

# HTT1115E

## Silicon NPN Epitaxial Twin Transistor

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

### Features

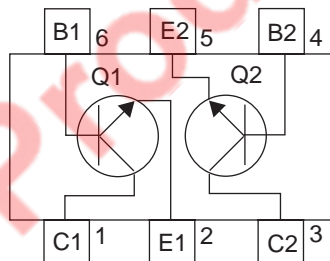
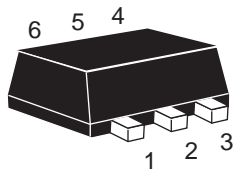
- Include 2 transistors in a small size SMD package: EMFPAK-6 (6 Leads: 1.2 x 0.8 x 0.5 mm)

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

### Outline

RENESAS Package code: PXSFO006LA-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)

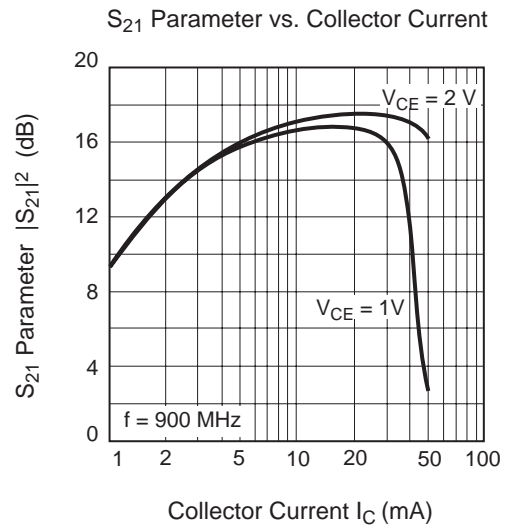
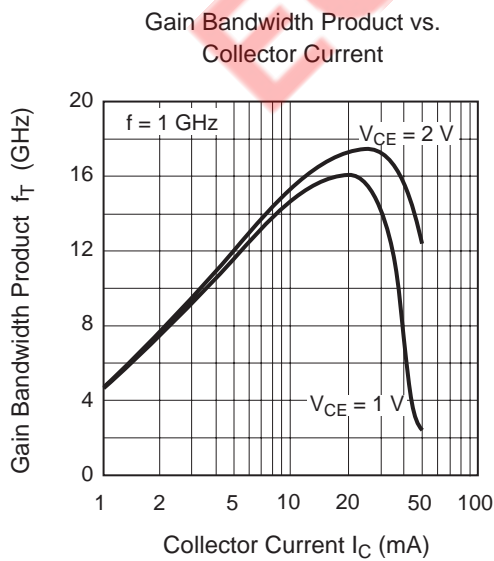
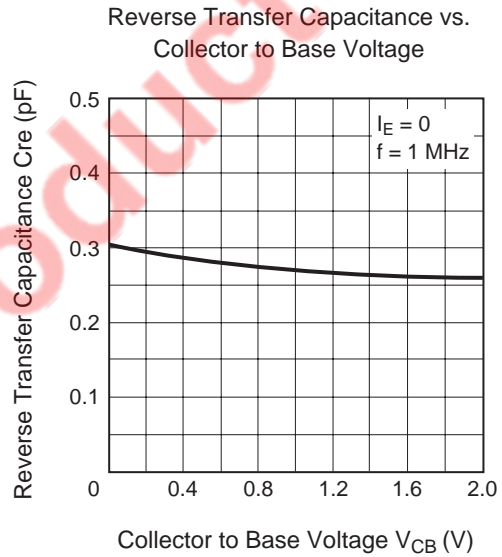
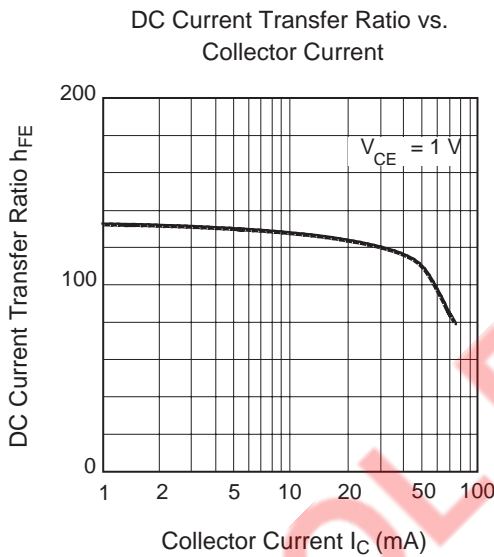
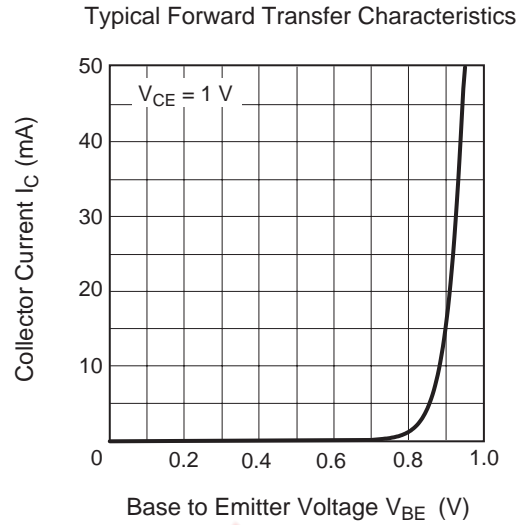
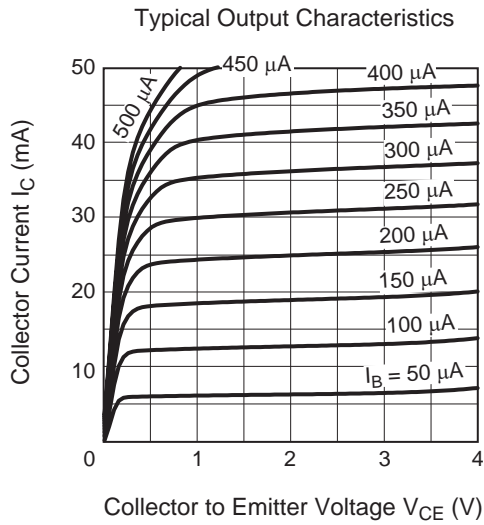
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	15	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector cutoff current	$I_{CBO}$	—	—	0.1	$\mu A$	$V_{CB} = 15 V, I_E = 0$
Collector cutoff current	$I_{CEO}$	—	—	1	$\mu A$	$V_{CE} = 4 V, R_{BE} = \text{infinite}$
Emitter cutoff current	$I_{EBO}$	—	—	0.2	$\mu A$	$V_{EB} = 0.8 V, I_C = 0$
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	$V_{CE} = 1 V, I_C = 5 mA,$
Noise figure	NF	—	1.0	2.0	dB	$f = 900 MHz,$ $\Gamma_S = \Gamma_L = 50 \Omega$

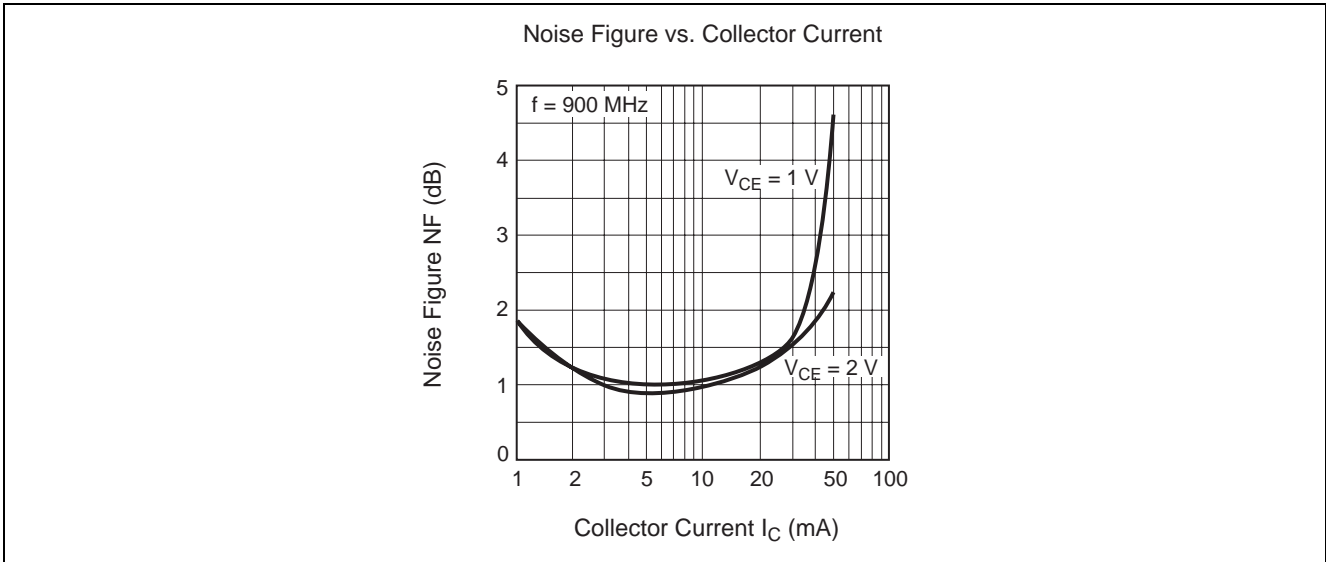
## Electrical Characteristics (Q2)

(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	$\mu A$	$V_{CB} = 10 V, I_E = 0$
Collector cutoff current	$I_{CEO}$	—	—	0.2	$\mu A$	$V_{CE} = 3.5 V, R_{BE} = \text{infinite}$
Emitter cutoff current	$I_{EBO}$	—	—	0.1	$\mu A$	$V_{EB} = 1.5 V, I_C = 0$
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	$V_{CE} = 1 V, I_C = 5 mA,$
Noise figure	NF	—	1.5	2.3	dB	$f = 900 MHz$ $\Gamma_S = \Gamma_L = 50 \Omega$

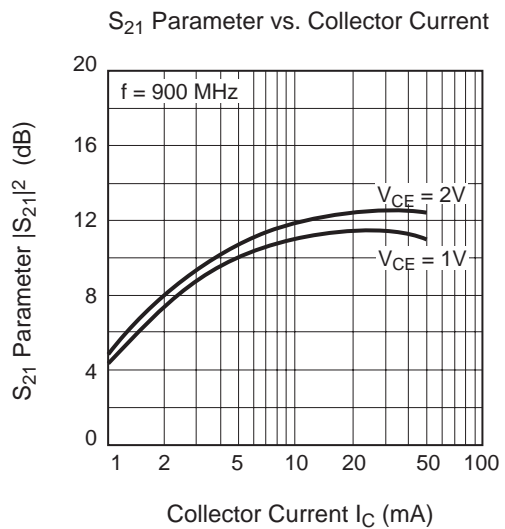
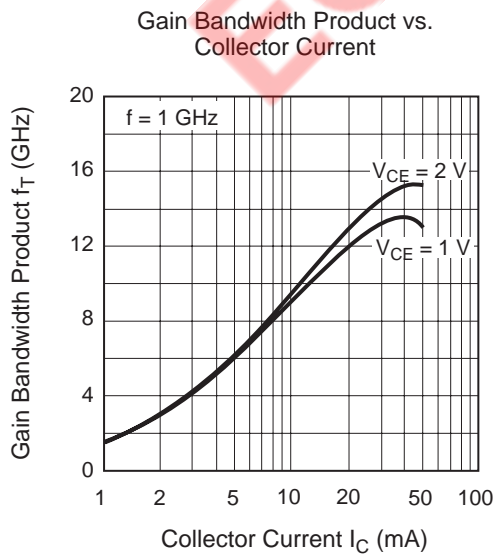
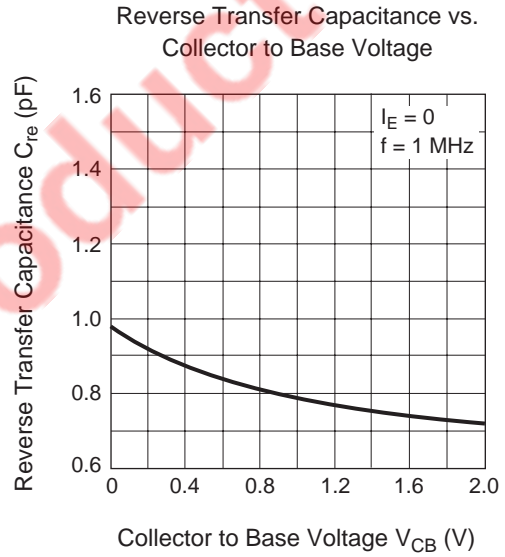
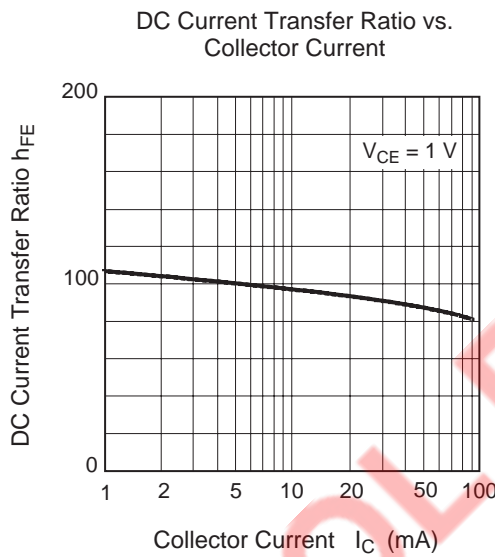
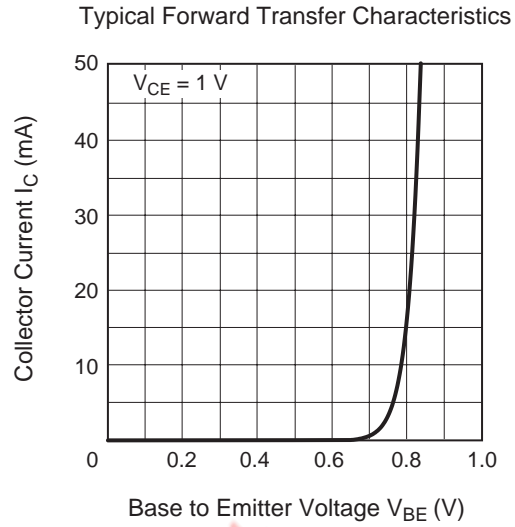
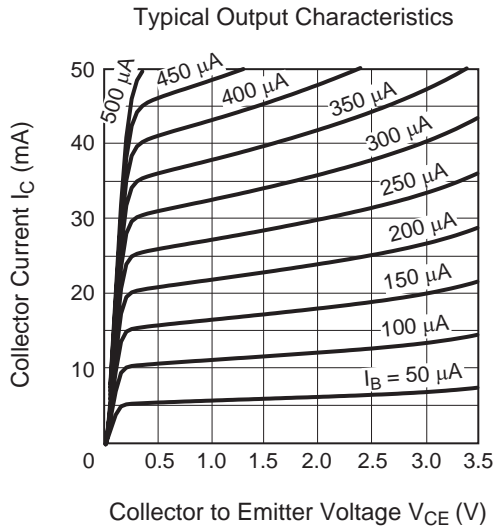
Main Characteristics (Q1)

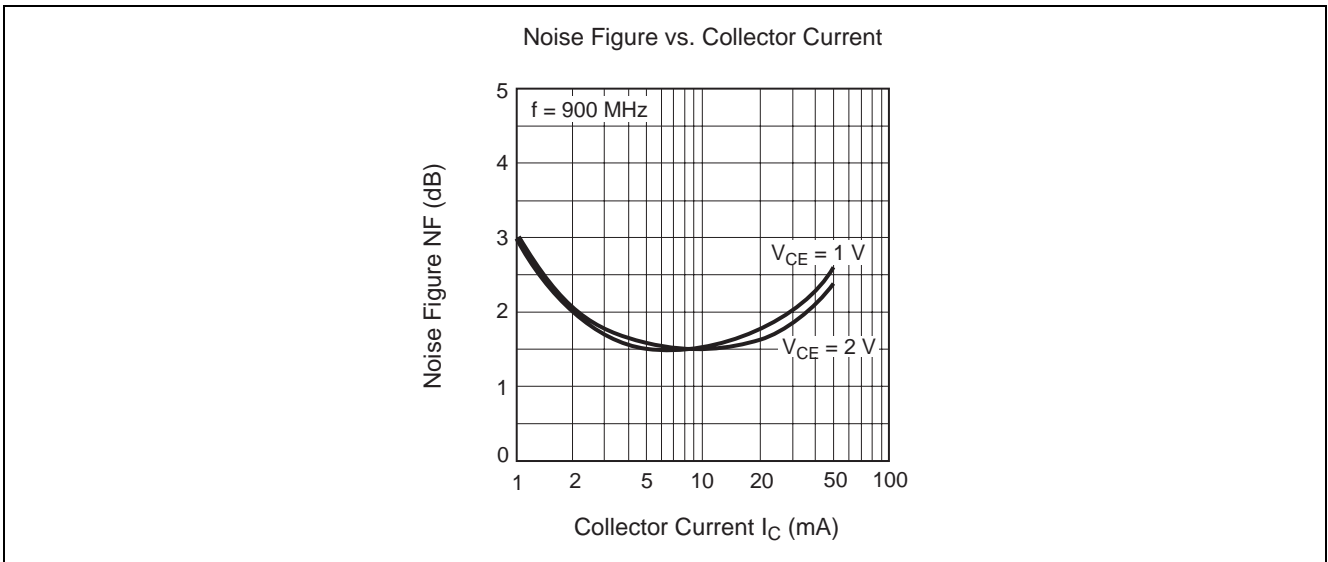




EOL Product

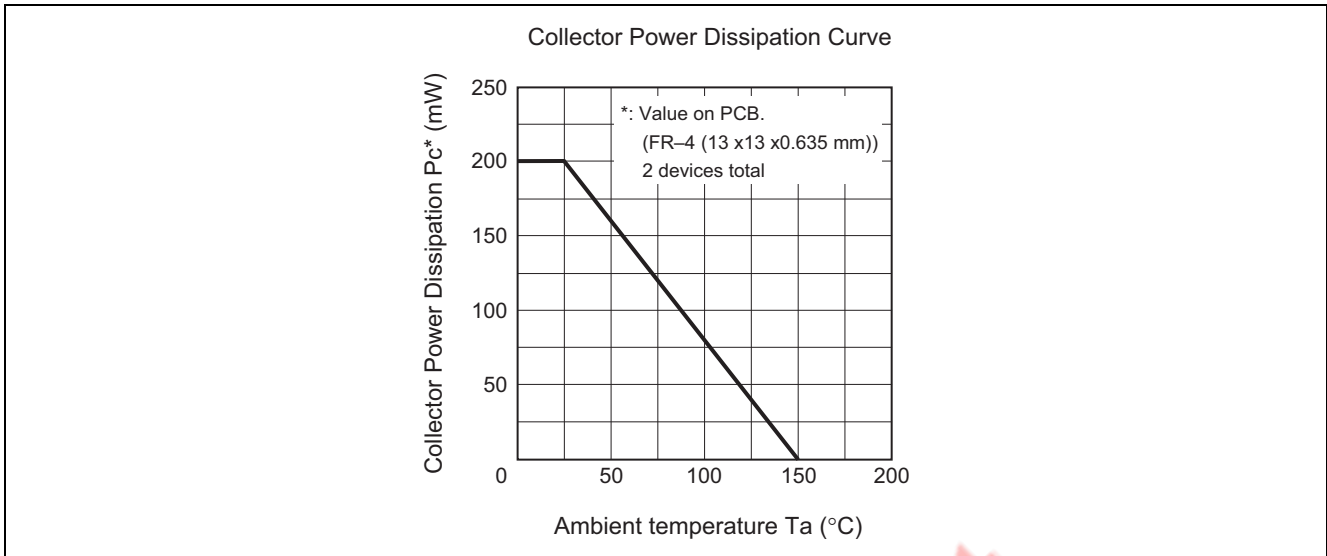
Main Characteristics (Q2)





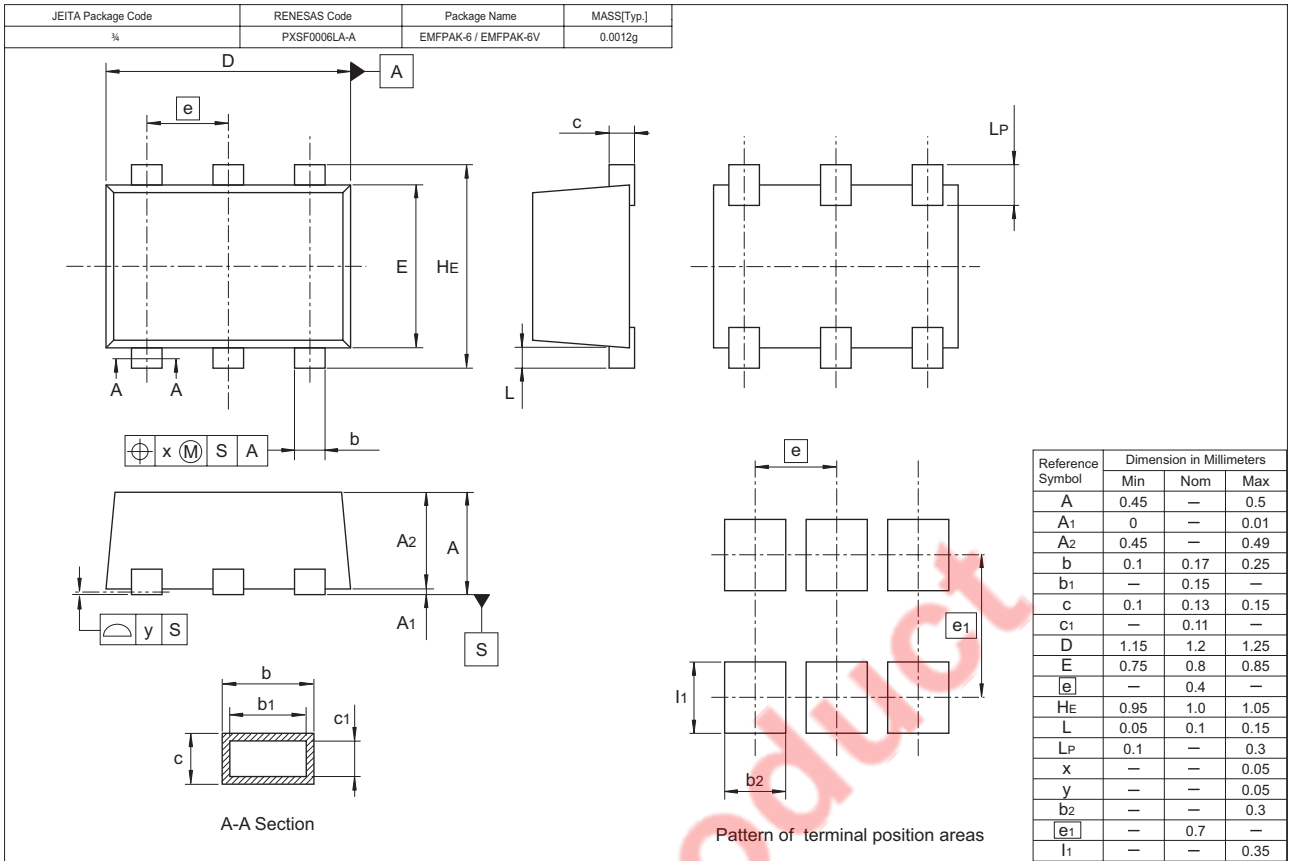
EOL Product

### Main Characteristics (Common)



EOL Product

### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
HTT1115EFTL-E	5000	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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