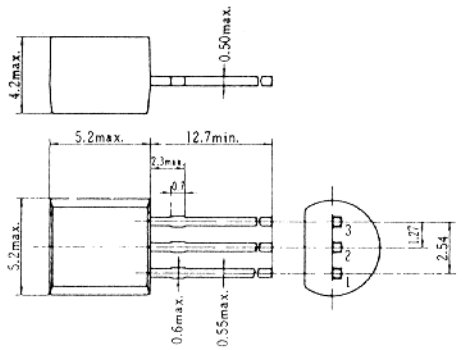
HITACHI

2SA778Ⓚ, 2SA778AⓀ

SILICON PNP EPITAXIAL

HIGH VOLTAGE MEDIUM SPEED SWITCHING



1. Emitter
2. Collector
3. Base

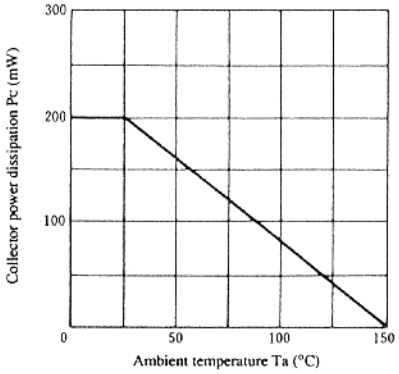
(Dimensions in mm)

(JEDEC TO-92)

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Item	Symbol	2SA778Ⓚ	2SA778AⓀ	Unit
Collector to base voltage	V_{CBO}	−150	−180	V
Collector to emitter voltage	V_{CER}	−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

MAXIMUM COLLECTOR DISSIPATION CURVE

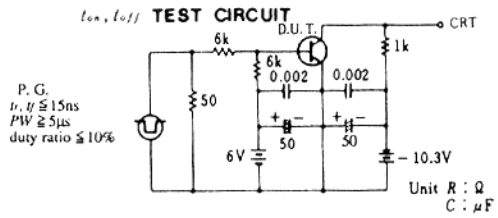


■ ELECTRICAL CHARACTERISTICS (Ta=25°C)

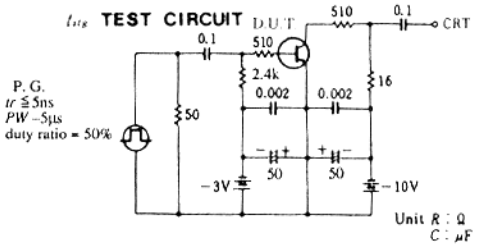
Item	Symbol	Test Condition	2SA778Ⓚ			2SA778AⓀ			Unit
			min.	typ.	max.	min.	typ.	max.	
Collector to base breakdown voltage	$V_{(BR)CBO}$	I_C = −50μA, I_E = 0	−150	—	—	−180	—	—	V
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	I_C = −50μA, R_{BE} = 30kΩ	−150	—	—	−180	—	—	V
Collector cutoff current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

2SA778Ⓚ, 2SA778AⓀ

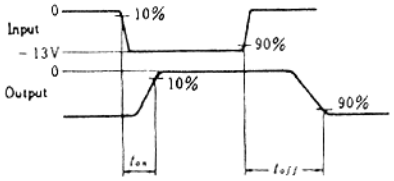
SWITCHING TIME TEST CIRCUIT



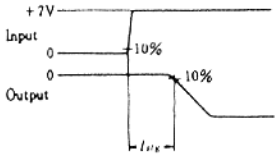
SWITCHING TIME TEST CIRCUIT



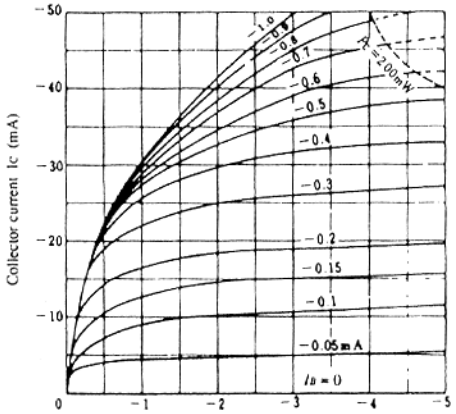
RESPONSE WAVEFORM



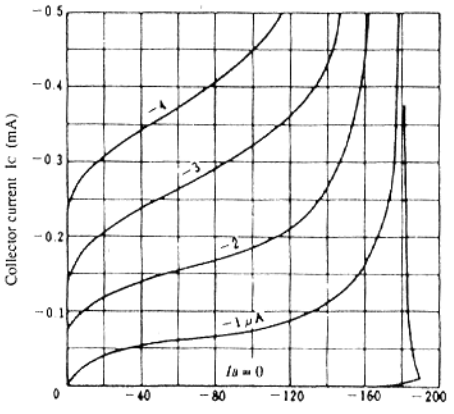
RESPONSE WAVEFORM



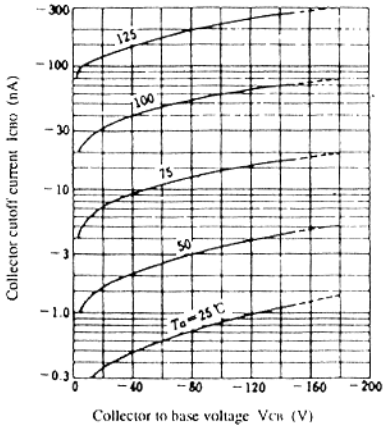
TYPICAL OUTPUT CHARACTERISTICS (1)



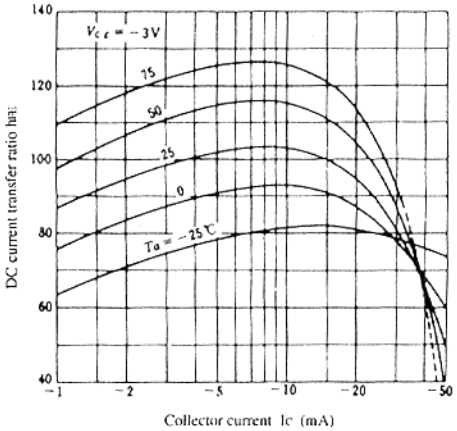
TYPICAL OUTPUT CHARACTERISTICS (2)



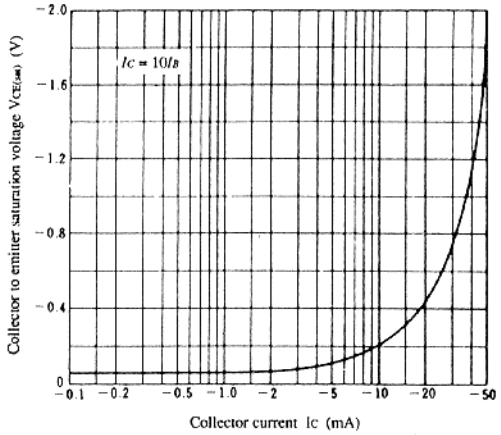
COLLECTOR CUTOFF CURRENT VS. COLLECTOR TO BASE VOLTAGE



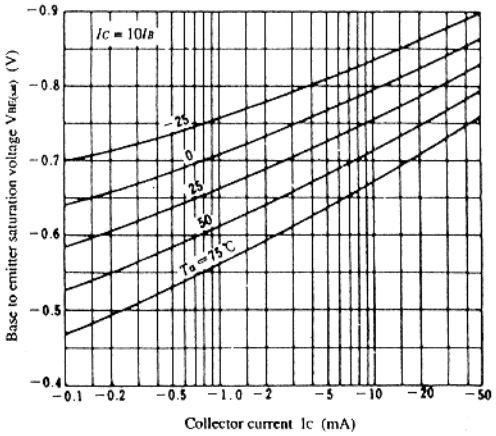
DC CURRENT TRANSFER RATIO VS. COLLECTOR CURRENT



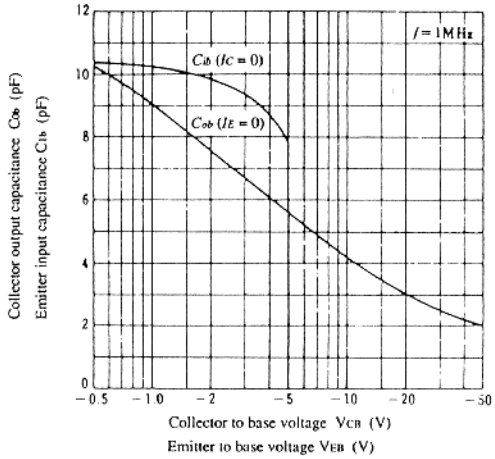
COLLECTOR TO EMITTER SATURATION VOLTAGE VS. COLLECTOR CURRENT



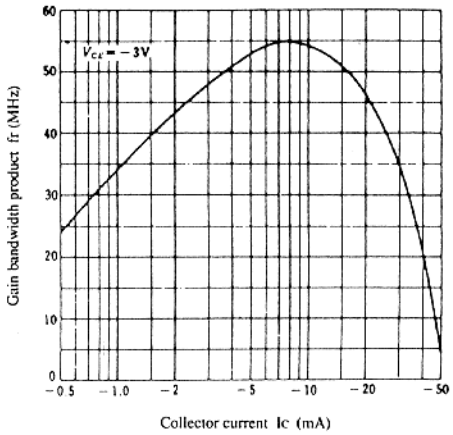
BASE TO EMITTER SATURATION VOLTAGE VS. COLLECTOR CURRENT



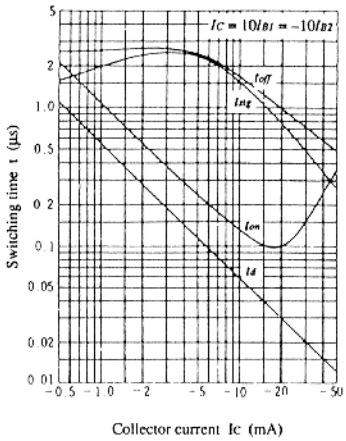
INPUT AND OUTPUT CAPACITANCE VS. VOLTAGE



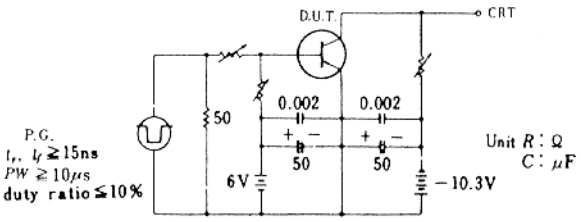
GAIN BANDWIDTH PRODUCT VS. COLLECTOR CURRENT



SWITCHING TIME VS. COLLECTOR CURRENT



SWITCHING TIME TEST CIRCUIT



RESPONSE WAVEFORM