2SC1213A(K)

Silicon NPN Epitaxial

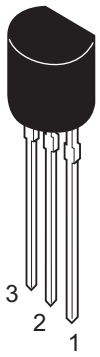
R07DS0432EJ0300
(Previous: REJ03G0685-0200)
Rev.3.00
Jun 07, 2011

Application

- Low frequency amplifier
- Medium speed switching

Outline

RENESAS Package code: PRSS0003DA-A
(Package name: TO-92 (1))



1. Emitter
2. Collector
3. Base

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	50	V
Collector to emitter voltage	V_{CEO}	50	V
Emitter to base voltage	V_{EBO}	4	V
Collector current	I_C	500	mA
Collector power dissipation	P_C	400	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	$V_{(BR)CBO}$	50	—	—	V	I_C = 10 μA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	50	—	—	V	I_C = 1.0 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	4	—	—	V	I_E = 10 μA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	0.5	μA	V_{CB} = 20 V, I_E = 0
DC current transfer ratio	h_{FE}*[1]	100	—	320		V_{CE} = 3 V, I_C = 10 mA
	h_{FE}	10	—	—		V_{CE} = 3 V, I_C = 500 mA*[2]
Base to emitter voltage	V_{BE}		0.64	—	V	V_{CE} = 3 V, I_C = 10 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	0.12	0.6	V	I_C = 150 mA, I_B = 15 mA*[2]
Base to emitter saturation voltage	$V_{BE(sat)}$	—	0.83	1.2	V	I_C = 150 mA, I_B = 15 mA*[2]
Collector output capacitance	Cob	—	7.0	—	pF	V_{CB} = 10 V, I_E = 0, f = 1 MHz
Gain bandwidth product	f_T	—	120	—	MHz	V_{CE} = 3 V, I_C = 10 mA
Turn on time	t_{on}	—	0.25	—	μS	V_{CC} = 10.3 V I_C = 10 I_{B1} = –10 I_{B2} = 10 mA
Turn off time	t_{off}	—	0.85	—	μS	
Storage time	t_{stg}	—	0.4	—	μS	V_{CC} = 5 V I_C = I_{B1} = –I_{B2} = 20 mA

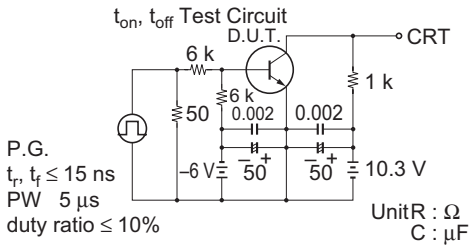
Notes: 1. The 2SC1213A(K) is grouped by h_{FE} as follows.

2. Pulse test

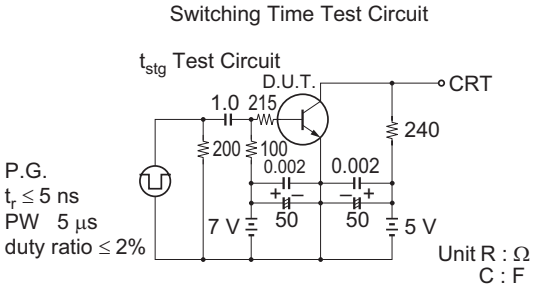
C	D
100 to 200	160 to 320

Main Characteristics

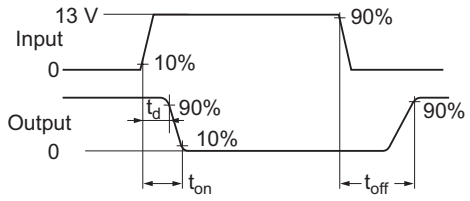
Switching Time Test Circuit



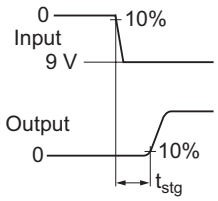
Switching Time Test Circuit



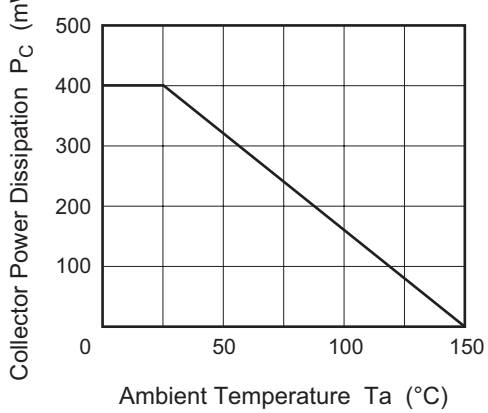
Response Waveform



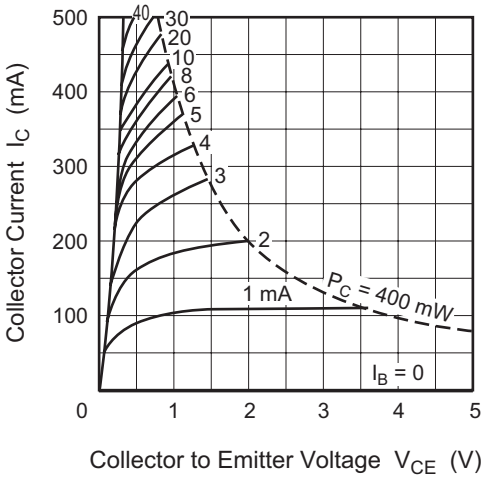
Response Waveform



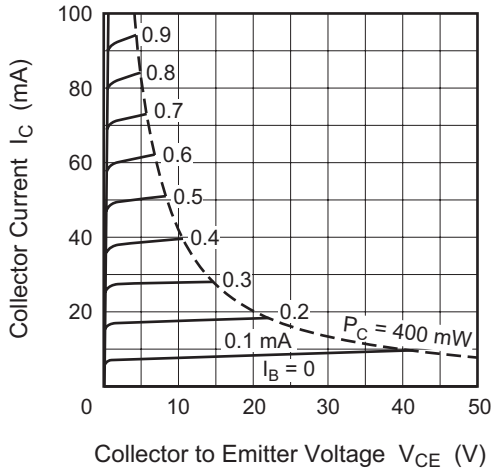
Maximum Collector Dissipation Curve



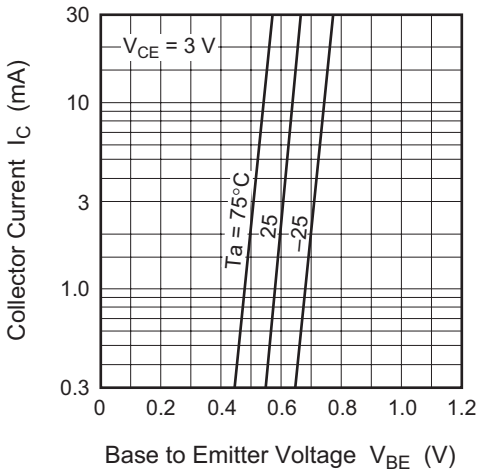
Typical Output Characteristics (1)



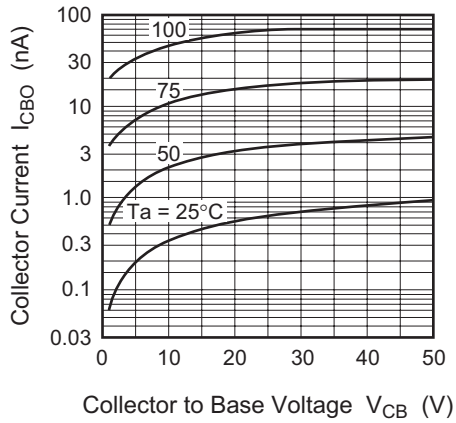
Typical Output Characteristics (2)



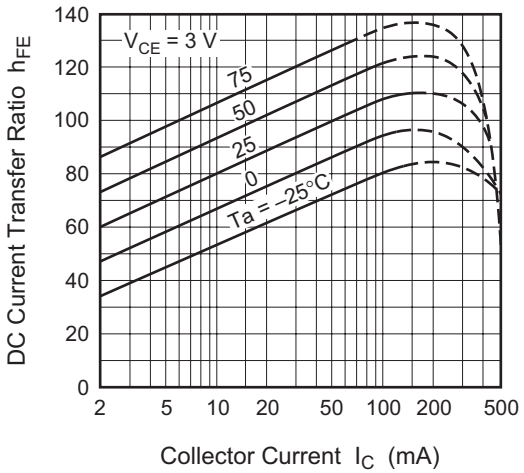
Typical Transfer Characteristics



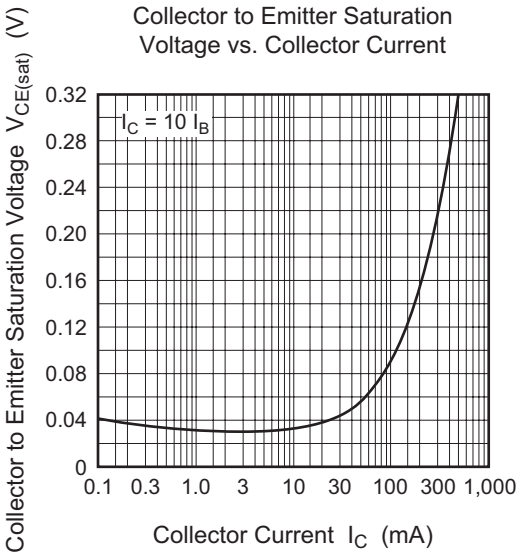
Collector Cutoff Current vs.
Collector to Base Voltage



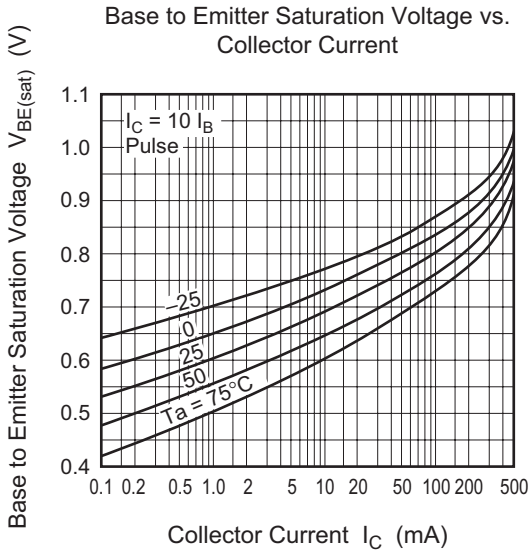
DC Current Transfer Ratio vs.
Collector Current



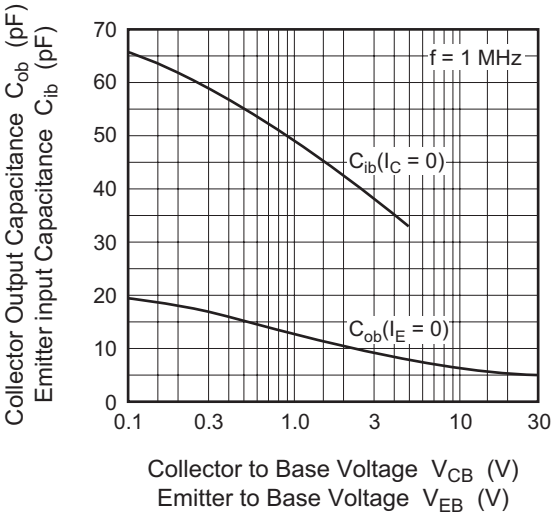
Collector to Emitter Saturation Voltage vs. Collector Current



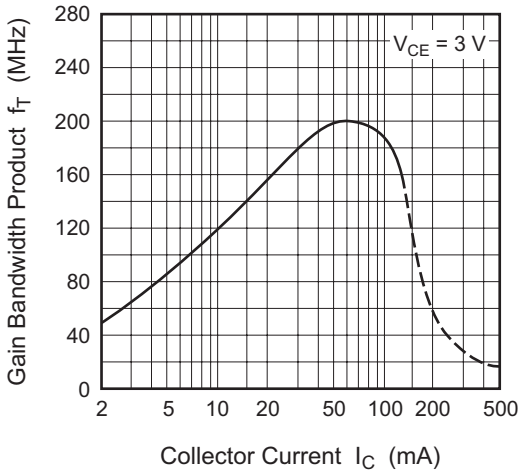
Base to Emitter Saturation Voltage vs. Collector Current



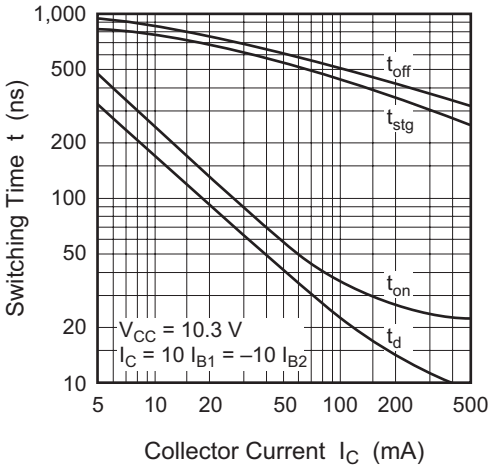
Input And Output Capacitance vs. Voltage



Gain Bandwidth Product vs. Collector Current



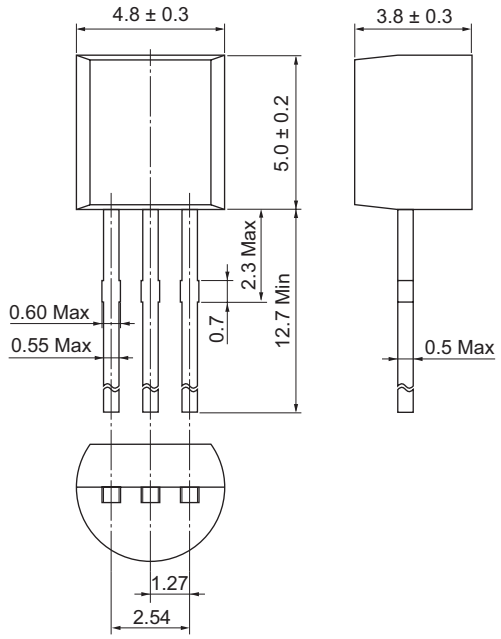
Switching Time vs. Collector Current



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-92(1)	SC-43A	PRSS0003DA-A	TO-92(1) / TO-92(1)V	0.25g

Unit: mm



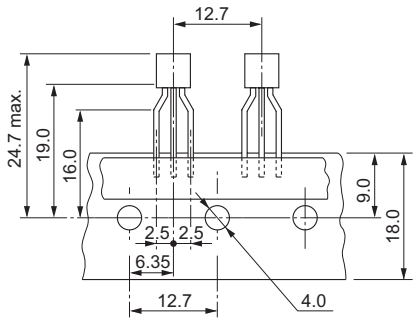
Ordering Information

Part Name	Quantity	Shipping Container
2SC1213AKCTZ-E	2500	Hold Box, Radial Taping

Notes: 1. For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

2. Leads is forming applied as following figure.

Unit: mm



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