

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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Not recommended  
for new design

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# 2SC4591

Silicon NPN Epitaxial

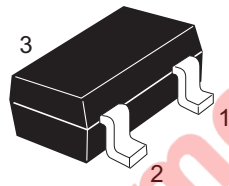
REJ03G0728-0300  
 (Previous ADE-208-1111A)  
 Rev.3.00  
 Aug.10.2005

## Application

UHF / VHF wide band amplifier

## Outline

RENESAS Package code: PLSP0003ZB-A  
 (Package name: MPAK)



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

Note: Marking is "XM-".

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	15	V
Collector to emitter voltage	$V_{CEO}$	9	V
Emitter to base voltage	$V_{EBO}$	1.5	V
Collector current	$I_C$	50	mA
Collector power dissipation	$P_C$	150	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

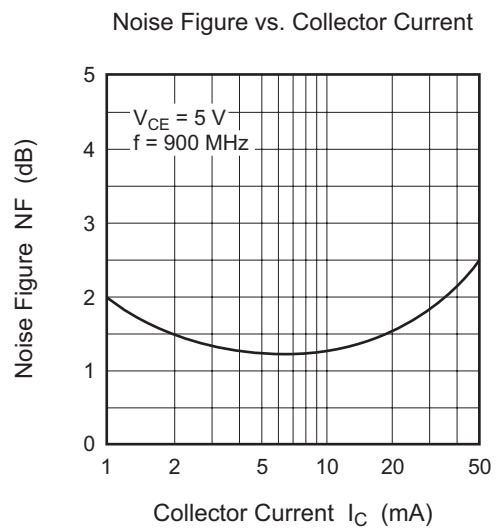
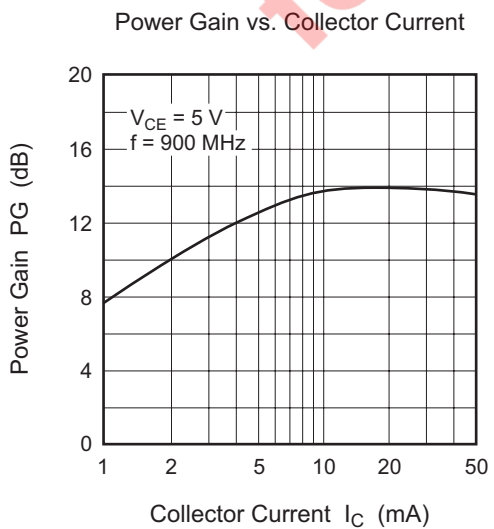
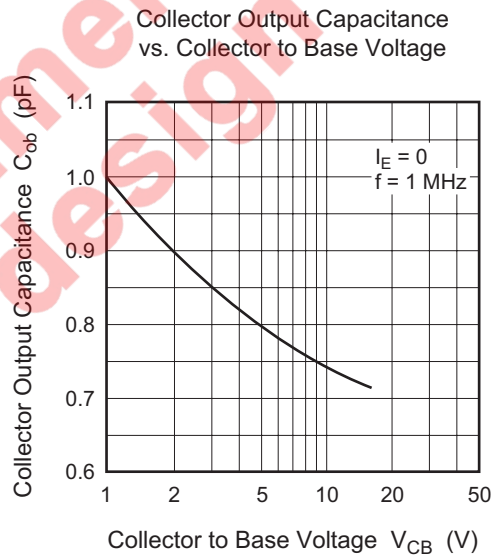
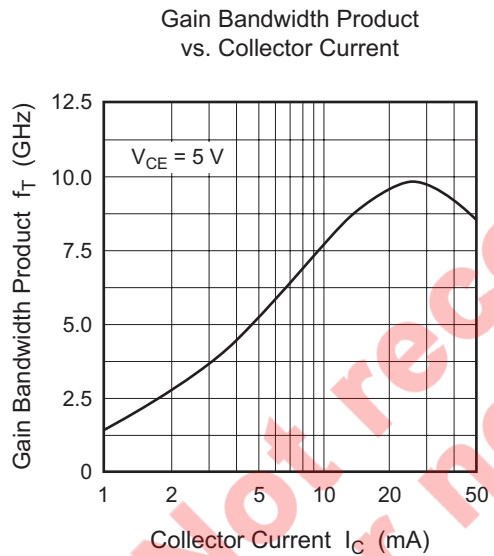
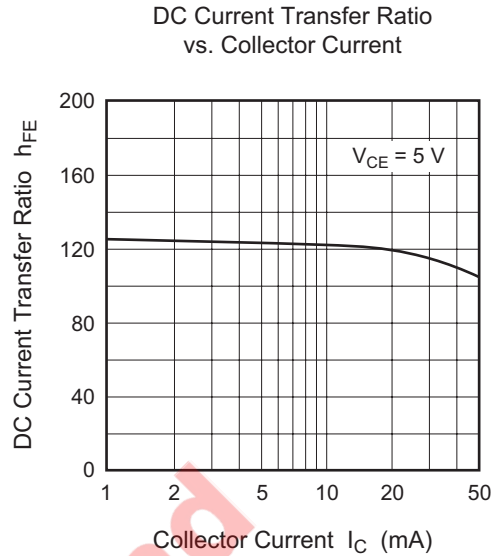
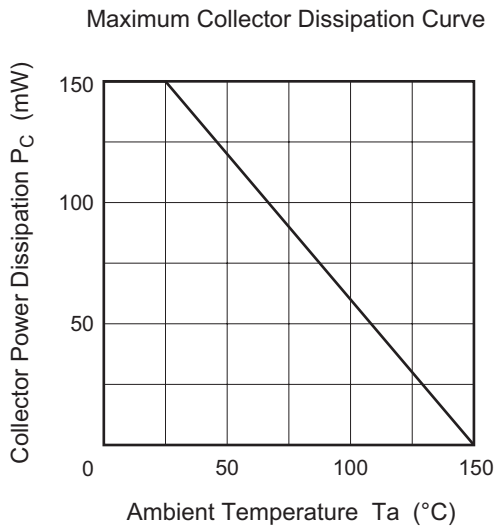
## Electrical Characteristics

(Ta = 25°C)

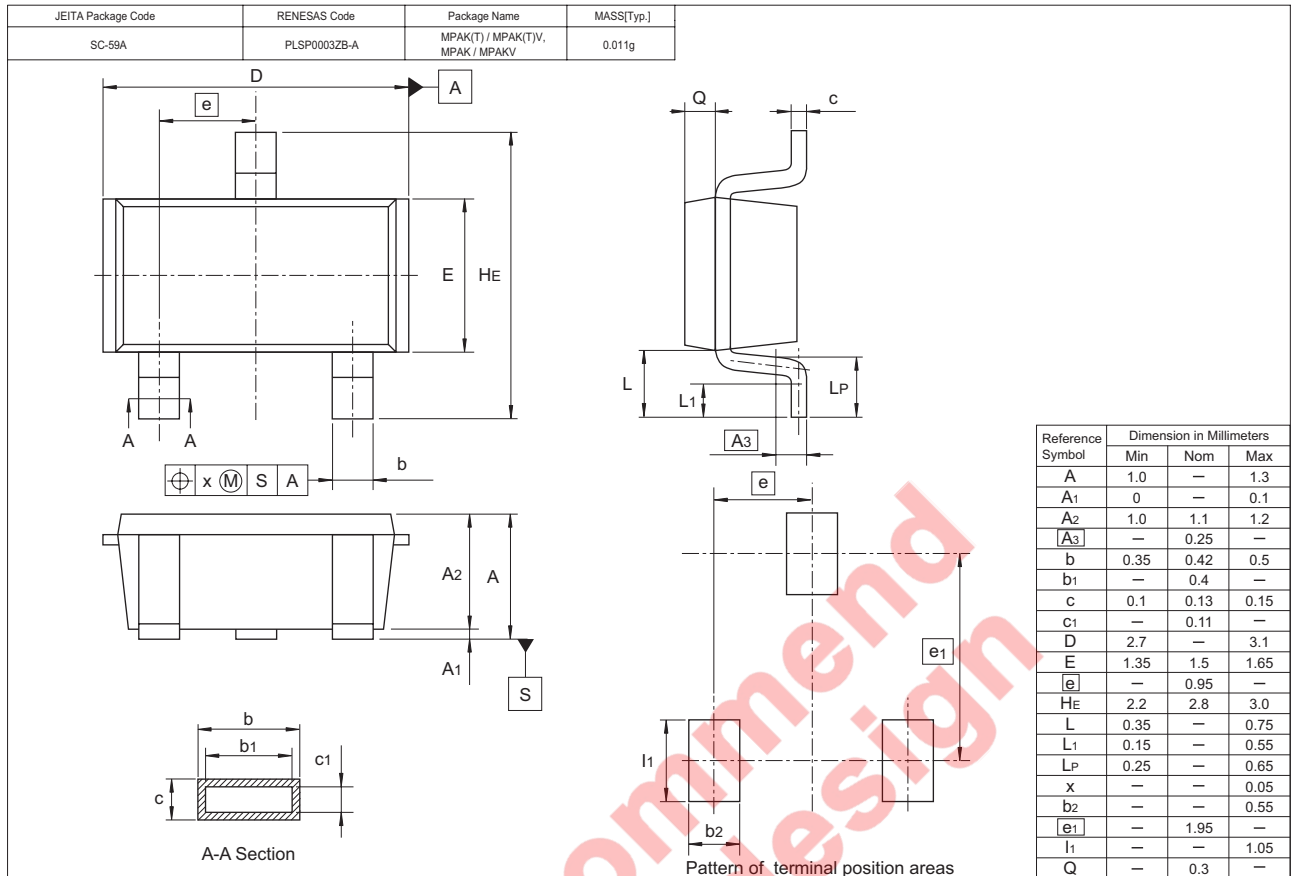
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	15	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector cutoff current	$I_{CBO}$	—	—	1	$\mu A$	$V_{CB} = 12 V, I_E = 0$
	$I_{CEO}$	—	—	1	mA	$V_{CE} = 9 V, R_{BE} = \infty$
Emitter cutoff current	$I_{EBO}$	—	—	10	$\mu A$	$V_{EB} = 1.5 V, I_C = 0$
DC current transfer ratio	$h_{FE}$	40	120	250	—	$V_{CE} = 5 V, I_C = 20 mA$
Collector output capacitance	$C_{ob}$	—	0.8	1.5	pF	$V_{CB} = 5 V, I_E = 0,$ $f = 1 MHz$
Gain bandwidth product	$f_T$	6.5	9.0	—	GHz	$V_{CE} = 5 V, I_C = 20 mA$
Power gain	PG	9.5	12.5	—	dB	$V_{CE} = 5 V, I_C = 20 mA,$ $f = 900 MHz$
Noise figure	NF	—	1.2	2.5	dB	$V_{CE} = 5 V, I_C = 5 mA,$ $f = 900 MHz$

Not recommend  
for new design

Main Characteristics



### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
2SC4591XM-TL-E	3000	φ 178 mm Reel, 8 mm Emboss Taping

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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450 Holger Way, San Jose, CA 95134-1368, U.S.A  
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

#### Renesas Technology Europe Limited

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Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

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Tel: <852> 2265-6688, Fax: <852> 2730-6071

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Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

#### Renesas Technology (Shanghai) Co., Ltd.

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Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

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1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632  
Tel: <65> 6213-0200, Fax: <65> 6278-8001

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Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea  
Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

#### Renesas Technology Malaysia Sdn. Bhd.

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
Tel: <603> 7955-9390, Fax: <603> 7955-9510