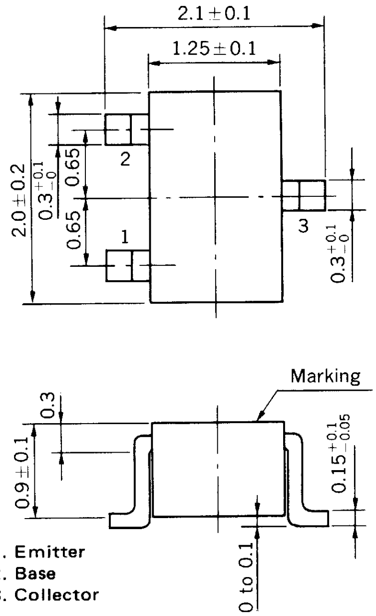
DATA SHEET

NEC
ELECTRON DEVICE

SILICON TRANSISTOR
2SA1608

HIGH FREQUENCY AMPLIFIER AND SWITCHING PNP SILICON EPITAXIAL TRANSISTOR

PACKAGE DIMENSIONS
in millimeters



1. Emitter
2. Base
3. Collector

FEATURES

- High f_T : f_T = 400 MHz
- Complementary to 2SC3739

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Current (T_a = 25 °C)			
Collector to Base Voltage	V_{CBO}	−60	V
Collector to Emitter Voltage	V_{CEO}	−40	V
Emitter to Base Voltage	V_{EBO}	−5.0	V
Collector Current (DC)	I_C	−500	mA
Maximum Power Dissipation			
Total power Dissipation at 25 °C Ambient Temperature	P_T	150	mW
Maximum Temperatures			
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	−55 to +150	°C

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			−100	nA	V_{CB} = −40 V, I_E = 0
Emitter Cutoff Current	I_{EBO}			−100	nA	V_{EB} = −4.0 V, I_C = 0
DC Current Gain	h_{FE1}*	75	140	300		V_{CE} = −2.0 V, I_C = −150 mA
DC Current Gain	h_{FE2}*	20	50			V_{CE} = −2.0 V, I_C = −150 mA
Collector Saturation Voltage	$V_{CE(sat)}$*		−0.45	−0.75	V	I_C = −500 mA, I_B = −50 mA
Base Saturation Voltage	$V_{BE(sat)}$*		−1.0	−1.30	V	I_C = −500 mA, I_B = −50 mA
Gain Bandwidth Product	f_T	150	400		MHz	V_{CE} = −10 V, I_E = 20 mA
Output Capacitance	C_{ob}		5.0	8.0	pF	V_{CB} = −10 V, I_E = 0, f = 1.0 MHz
Turn-on Time	t_{on}		25		ns	V_{CC} = −30 V
Storage Time	t_{stg}		70		ns	I_C = 150 mA
Turn-off Time	t_{off}		100		ns	I_{B1} = $-I_{B2}$ = 15 mA

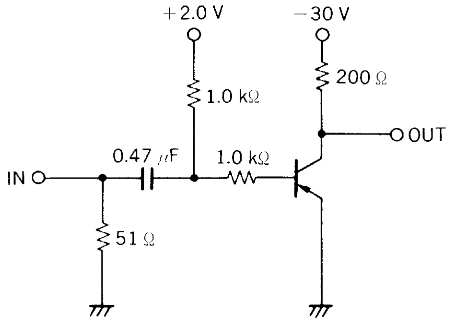
* Pulsed: PW ≦ 350 μs, Duty Cycle ≦ 2 %

h_{FE} Classification

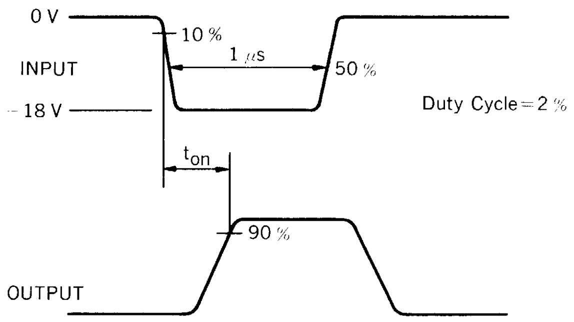
Making	Y12	Y13	Y14
h_{FE1}	75 to 150	100 to 200	150 to 300

NEC cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement.

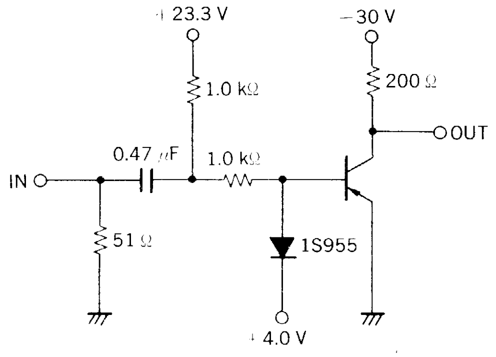
SWITCHING TIME TEST CIRCUIT



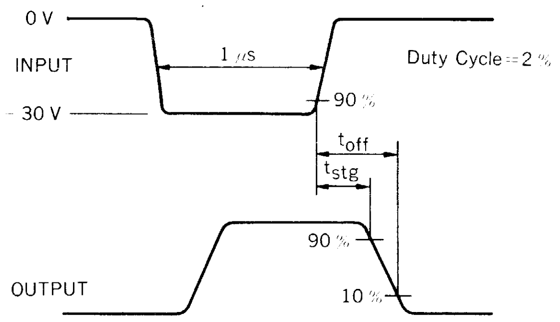
t_{on} SWITCHING



VOLTAGE WAVEFORMS



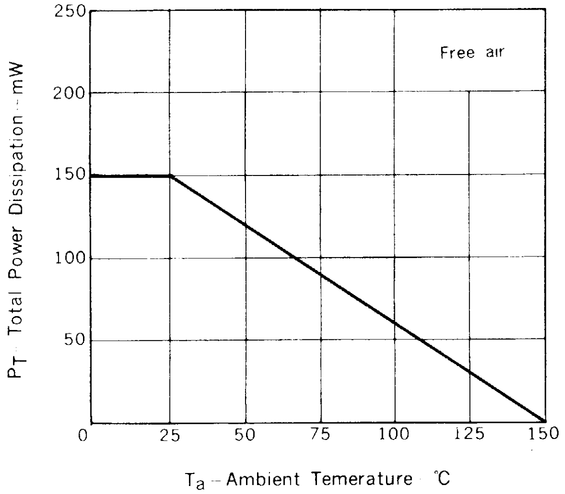
t_{stg}, t_{off} SWITCHING



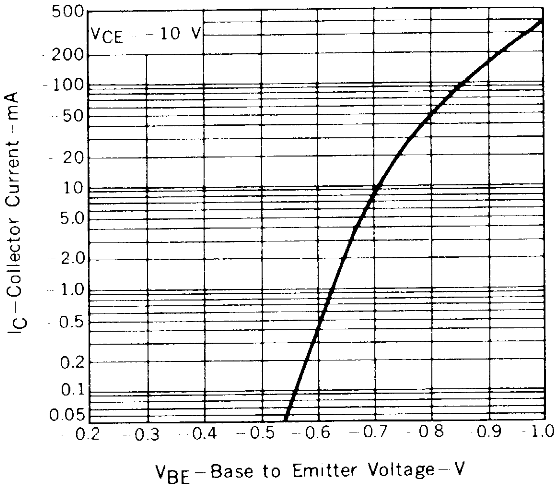
VOLTAGE WAVEFORMS

TYPICAL CHARACTERISTICS (T_a = 25 °C)

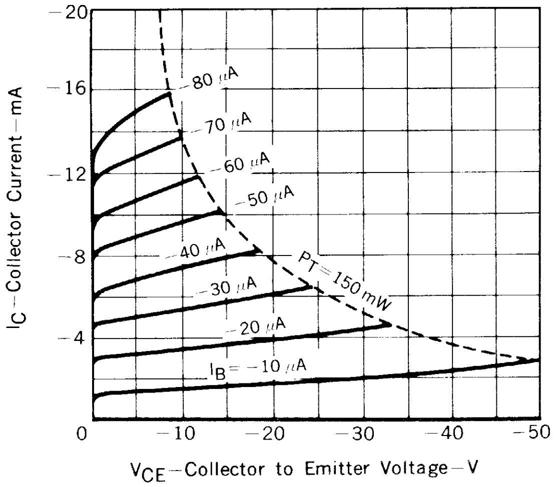
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



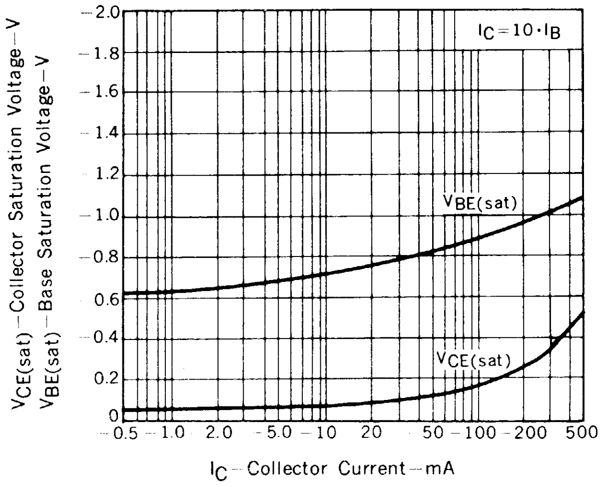
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



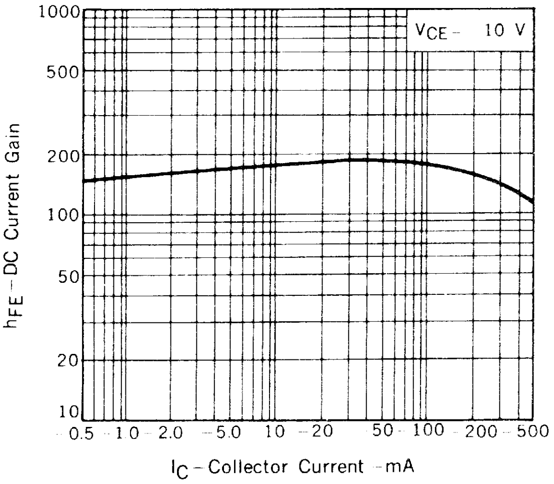
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



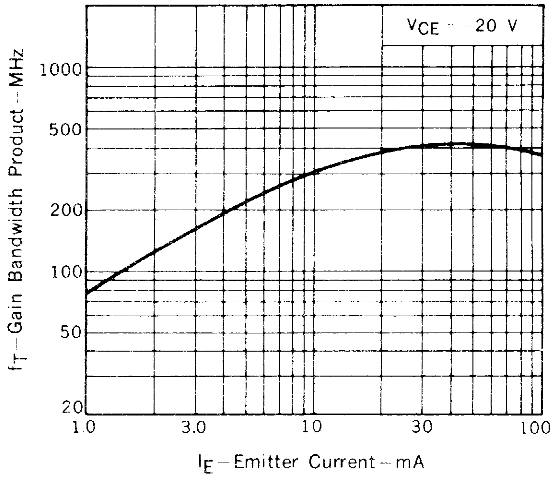
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



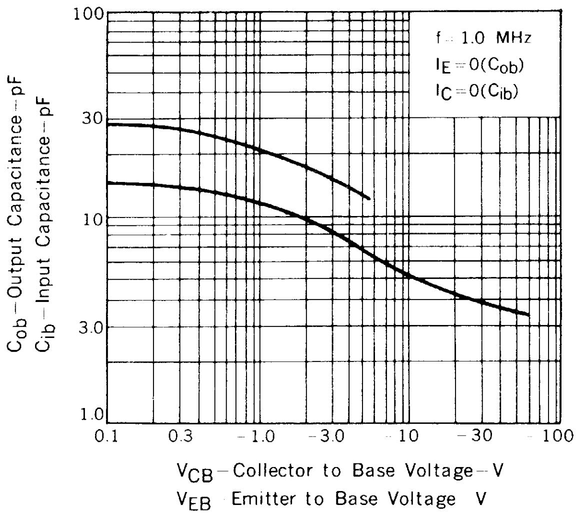
DC CURRENT GAIN vs. COLLECTOR CURRENT



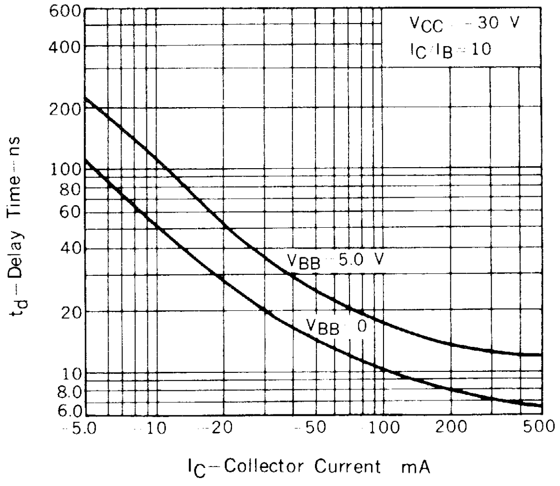
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



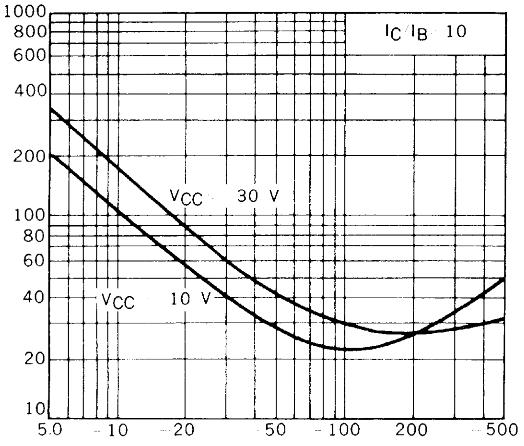
INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



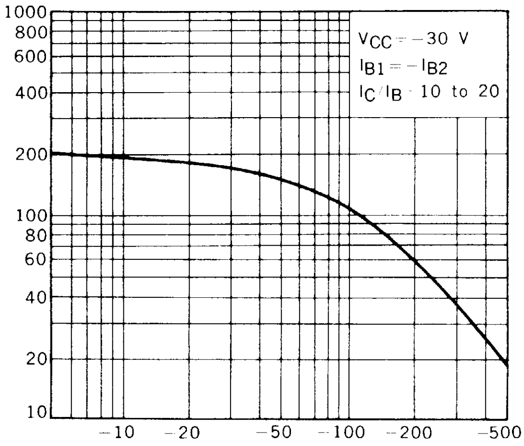
DELAY TIME vs. COLLECTOR CURRENT



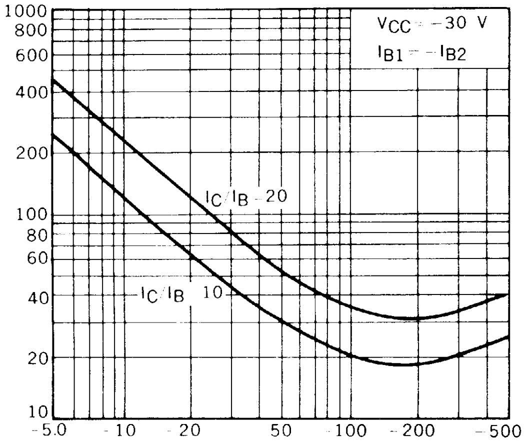
RISE TIME vs. COLLECTOR CURRENT



STORAGE TIME vs. COLLECTOR CURRENT



FALL TIME vs. COLLECTOR CURRENT



TC−2112
October 1987M
Printed in Japan