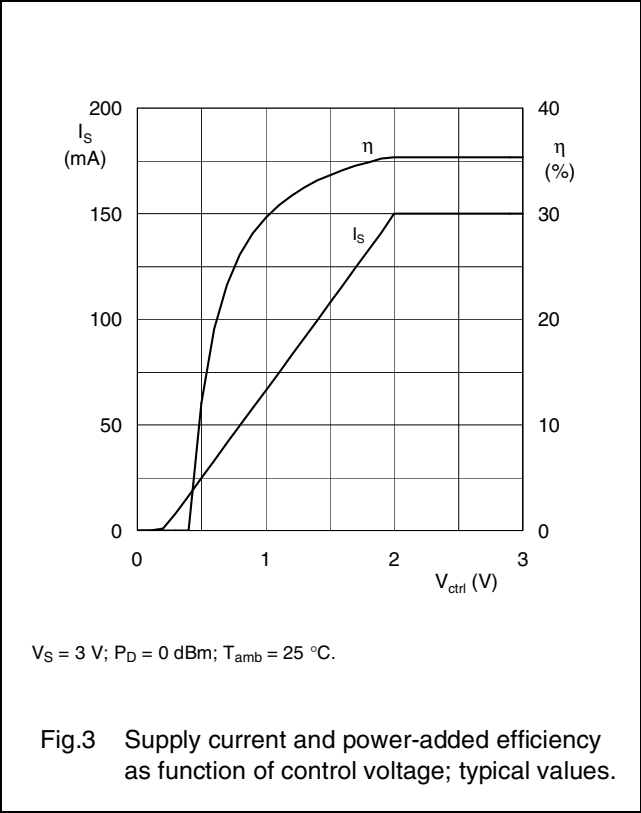
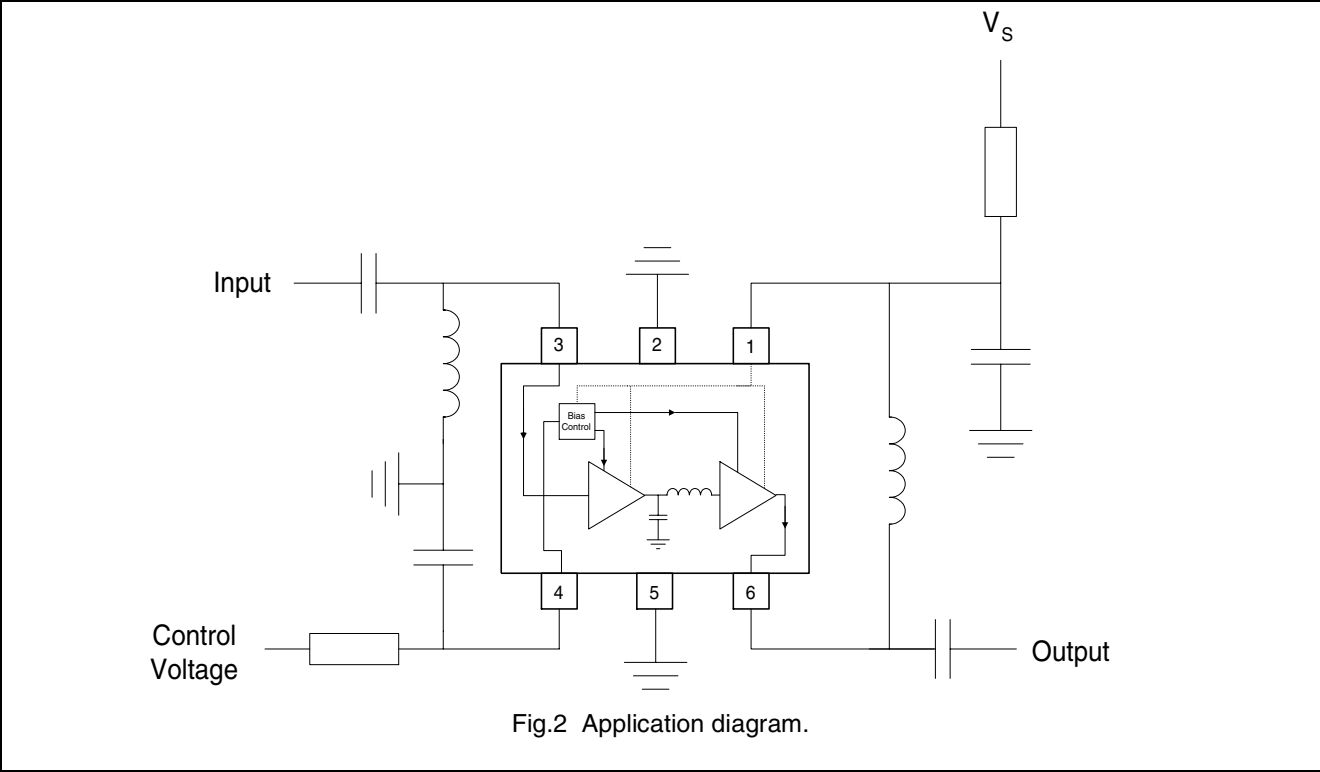
V_S = 3 V; V_{ctrl} = 3 V; P_D = 2 dBm; f_{RF} = 2450 MHz; T_{amb} = 25 °C; measured in evaluation board (see application information); unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
P _o	output power		–	22	–	dBm
P _o	output power	V _{ctrl} < 1 V	–	2	–	dBm
I _{S max}	supply current		–	–	160	mA
η	efficiency		–	35	–	%
H ₂	second harmonic	includes output matching	–	–25	–	dBc
H ₃	third harmonic	includes output matching	–	–25	–	dBc

MMIC power amplifier

BGA2450

APPLICATION INFORMATION



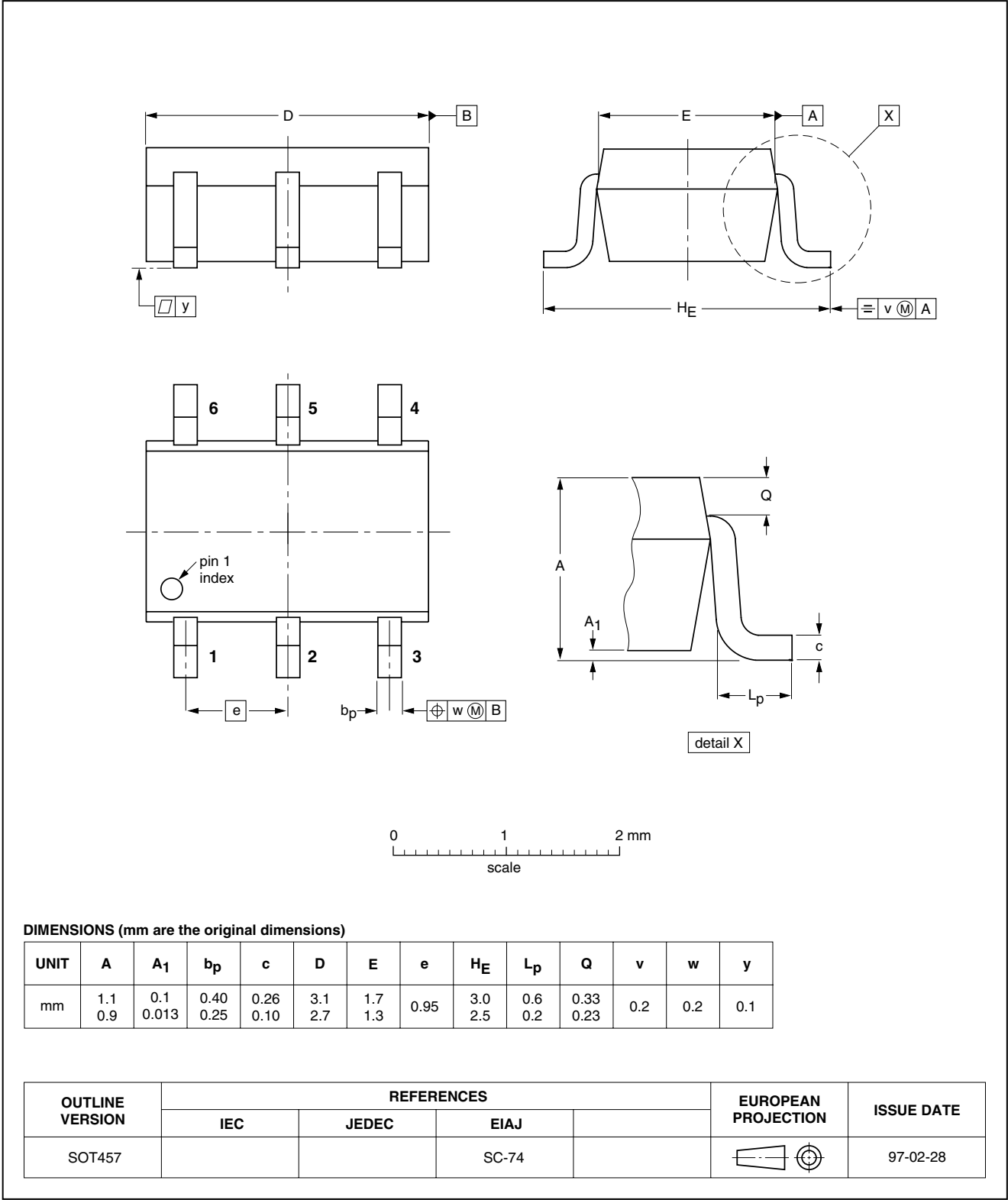
MMIC power amplifier

BGA2450

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT457



MMIC power amplifier

BGA2450

DATA SHEET STATUS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS ⁽¹⁾
Objective specification	Development	This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice.
Preliminary specification	Qualification	This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

Note

1. Please consult the most recently issued data sheet before initiating or completing a design.

DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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