
2SA778(K), 2SA778A(K)

Silicon PNP Epitaxial

HITACHI

Application

High voltage medium speed switching

Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

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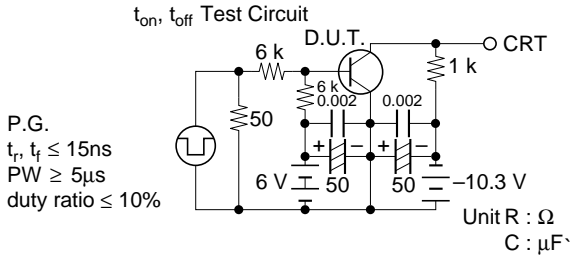
Absolute Maximum Ratings (Ta = 25°C)

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

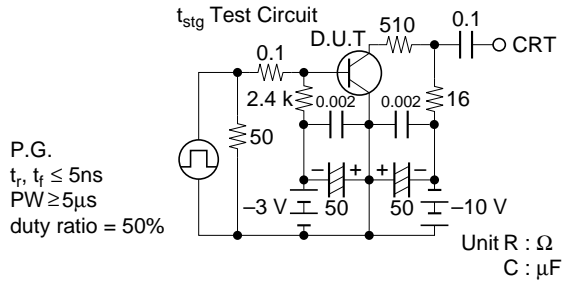
Electrical Characteristics (Ta = 25°C)

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	$V_{CC} = -10 V, I_C = -17 mA, I_{B1} = -1 mA, I_{B2} = -12 mA$

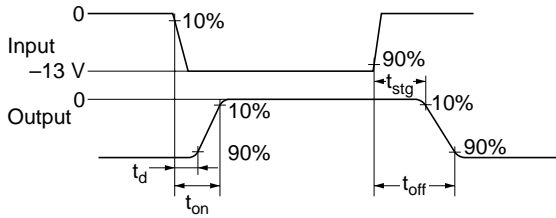
Switching Time Test Circuit



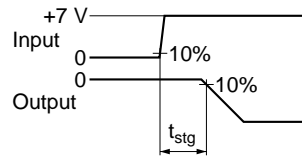
Switching Time Test Circuit



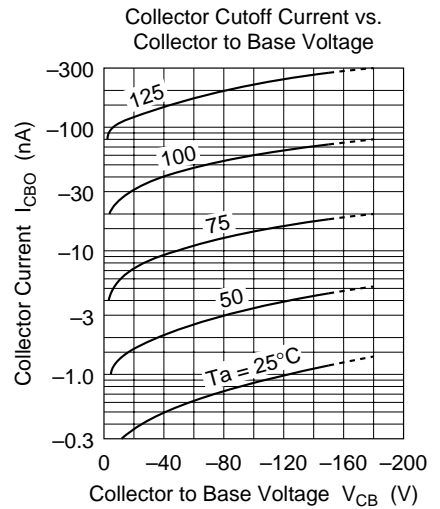
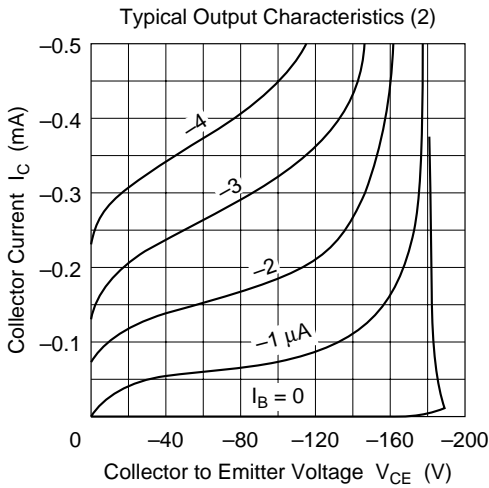
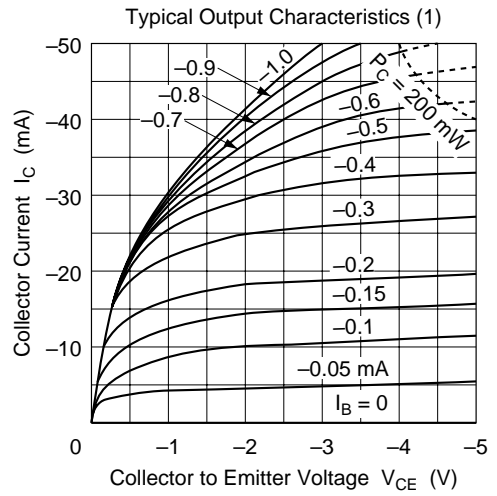
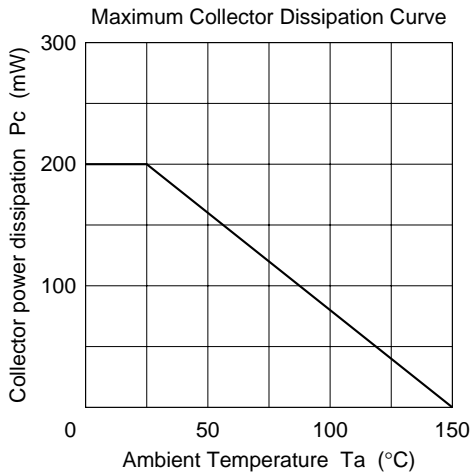
Response Waveform

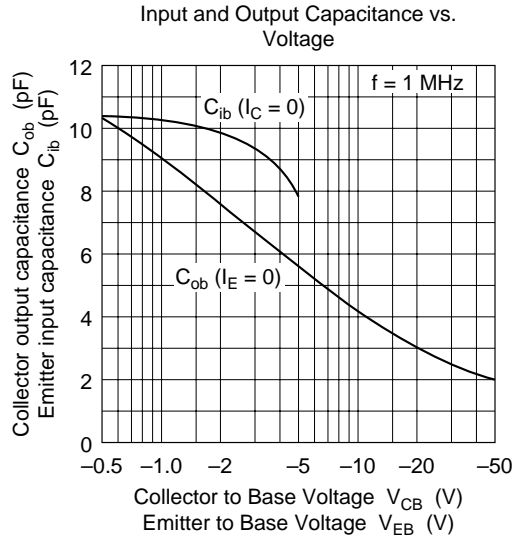
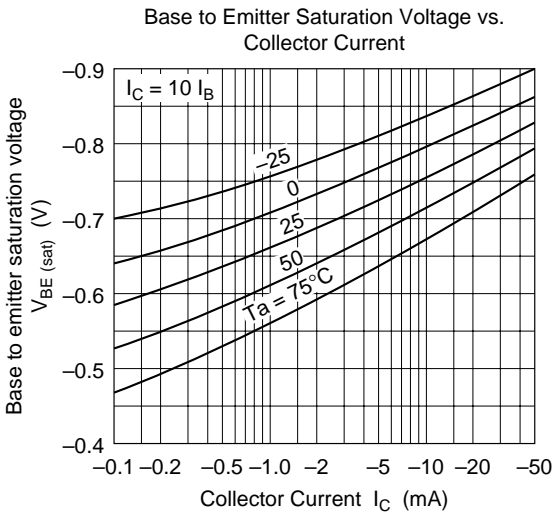
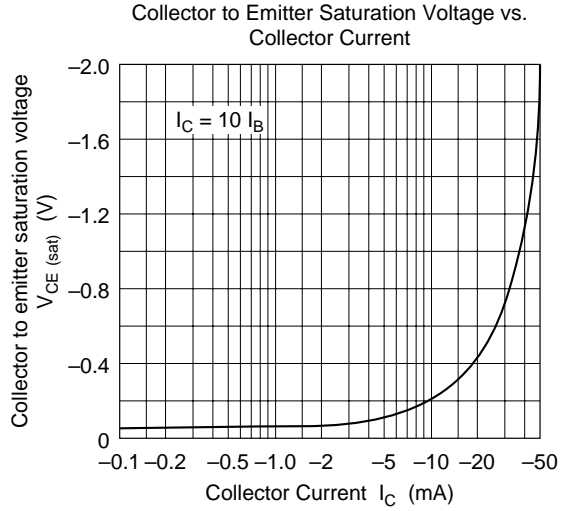
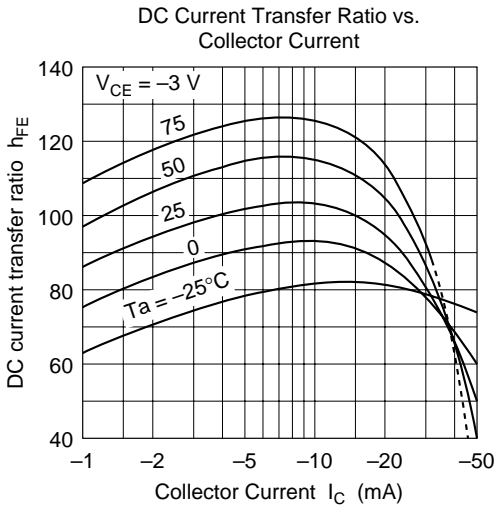


Response Waveform



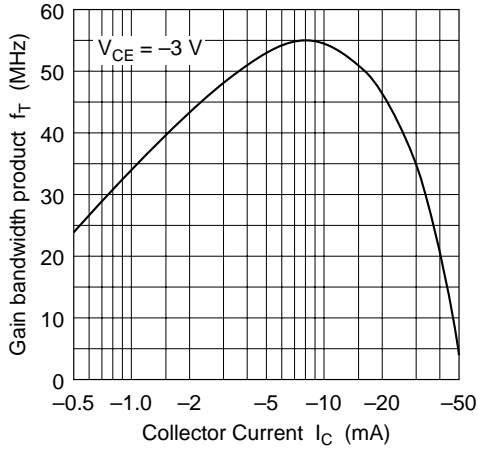
2SA778(K), 2SA778A(K)



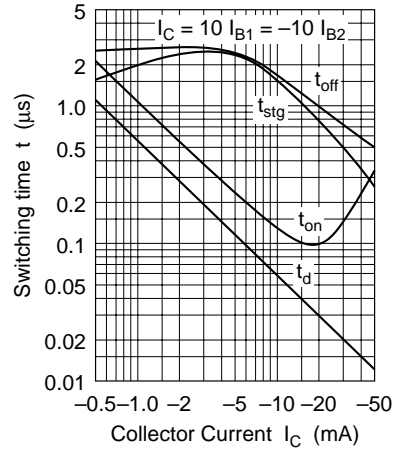


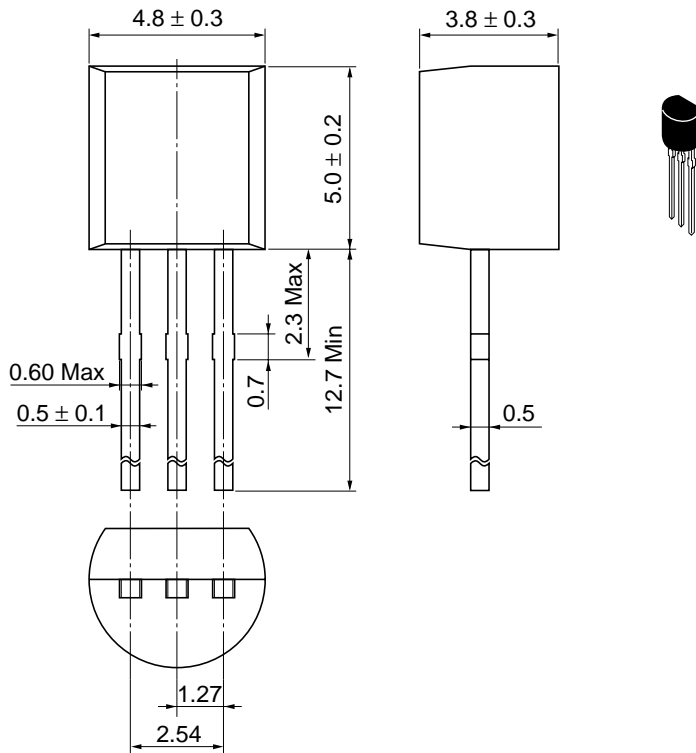
2SA778(K), 2SA778A(K)

Gain Bandwidth Product vs. Collector Current



Switching Time vs. Collector Current





Hitachi Code	TO-92 (1)
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.25 g

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