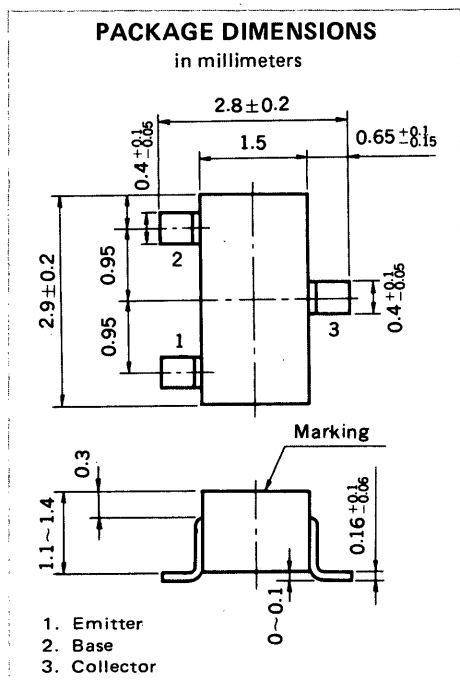


HIGH FREQUENCY AMPLIFIER AND SWITCHING
NPN SILICON EPITAXIAL TRANSISTOR
MINI MOLD



FEATURES

- High Gain Bandwidth Product: $f_T = 200$ MHz MIN.
- Complementary to 2SA1464

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Current ($T_a = 25^\circ\text{C}$)

Collector to Base Voltage	V_{CB0}	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	200	mW
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Maximum Temperatures

Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

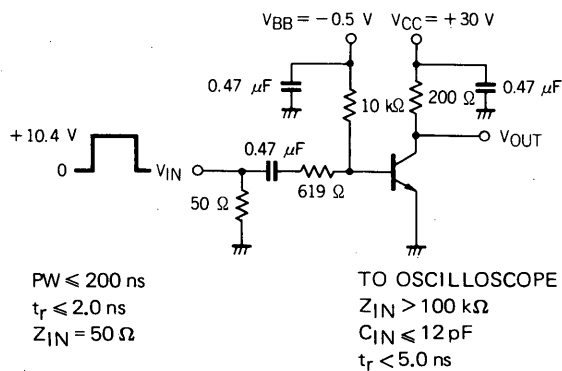
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			100	nA	$V_{CB} = 40\text{ V}, I_E = 0$
Emitter Cutoff Current	I_{EBO}			100	nA	$V_{EB} = 4.0\text{ V}, I_C = 0$
DC Current Gain	h_{FE1}	75	150	300		$V_{CE} = 1.0\text{ V}, I_C = 150\text{ mA}$
DC Current Gain	h_{FE2}	20	75			$V_{CE} = 2.0\text{ V}, I_C = 500\text{ mA}$
Collector Saturation Voltage	$V_{CE(sat)}$		0.25	0.75	V	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$
Base Saturation Voltage	$V_{BE(sat)}$		1.0	1.2	V	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$
Gain Bandwidth Product	f_T	200	400		MHz	$V_{CE} = 10\text{ V}, I_E = -20\text{ mA}$
Output Capacitance	C_{ob}		3.5	8.0	pF	$V_{CB} = 10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$
Turn-on Time	t_{on}			35	ns	$V_{CC} = 30\text{ V}$
Storage Time	t_{stg}			225	ns	$I_C = 150\text{ mA}$
Turn-off Time	t_{off}			275	ns	$I_{B1} = -I_{B2} = 15\text{ mA}$

* Pulsed: $PW \leq 350\ \mu\text{s}$, Duty Cycle $\leq 2\%$

h_{FE} Classification

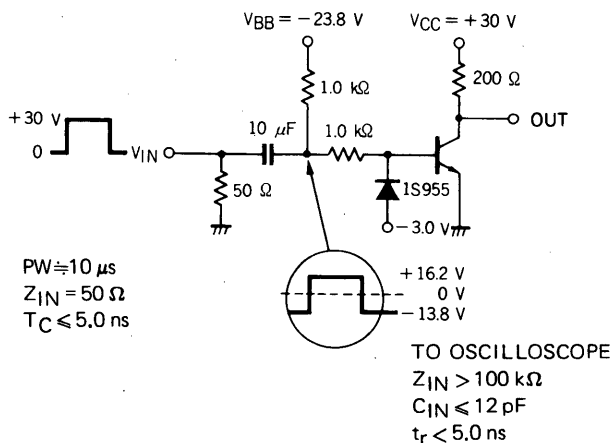
Marking	B12	B13	B14
h_{FE1}	75 to 150	100 to 200	150 to 300

SWITCHING TIME TEST CIRCUIT



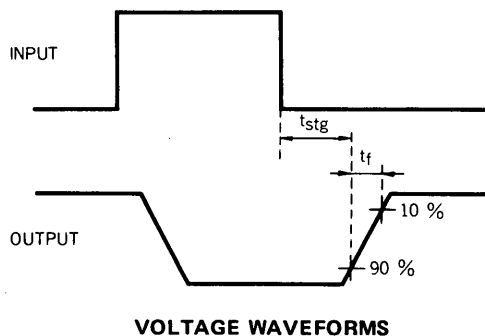
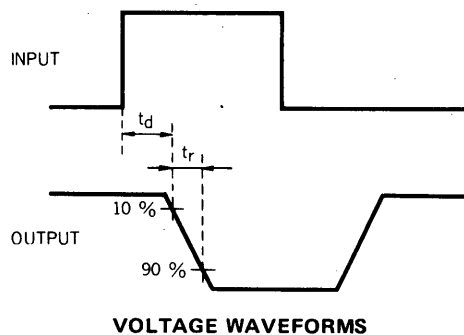
$PW \leq 200 \text{ ns}$
 $t_r \leq 2.0 \text{ ns}$
 $Z_{IN} = 50 \Omega$

t_{on} SWITCHING

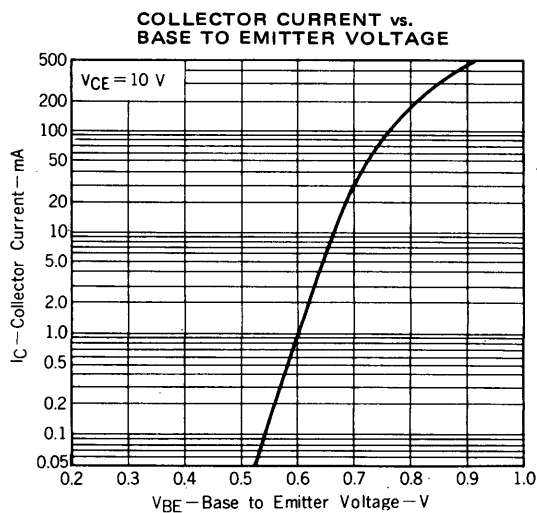
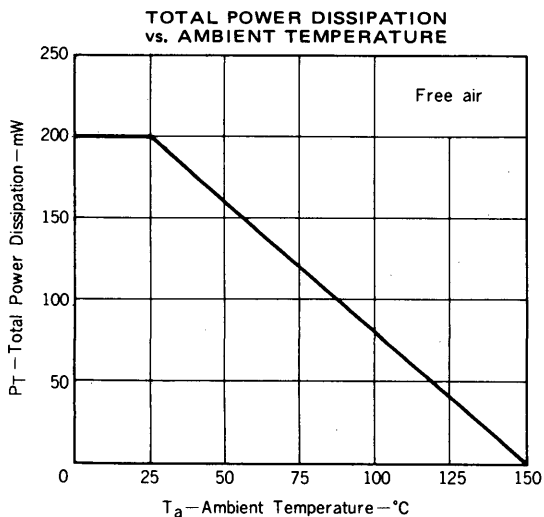


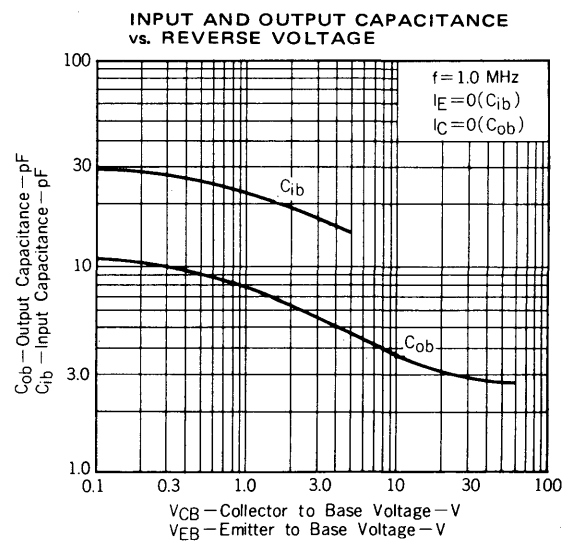
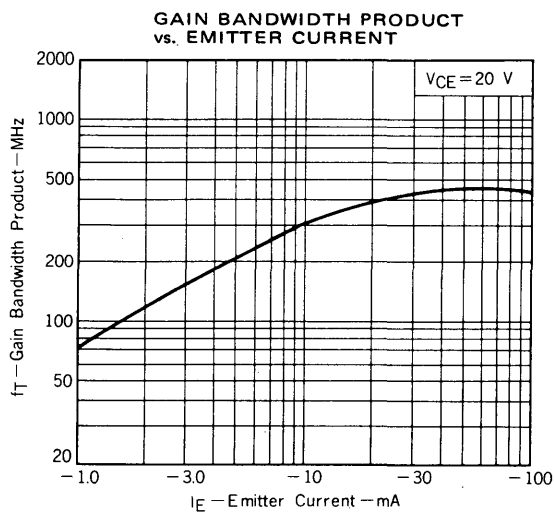
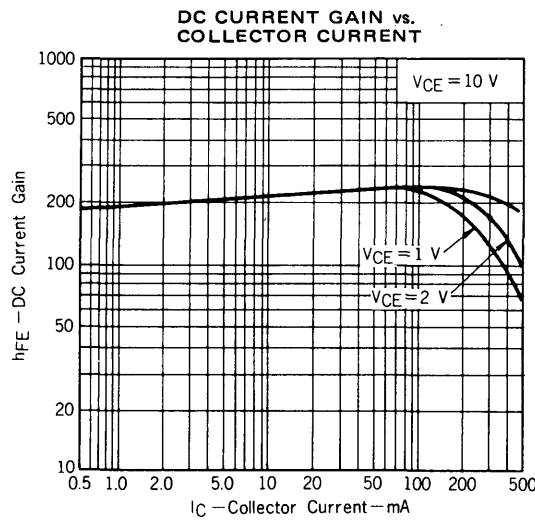
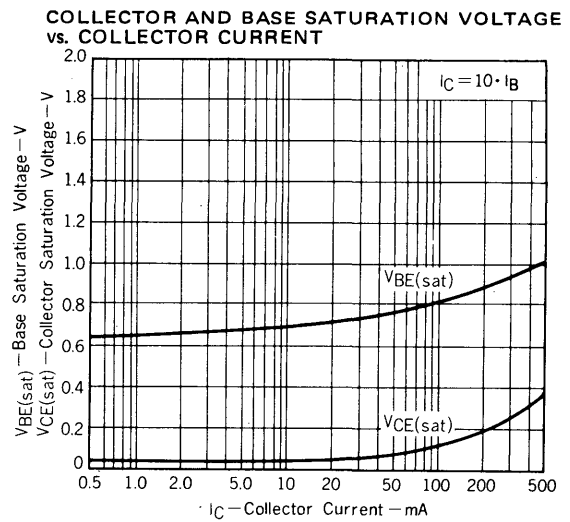
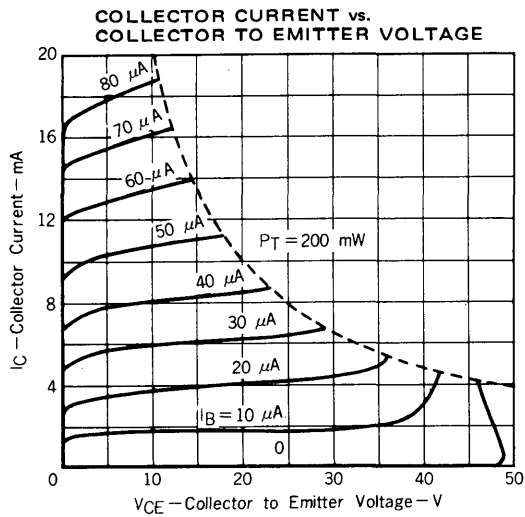
$PW \approx 10 \mu\text{s}$
 $Z_{IN} = 50 \Omega$
 $T_C \leq 5.0 \text{ ns}$

t_{off} SWITCHING

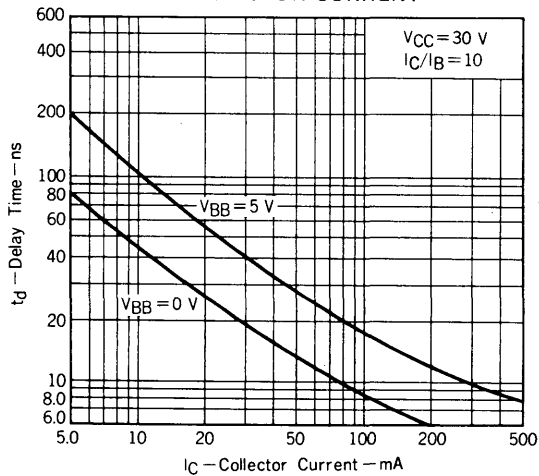


TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

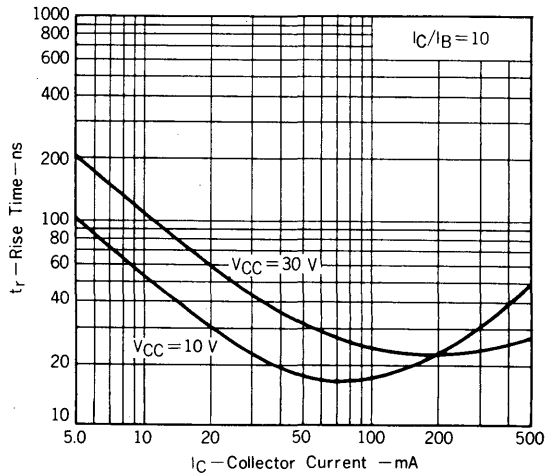




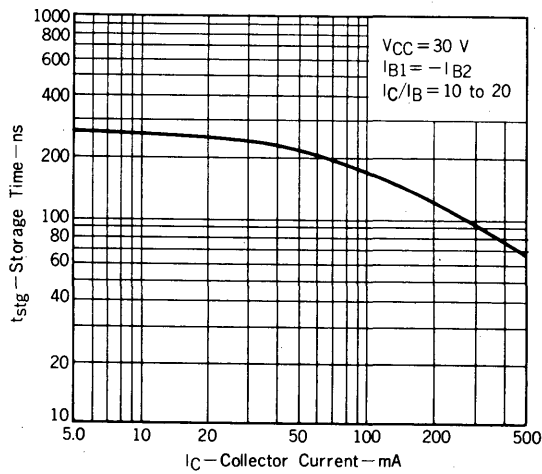
DELAY TIME vs. COLLECTOR CURRENT



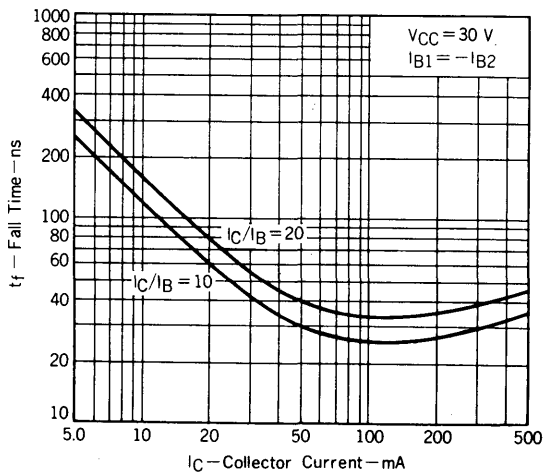
RISE TIME vs. COLLECTOR CURRENT



STORAGE TIME vs. COLLECTOR CURRENT



FALL TIME vs. COLLECTOR CURRENT





[MEMO]

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