2SC4462

Silicon NPN Epitaxial

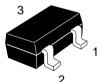
HITACHI

Application

UHF frequency converter

Outline

CMPAK



- 1. Emitter
- 2. Base
- 3. Collector



2SC4462

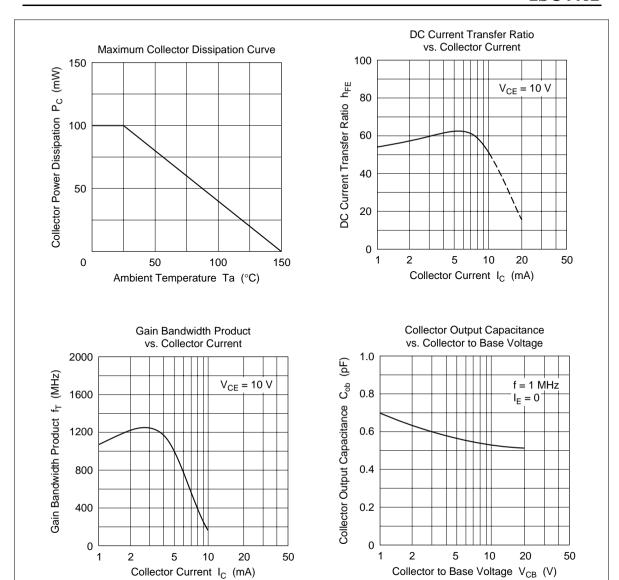
Absolute Maximum Ratings ($Ta = 25^{\circ}C$)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V _{CEO}	25	V
Emitter to base voltage	V _{EBO}	4	V
Collector current	I _c	20	mA
Collector power dissipation	P _c	100	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	-55 to +150	°C

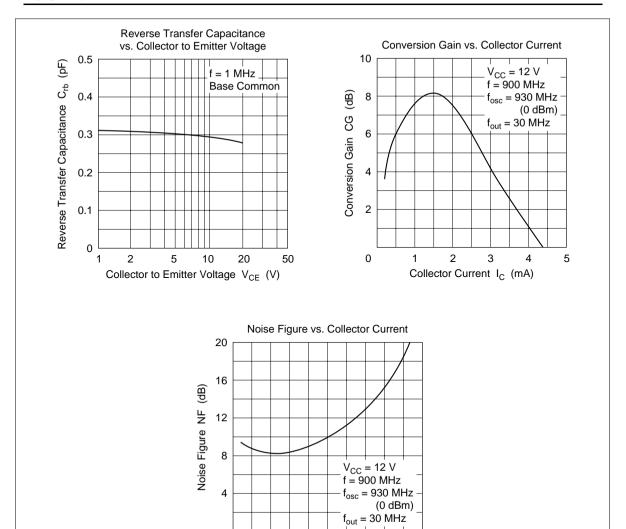
Electrical Characteristics ($Ta = 25^{\circ}C$)

Item	Symbol	Min	Тур	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{\text{(BR)CBO}}$	30	_	_	V	$I_{C} = 10 \ \mu A, \ I_{E} = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	25	_	_	V	I_{C} = 1 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	4	_	_	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	I _{CBO}	_	_	0.5	μΑ	$V_{CB} = 10 \text{ V}, I_{E} = 0$
Collector to emitter saturation voltage	$V_{\text{CE(sat)}}$	_	_	5	V	$I_{\rm C}$ = 10 mA, $I_{\rm B}$ = 1 mA
DC current transfer ratio	h _{FE}	30	_	_		$V_{CE} = 10 \text{ V}, I_{C} = 3 \text{ mA}$
Gain bandwidth product	f _T	700	1000	_	MHz	$V_{CE} = 10 \text{ V}, I_{C} = 5 \text{ mA}$
Collector output capacitance	Cob	_	_	0.8	pF	$V_{CB} = 10 \text{ V}, I_{C} = 5 \text{ mA},$ f = 1 MHz
Conversion gain	CG	_	7.0	_	dB	$V_{CC} = 12 \text{ V}, I_{E} = 0,$ f = 900 MHz
Noise figure	NF	_	10.0	_	dB	$f_{OSC} = 930 \text{ Mhz } (0 \text{ dBm}),$ $f_{out} = 30 \text{ MHz}$

Note: Marking is "EC".



2SC4462



0

0.4

8.0

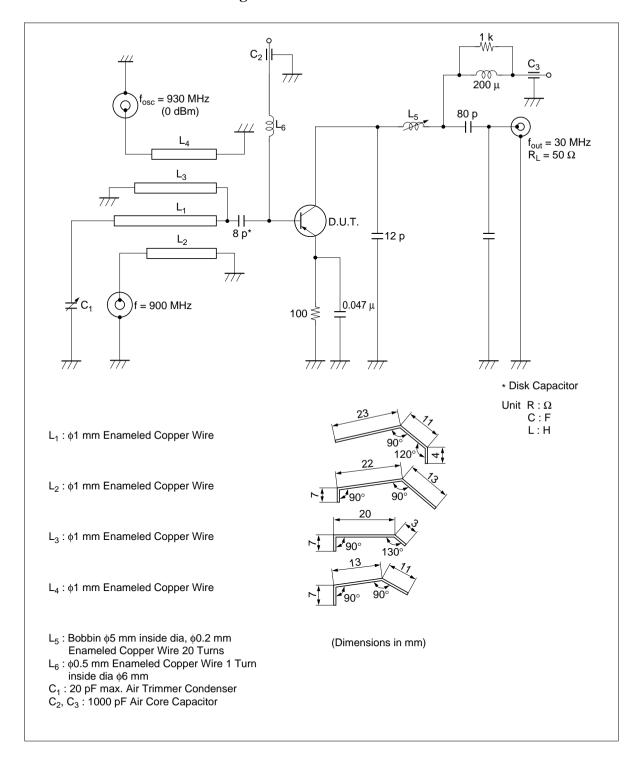
Collector Current I_C (mA)

1.2

1.6

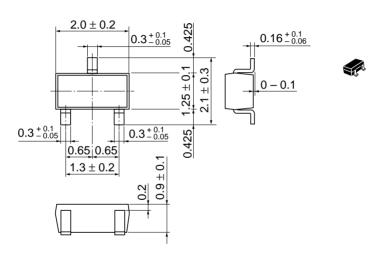
2.0

Conversion Gain and Noise Figure Test Circuit



HITACHI

Unit: mm



Hitachi Code	CMPAK
JEDEC	_
EIAJ	Conforms
Weight (reference value)	0.006 g

Cautions

- 1. Hitachi neither warrants nor grants licenses of any rights of Hitachi's or any third party's patent, copyright, trademark, or other intellectual property rights for information contained in this document. Hitachi bears no responsibility for problems that may arise with third party's rights, including intellectual property rights, in connection with use of the information contained in this document.
- 2. Products and product specifications may be subject to change without notice. Confirm that you have received the latest product standards or specifications before final design, purchase or use.
- 3. Hitachi makes every attempt to ensure that its products are of high quality and reliability. However, contact Hitachi's sales office before using the product in an application that demands especially high quality and reliability or where its failure or malfunction may directly threaten human life or cause risk of bodily injury, such as aerospace, aeronautics, nuclear power, combustion control, transportation, traffic, safety equipment or medical equipment for life support.
- 4. Design your application so that the product is used within the ranges guaranteed by Hitachi particularly for maximum rating, operating supply voltage range, heat radiation characteristics, installation conditions and other characteristics. Hitachi bears no responsibility for failure or damage when used beyond the guaranteed ranges. Even within the guaranteed ranges, consider normally foreseeable failure rates or failure modes in semiconductor devices and employ systemic measures such as failsafes, so that the equipment incorporating Hitachi product does not cause bodily injury, fire or other consequential damage due to operation of the Hitachi product.
- 5. This product is not designed to be radiation resistant.
- 6. No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without written approval from Hitachi.
- 7. Contact Hitachi's sales office for any questions regarding this document or Hitachi semiconductor products.

HTACHI

Hitachi, Ltd.

Semiconductor & Integrated Circuits.

Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

NorthAmerica URL Europe

http://www.hitachi-eu.com/hel/ecg http://www.has.hitachi.com.sg/grp3/sicd/index.htm http://www.hitachi.com.tw/E/Product/SICD_Frame.htm Asia (Singapore) Asia (Taiwan) Asia (HongKong) http://www.hitachi.com.hk/eng/bo/grp3/index.htm

http:semiconductor.hitachi.com/

http://www.hitachi.co.jp/Sicd/indx.htm Japan

For further information write to:

Hitachi Semiconductor (America) Inc. 179 East Tasman Drive, San Jose,CA 95134 Tel: <1> (408) 433-1990 Fax: <1>(408) 433-0223 Hitachi Europe GmbH Electronic components Group Dornacher Stra§e 3 D-85622 Feldkirchen, Munich Germany Tel: <49> (89) 9 9180-0

Fax: <49> (89) 9 29 30 00 Hitachi Europe Ltd. Electronic Components Group. Whitebrook Park Lower Cookham Road

Maidenhead Berkshire SL6 8YA, United Kingdom

Tel: <44> (1628) 585000 Fax: <44> (1628) 778322 Hitachi Asia Pte. Ltd. 16 Collyer Quay #20-00 Hitachi Tower Singapore 049318 Tel: 535-2100 Fax: 535-1533

Hitachi Asia Ltd. Taipei Branch Office 3F, Hung Kuo Building. No.167, Tun-Hwa North Road, Taipei (105) Tel: <886> (2) 2718-3666

Fax: <886> (2) 2718-8180

Hitachi Asia (Hong Kong) Ltd. Group III (Electronic Components) 7/F., North Tower, World Finance Centre, Harbour City, Canton Road, Tsim Sha Tsui, Kowloon, Hong Kong Tel: <852> (2) 735 9218

Fax: <852> (2) 730 0281 Telex: 40815 HITEC HX

Copyright ' Hitachi, Ltd., 1999. All rights reserved. Printed in Japan.