To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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2SC2734

Silicon NPN Epitaxial

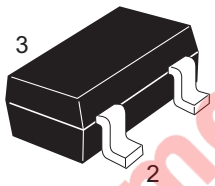
REJ03G0705-0200
(Previous ADE-208-1074)
Rev.2.00
Aug.10.2005

Application

- UHF frequency converter
- Local oscillator, wide band amplifier

Outline

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



1. Emitter
2. Base
3. Collector

Note: Marking is “GC”.

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	20	V
Collector to emitter voltage	V_{CEO}	11	V
Emitter to base voltage	V_{EBO}	3	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

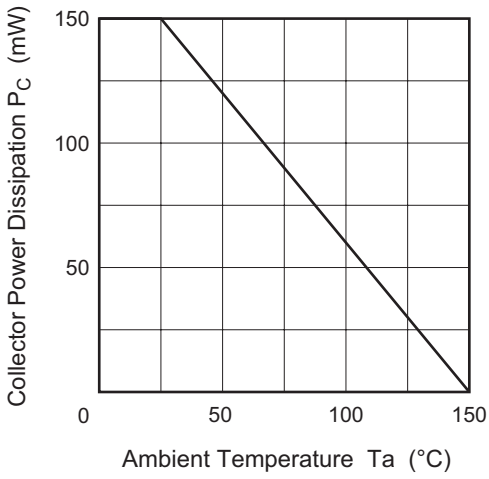
Electrical Characteristics

(Ta = 25°C)

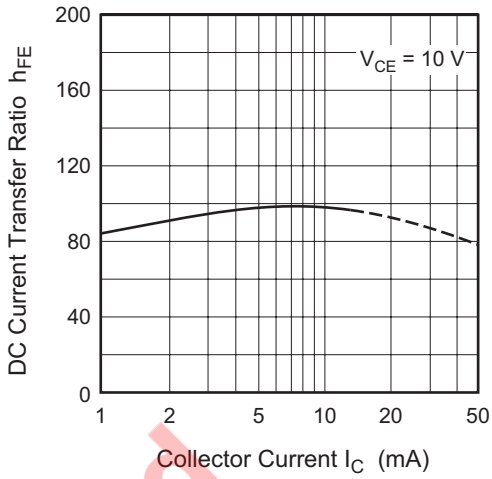
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	20	—	—	V	I_C = 10 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	11	—	—	V	I_C = 1 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	3	—	—	V	I_E = 10 µA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	0.5	µA	V_{CB} = 10 V, I_E = 0
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.7	V	I_C = 10 mA, I_B = 5 mA
DC current transfer ratio	h_{FE}	20	90	200		V_{CE} = 10 V, I_C = 5 mA
Gain bandwidth product	f_T	1.4	3.5	—	GHz	V_{CE} = 10 V, I_C = 10 mA
Collector output capacitance	Cob	—	0.9	1.5	pF	V_{CB} = 10 V, I_E = 0, f = 1 MHz
Conversion gain	CG	—	15	—	dB	V_{CC} = 6 V, I_C = 2 mA, f = 900 MHz, f_{OSC} = 930 MHz (0dBm), f_{out} = 30 MHz
Noise figure	NF	—	9	—	dB	V_{CC} = 6 V, I_C = 2 mA, f = 900 MHz, f_{OSC} = 930 MHz (0dBm), f_{out} = 30 MHz
Oscillating output voltage	V_{OSC}	—	140	—	mV	V_{CC} = 6 V, I_C = 5 mA, f = 930 MHz

Main Characteristics

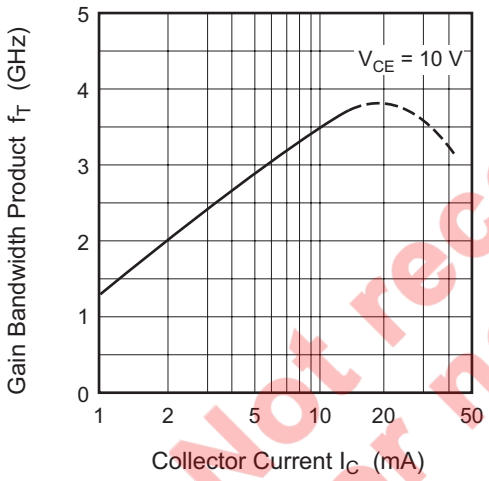
Maximum Collector Dissipation Curve



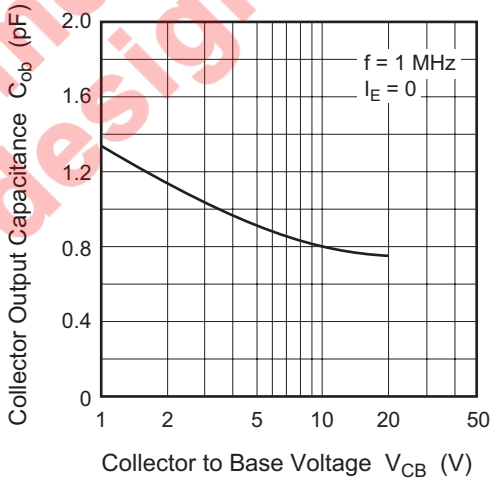
DC Current Transfer Ratio vs. Collector Current



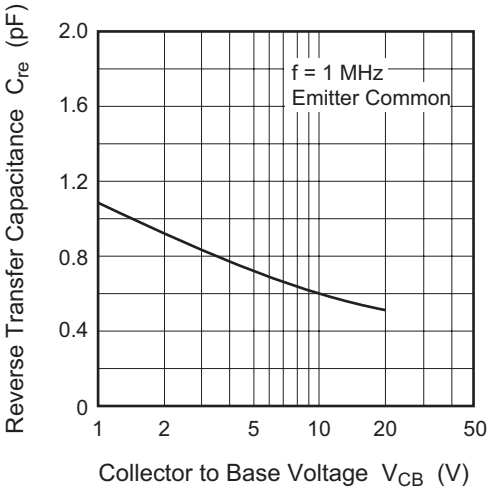
Gain Bandwidth Product vs. Collector Current



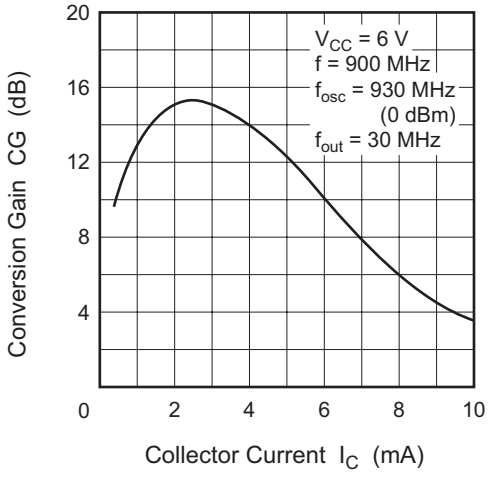
Collector Output Capacitance vs. Collector to Base Voltage



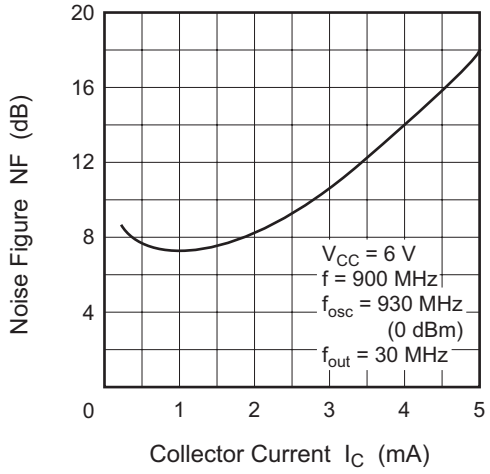
Reverse Transfer Capacitance vs. Collector to Base Voltage



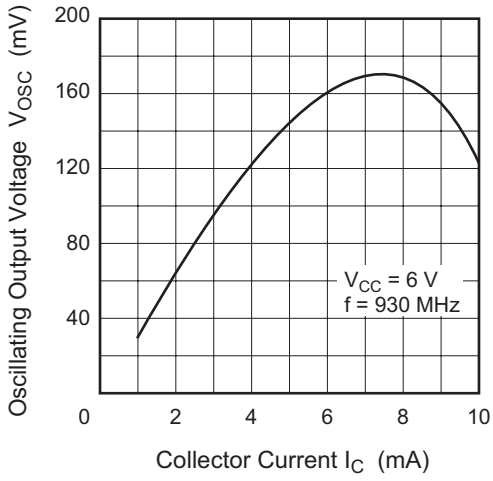
Conversion Gain vs. Collector Current



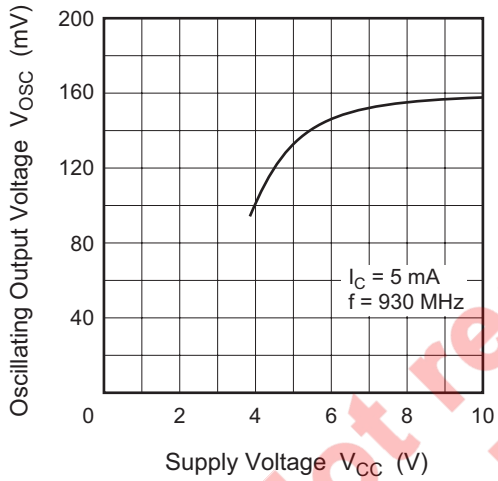
Noise Figure vs. Collector Current



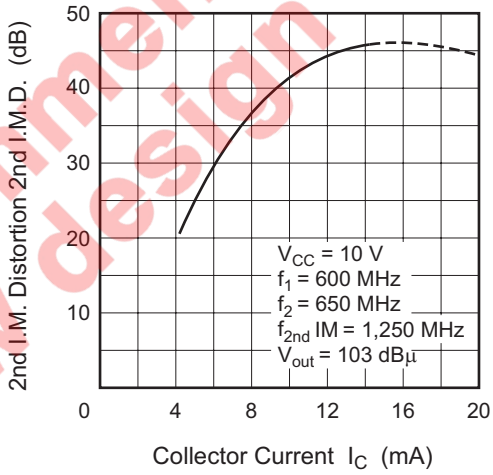
Oscillating Output Voltage vs. Collector Current



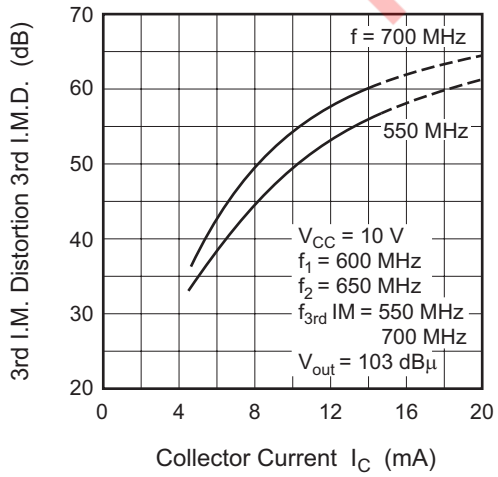
Oscillating Output Voltage vs. Supply Voltage



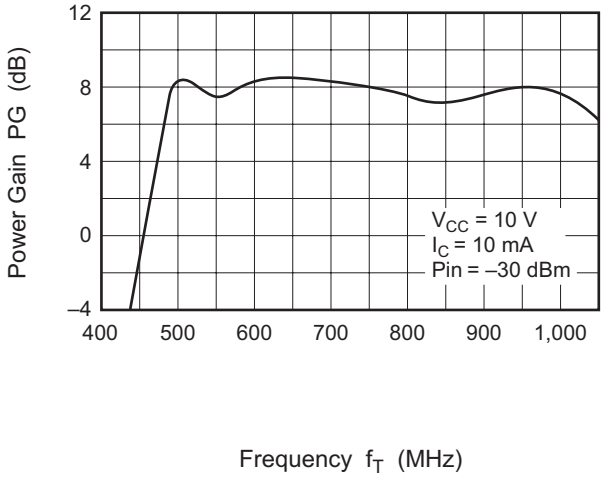
2nd I.M. Distortion vs. Collector Current



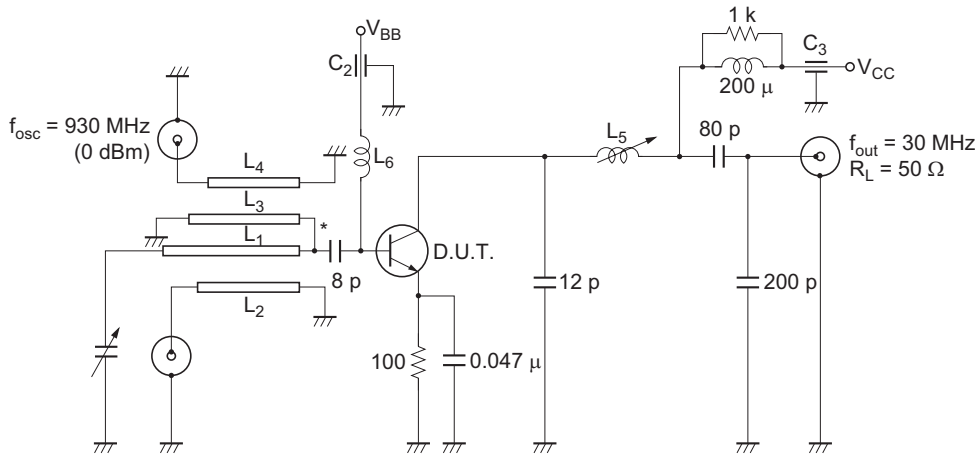
3rd I.M. Distortion vs. Collector Current



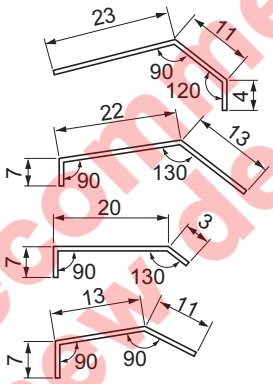
Power Gain vs. Frequency



Conversion Gain, Noise Figure Test Curcuit



* ···· Disk Capacitor
Unit R : Ω
C : F
L : H



L_1 : ϕ1 mm Enameled Copper wire

L_2 : ϕ1 mm Enameled Copper wire

L_3 : ϕ1 mm Enameled Copper wire

L_4 : ϕ1 mm Enameled Copper wire

Unit : mm

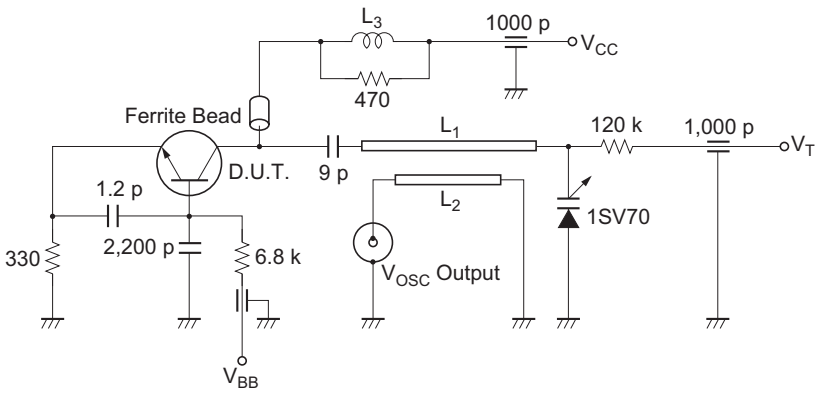
L_5 : Bobbin ϕ5 mm inside dia, ϕ0.2 mm 20 Turns Enameled Copper wire

L_6 : ϕ0.5 mm Enameled Copper wire 1 Turn inside dia ϕ6 mm

C_1 : 20 pF max. Air Trimmer Condenser

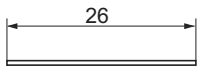
C_2, C_3 : 1000 pF Air Core Capacitor

V_{OSC} Test Circuit

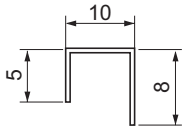


Unit C : F
R : Ω

L_1 : ϕ1 mm Enameled Copper wire

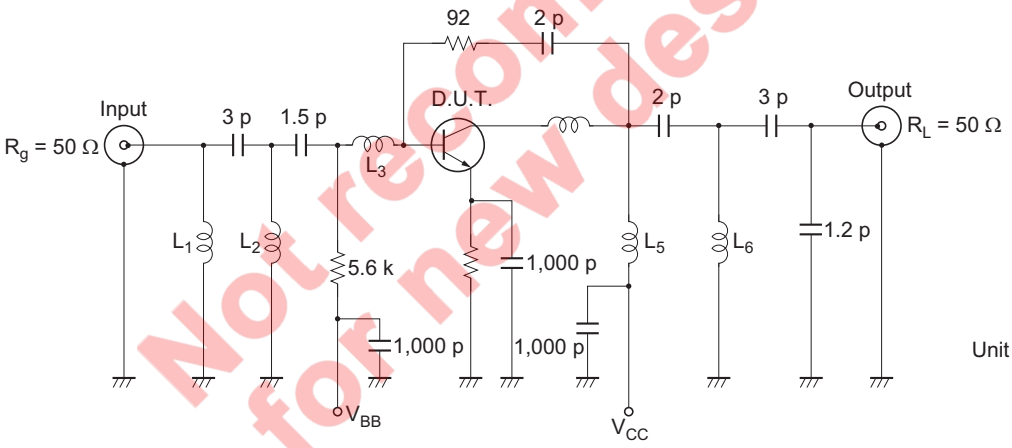


L_2 : ϕ0.8 mm Enameled Copper wire



L_3 : ϕ0.3 mm Enameled Copper wire, 10 Turns with 470 Ω Resistor

Circuit Example-UHF Wide Bandwidth Amplifier (f = 500 MHz to 950 MHz)



Unit R : Ω
C : F

L_1 : ϕ0.5 mm Copper wire 5 Turns inside dia ϕ3 mm

L_2 : ϕ0.5 mm Copper wire 2 Turns inside dia ϕ2 mm

L_3 : ϕ0.5 mm Copper wire 2 Turns inside dia ϕ2 mm

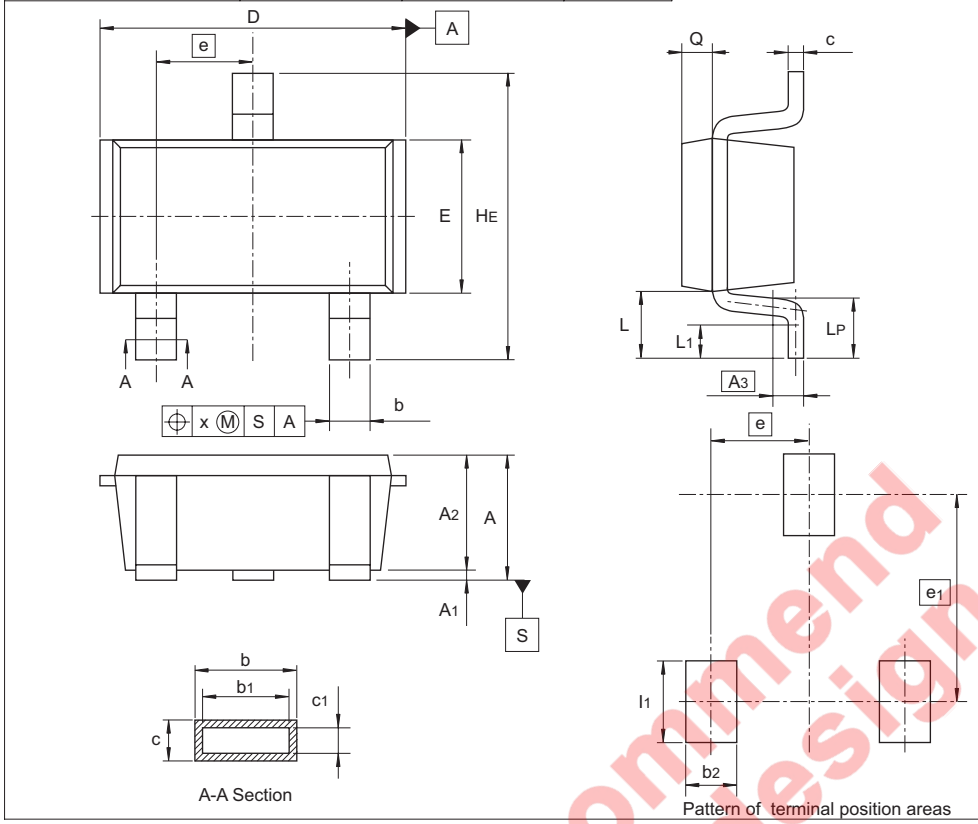
L_4 : ϕ0.5 mm Copper wire 1.5 Turns inside dia ϕ2 mm

L_5 : ϕ0.5 mm Copper wire 4 Turns inside dia ϕ2 mm

L_6 : ϕ0.5 mm Copper wire 3 Turns inside dia ϕ2 mm

Package Dimensions

JEITA Package Code	RENESAS Code	Package Name	MASS[Typ.]
SC-59A	PLSP0003ZB-A	MPAK(T) / MPAK(T)V, MPAK / MPAKV	0.011g



Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
A	1.0	—	1.3
A_1	0	—	0.1
A_2	1.0	1.1	1.2
A_3	—	0.25	—
b	0.35	0.42	0.5
b_1	—	0.4	—
c	0.1	0.13	0.15
c_1	—	0.11	—
D	2.7	—	3.1
E	1.35	1.5	1.65
e	—	0.95	—
H_E	2.2	2.8	3.0
L	0.35	—	0.75
L_1	0.15	—	0.55
L_P	0.25	—	0.65
x	—	—	0.05
b_2	—	—	0.55
e_1	—	1.95	—
l_1	—	—	1.05
Q	—	0.3	—

Ordering Information

Part Name	Quantity	Shipping Container
2SC2734GTL-E	3000	ϕ 178 mm Reel, 8 mm Emboss Taping

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Colophon .3.0