

2SA778(K), 2SA778A(K)

Silicon PNP Epitaxial

REJ03G0628-0300

Rev.3.00

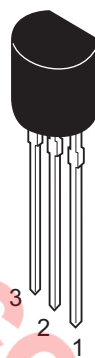
Jul 30, 2007

Application

High voltage 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	2SA778(K)	2SA778A(K)	Unit
Collector to base voltage	V_{CBO}	-150	-180	V
Collector to emitter voltage	V_{CEO}	-150	-180	V
Emitter to base voltage	V_{EBO}	-5	-5	V
Collector current	I_C	-50	-50	mA
Collector power dissipation	P_C	200	200	mW
Junction temperature	T_j	150	150	°C
Storage temperature	T_{stg}	-55 to +150	-55 to +150	°C

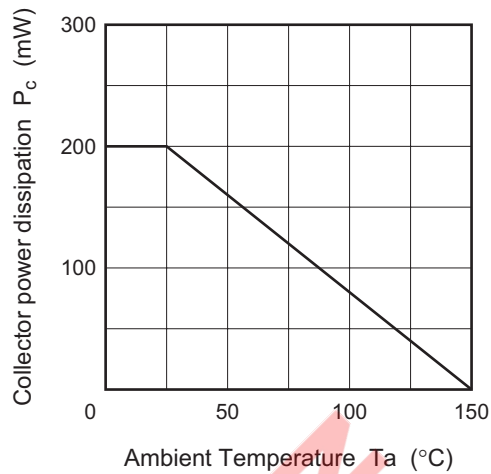
Electrical Characteristics

(Ta = 25°C)

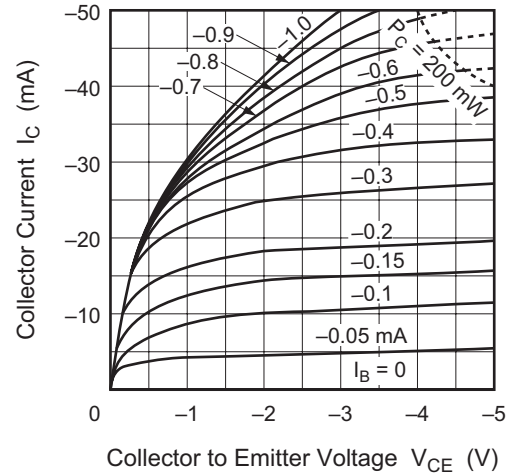
Item	Symbol	2SA778(K)			2SA778A(K)			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	-150	—	—	-180	—	—	V	$I_C = -50 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CER}$	-150	—	—	-180	—	—	V	$I_C = -50 \mu A, R_{BE} = 30 k\Omega$
Collector cutoff current	I_{CBO}	—	—	-1.0	—	—	—	μA	$V_{CB} = -100 V, I_E = 0$
		—	—	—	—	—	-1.0	μA	$V_{CB} = -150 V, I_E = 0$
Emitter cutoff current	I_{EBO}	—	—	-1.0	—	—	-1.0	μA	$V_{EB} = -5 V, I_C = 0$
DC current transfer ratio	h_{FE}	30	100	—	40	100	200		$V_{CE} = -3 V, I_E = -15 mA$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	-0.3	-1.0	—	-0.3	-1.0	V	$I_C = -15 mA, I_B = -1 mA$
Base to emitter saturation voltage	$V_{BE(sat)}$	—	-0.77	-1.0	—	-0.77	-1.0	V	$I_C = -15 mA, I_B = -1 mA$
Collector output capacitance	C_{ob}	—	—	10	—	—	10	pF	$V_{CB} = -10 V, I_E = 0, f = 1 MHz$
Gain bandwidth product	f_T	—	50	—	—	50	—	MHz	$V_{CE} = -3 V, I_C = -15 mA$
Turn on time	t_{on}	—	135	—	—	135	—	ns	$V_{CC} = -10.3 V$
Turn off time	t_{off}	—	1.7	—	—	1.7	—	μs	$I_C = 10 I_{B1} = -10 I_{B2} = -10 mA$
Storage time	t_{stg}	—	—	1.0	—	—	1.0	μs	$V_{CC} = -10 V, I_C = -17 mA, I_{B1} = -1 mA, I_{B2} = -12 mA$

Main Characteristics

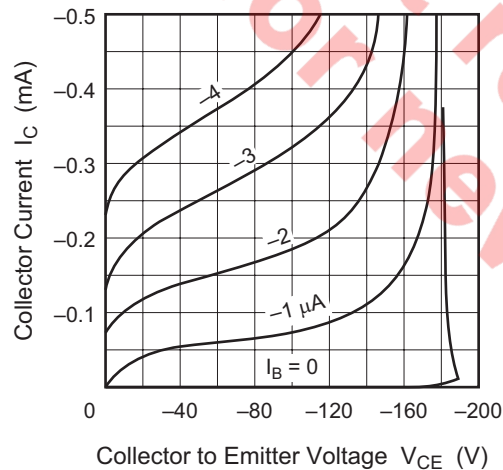
Maximum Collector Dissipation Curve



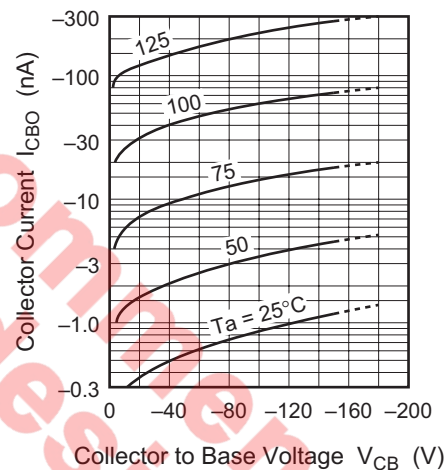
Typical Output Characteristics (1)



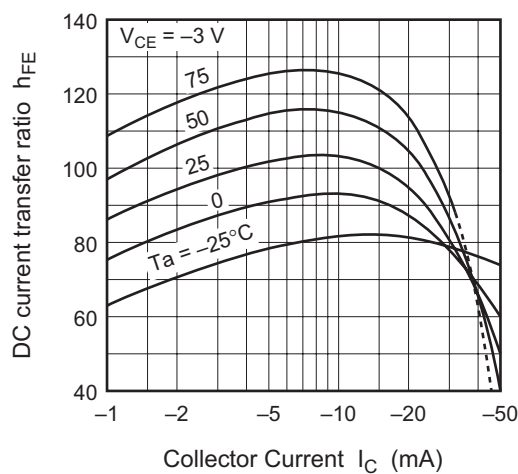
Typical Output Characteristics (2)



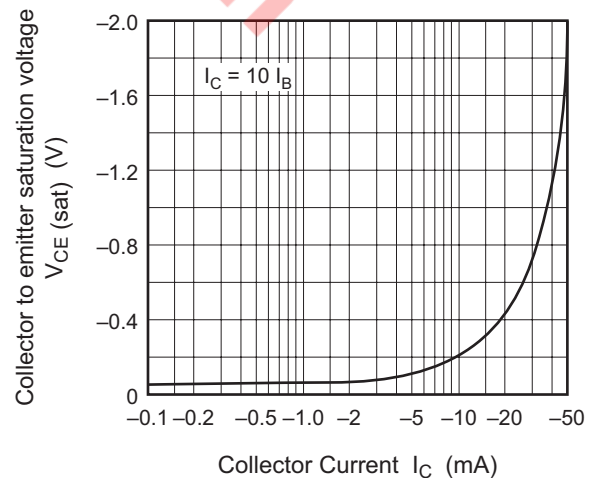
Collector Cutoff Current vs. Collector to Base Voltage

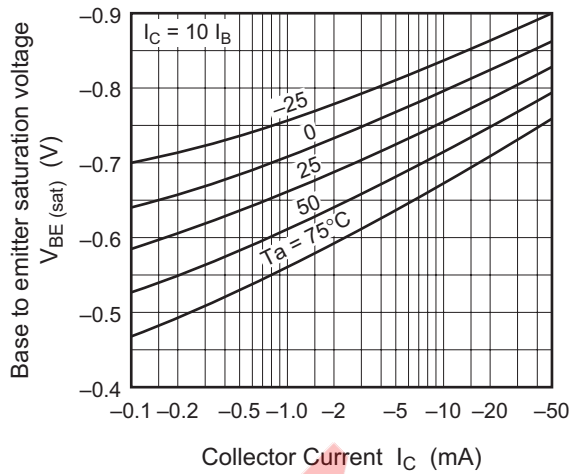
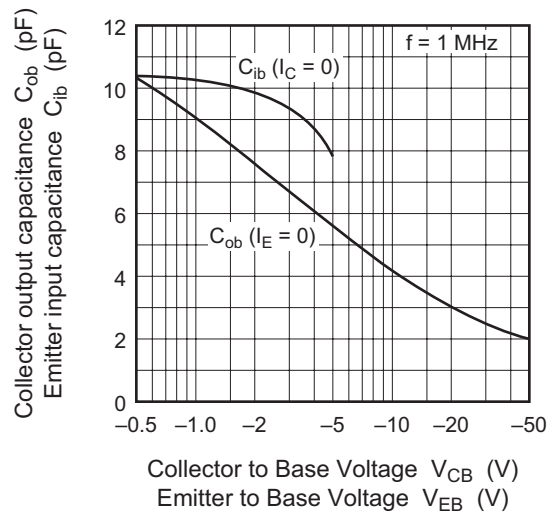
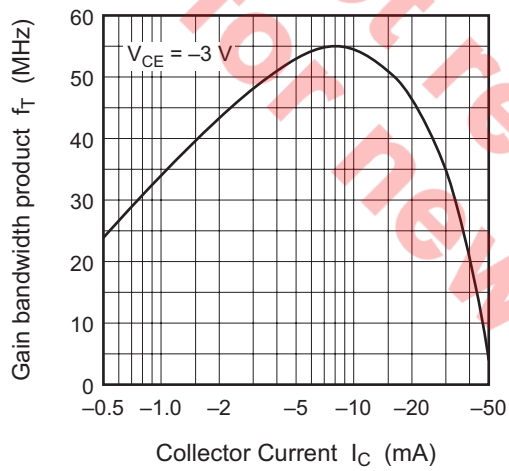


DC Current Transfer Ratio vs. Collector Current

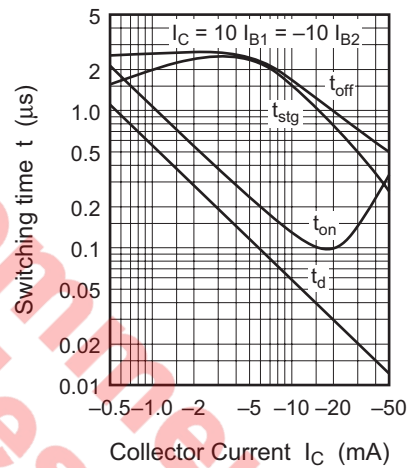


Collector to Emitter Saturation Voltage vs. Collector Current

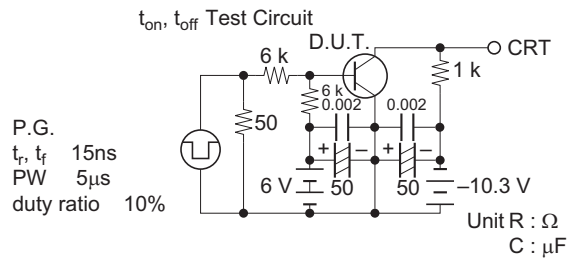


Base to Emitter Saturation Voltage vs.
Collector CurrentInput and Output Capacitance vs.
VoltageGain Bandwidth Product vs.
Collector Current

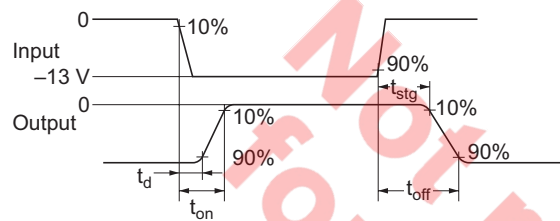
Switching Time vs. Collector Current



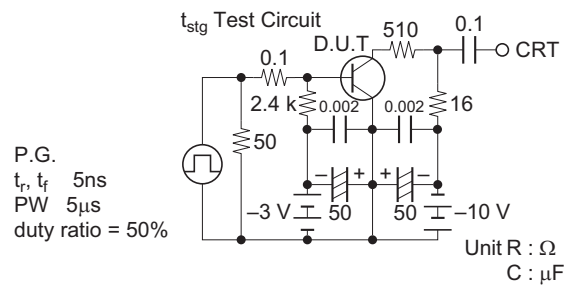
Switching Time Test Circuit



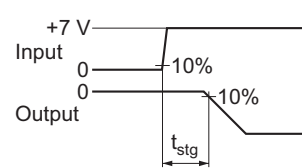
Response Waveform



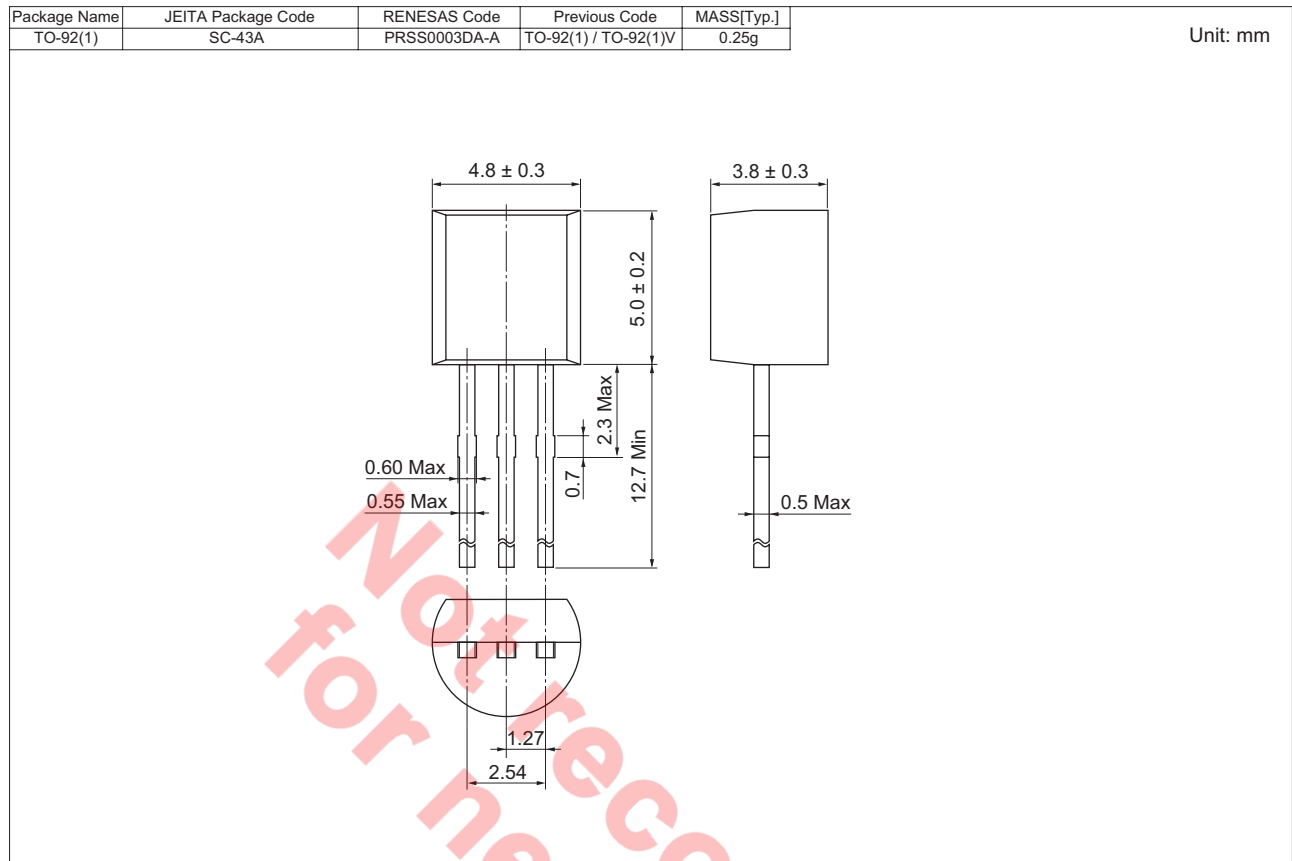
Switching Time Test Circuit



Response Waveform



Package Dimensions



Ordering Information

Part No.	Quantity	Shipping Container
2SA778KTZ 2SA778AKTZ	2500	Hold Box, Radial 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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