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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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EOL product

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HTT1115E

Silicon NPN Epitaxial Twin Transistor

REJ03G0838-0200
(Previous ADE-208-1439A)
Rev.2.00
Aug.10.2005

Features

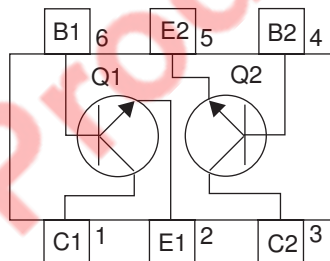
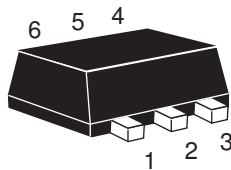
- Include 2 transistors in a small size SMD package: EMFPAK-6 (6 Leads: 1.2 x 0.8 x 0.5 mm)

Q1: Equivalent Buffer transistor	Q2: Equivalent OSC transistor
2SC5700	2SC5757

Outline

RENESAS Package code: PXSF0006LA-A
(Package name: EMFPAK-6)

Pin Arrangement



1. Collector Q1
2. Emitter Q1
3. Collector Q2
4. Base Q2
5. Emitter Q2
6. Base Q1

Note: Marking is "F".

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings		Unit
		Q1	Q2	
Collector to base voltage	V_{CBO}	15	10	V
Collector to emitter voltage	V_{CEO}	4	3.5	V
Emitter to base voltage	V_{EBO}	1.5	1.5	V
Collector current	I_C	50	80	mA
Collector power dissipation	P_C	Total 200*		mW
Junction temperature	T_j	150	150	°C
Storage temperature	T_{stg}	-55 to +150	-50 to +150	°C

Note: Value on PCB. (FR-4 (13 x 13 x 0.635 mm)).

Electrical Characteristics (Q1)

(Ta = 25°C)

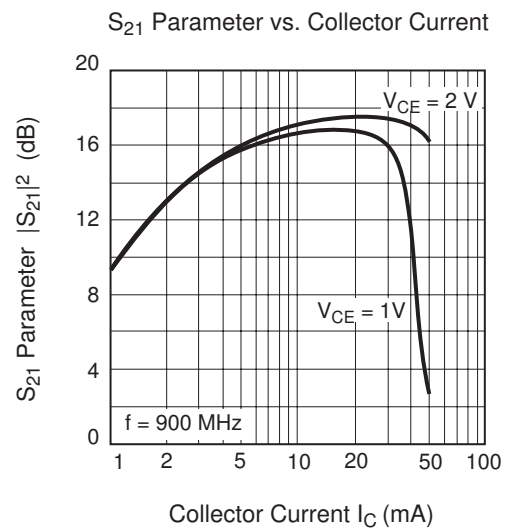
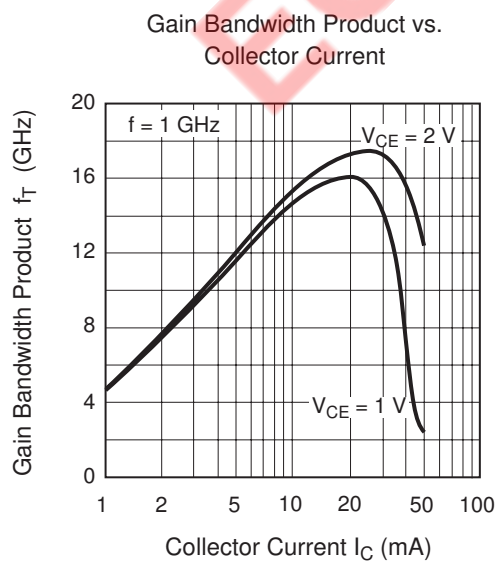
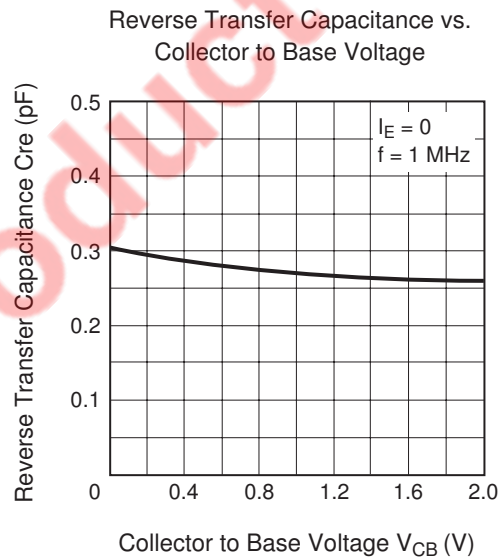
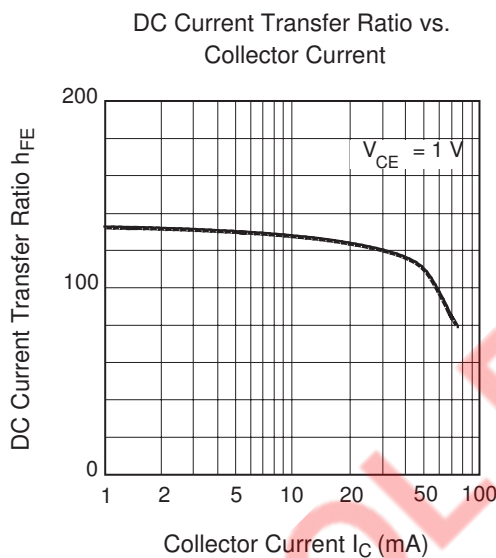
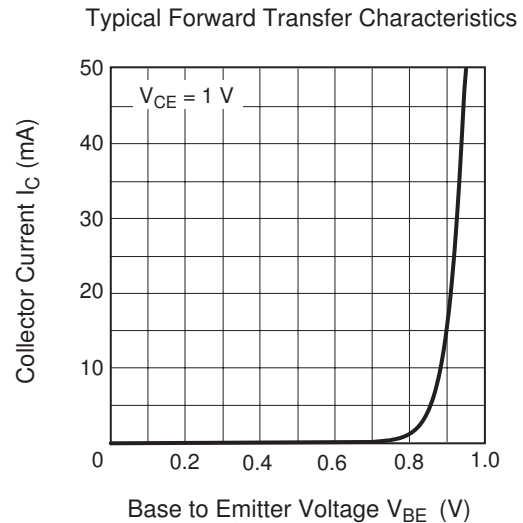
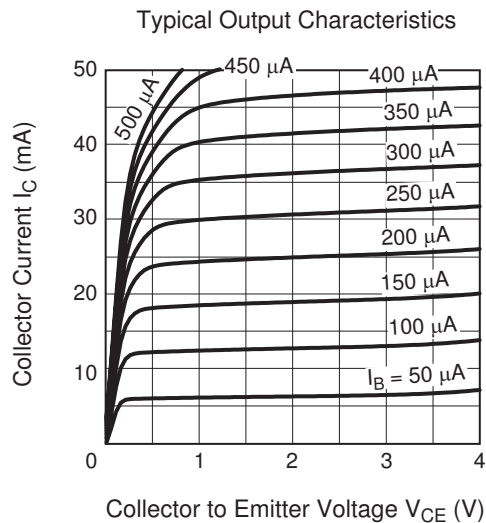
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	15	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector cutoff current	I_{CBO}	—	—	0.1	μA	$V_{CB} = 15 V, I_E = 0$
Collector cutoff current	I_{CEO}	—	—	1	μA	$V_{CE} = 4 V, R_{BE} = \text{infinite}$
Emitter cutoff current	I_{EBO}	—	—	0.2	μA	$V_{EB} = 0.8 V, I_C = 0$
DC current transfer ratio	h_{FE}	100	130	170	—	$V_{CE} = 1 V, I_C = 5 mA$
Reverse transfer capacitance	C_{re}	—	0.3	0.45	pF	$V_{CB} = 1 V, f = 1 MHz$ Emitter ground
Gain bandwidth product	f_T	10	12	—	GHz	$V_{CE} = 1 V, I_C = 5 mA, f = 1 GHz$
Forward transfer coefficient	$ S_{21} ^2$	13	16	—	dB	$V_{CE} = 1 V, I_C = 5 mA,$ $f = 900 MHz,$ $\Gamma_S = \Gamma_L = 50 \Omega$
Noise figure	NF	—	1.0	2.0	dB	

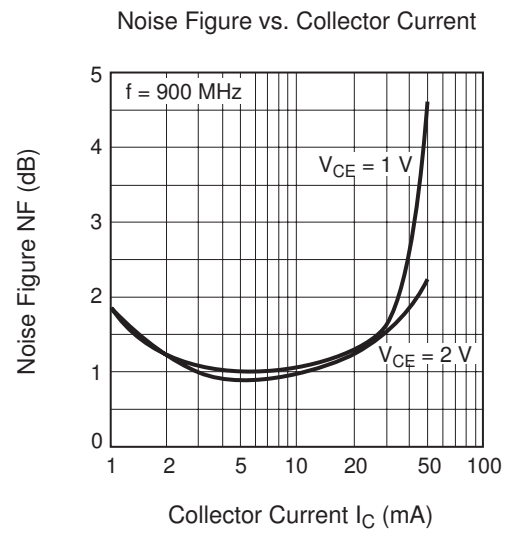
Electrical Characteristics (Q2)

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	10	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector cutoff current	I_{CBO}	—	—	0.6	μA	$V_{CB} = 10 V, I_E = 0$
Collector cutoff current	I_{CEO}	—	—	0.2	μA	$V_{CE} = 3.5 V, R_{BE} = \text{infinite}$
Emitter cutoff current	I_{EBO}	—	—	0.1	μA	$V_{EB} = 1.5 V, I_C = 0$
DC current transfer ratio	h_{FE}	80	100	130	—	$V_{CE} = 1 V, I_C = 5 mA$
Reverse transfer capacitance	C_{re}	—	0.8	1.1	pF	$V_{CB} = 1 V, f = 1 MHz$ Emitter ground
Gain bandwidth product	f_T	4	6	—	GHz	$V_{CE} = 1 V, I_C = 5 mA, f = 1 GHz$
Forward transfer coefficient	$ S_{21} ^2$	7	10	—	dB	$V_{CE} = 1 V, I_C = 5 mA,$ $f = 900 MHz,$ $\Gamma_S = \Gamma_L = 50 \Omega$
Noise figure	NF	—	1.5	2.3	dB	

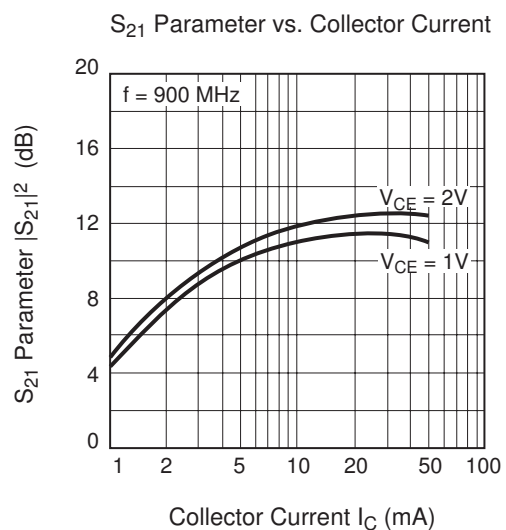
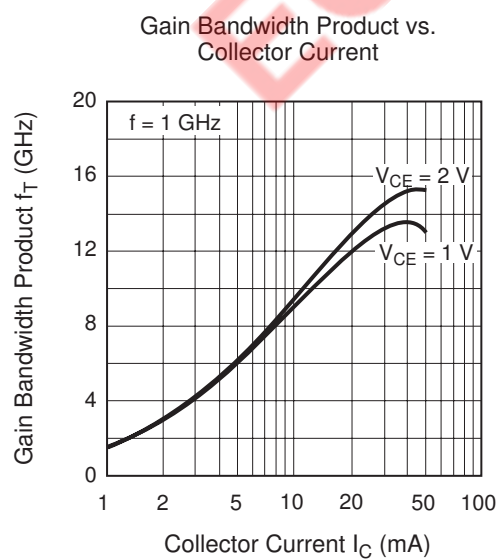
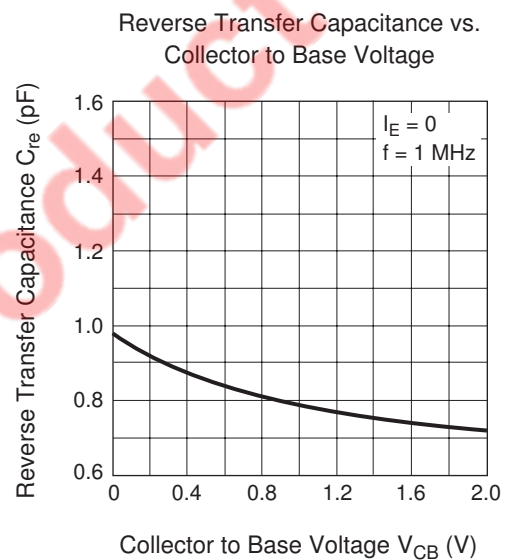
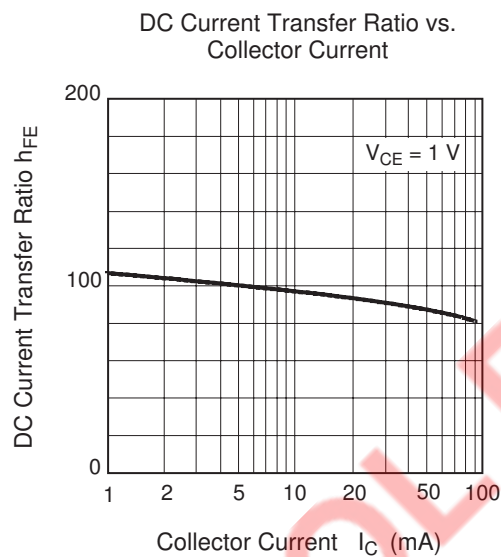
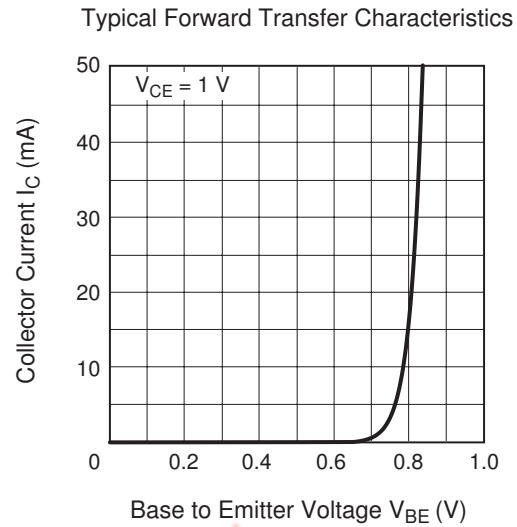
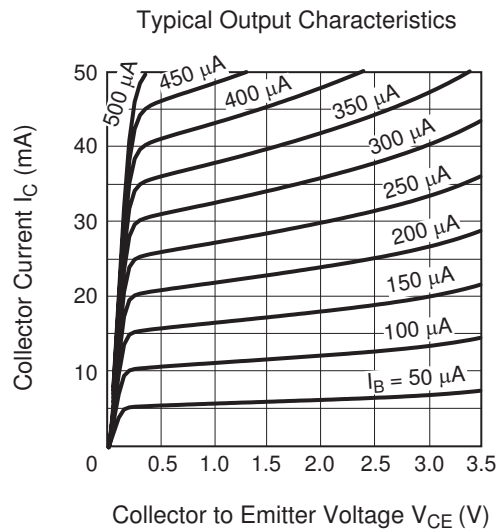
Main Characteristics (Q1)

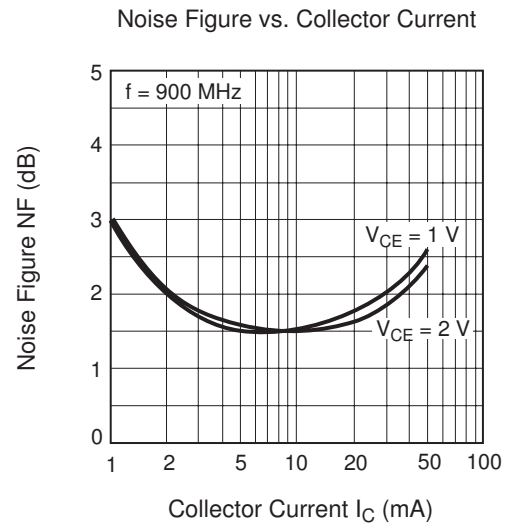




EOL Product

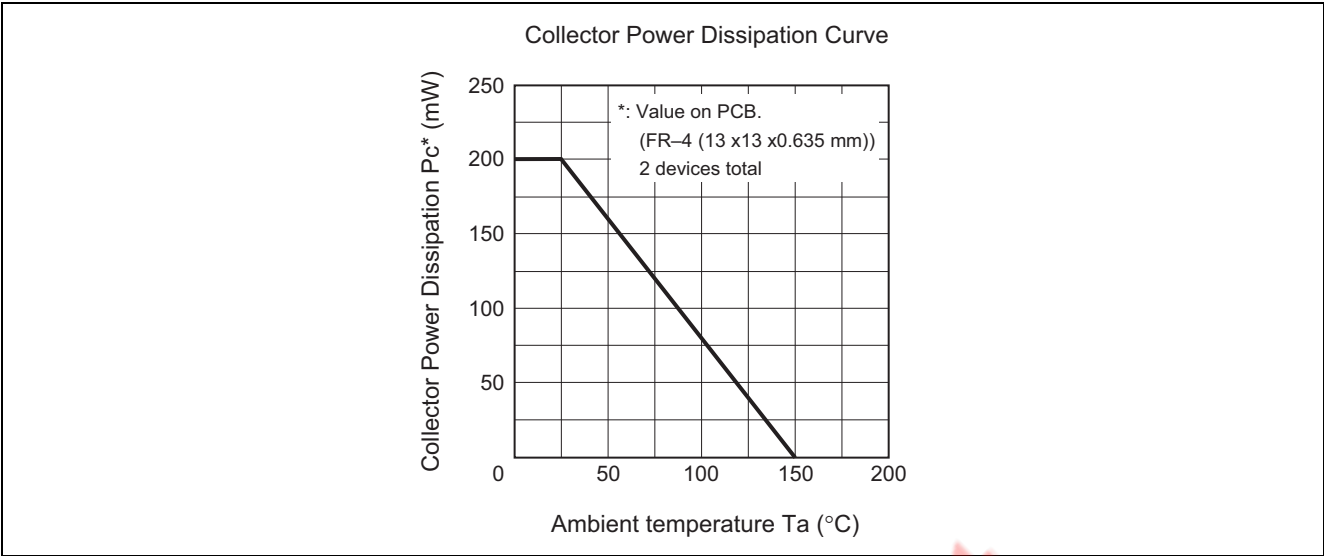
Main Characteristics (Q2)



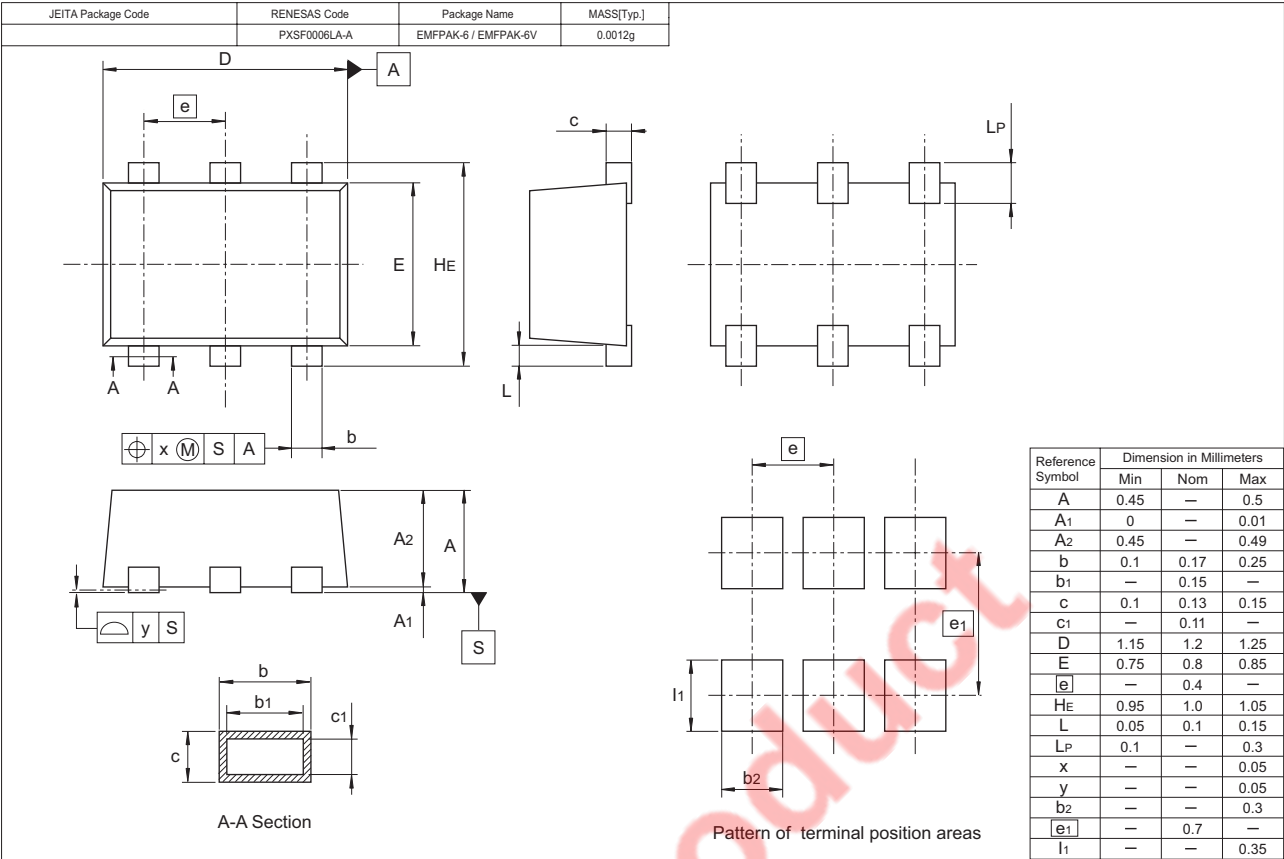


EOL Product

Main Characteristics (Common)



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HTT1115EFTL-E	5000	φ 178 mm Reel, 8 mm Emboss Taping

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