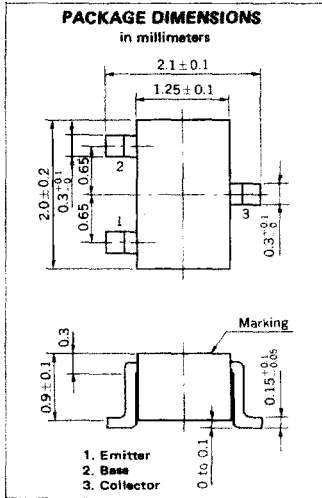


HIGH SPEED SWITCHING
PNP SILICON EPITAXIAL TRANSISTOR



FEATURES

- High Speed Switching : $t_{on} = 9.0$ ns TYP.
 $t_{off} = 19.0$ ns TYP.
- High f_T : $f_T = 1800$ MHz TYP.
- Low C_{ob} : $C_{ob} = 2.0$ pF TYP.
- Complementary to 2SC4176

ABSOLUTE MAXIMUM RATINGS

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

Collector to Base Voltage	V_{CB0}	-15	V
Collector to Emitter Voltage	V_{CEO}	-15	V
Emitter to Base Voltage	V_{EBO}	-4.5	V
Collector Current (DC)	I_C	-50	mA

Maximum Power Dissipation

Total power Dissipation at 25°C Ambient Temperature	P_T	150	mW
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Maximum Temperatures

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

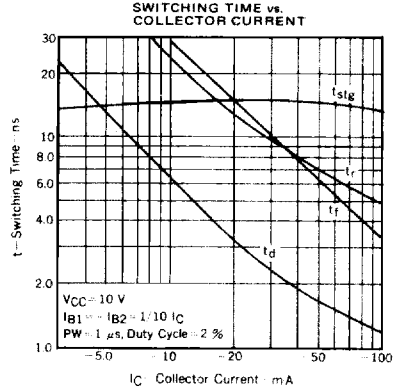
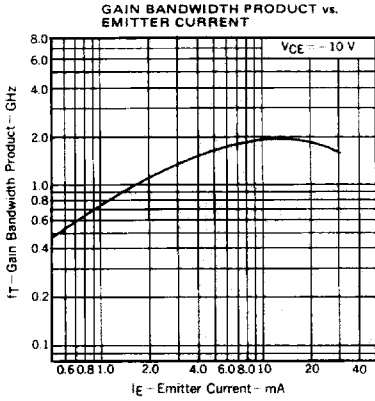
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CB0}			-100	nA	$V_{CB} = -8.0$ V, $I_E = 0$
Emitter Cutoff Current	I_{EB0}			-100	nA	$V_{EB} = -3.0$ V, $I_C = 0$
DC Current Gain	h_{FE1}^*	30	70			$V_{CE} = -1.0$ V, $I_C = -1.0$ mA
DC Current Gain	h_{FE2}^*	50	80	150		$V_{CE} = -1.0$ V, $I_C = -10$ mA
Collector Saturation Voltage	$V_{CE(sat)}^*$		-0.09	-0.20	V	$I_C = -10$ mA, $I_B = -1.0$ mA
Base Saturation Voltage	$V_{BE(sat)}^*$		-0.80	-0.95	V	$I_C = -10$ mA, $I_B = -1.0$ mA
Gain Bandwidth Product	f_T	800	1800		MHz	$V_{CE} = -10$ V, $I_E = 10$ mA
Output Capacitance	C_{ob}		2.0	3.0	pF	$V_{CB} = -5.0$ V, $I_E = 0$, $f = 1.0$ MHz
Turn-on Time	t_{on}		9.0	20	ns	See Test Circuit
Storage Time	t_{stg}		16	40	ns	
Turn-off Time	t_{off}		19	40	ns	

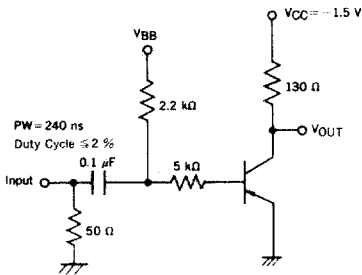
* Pulsed: PW \approx 350 μ s, Duty Cycle \approx 2 %

h_{FE2} Classification

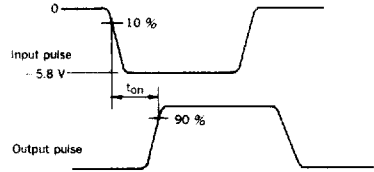
Making	Y33	Y34
h_{FE2}	50 to 100	75 to 150



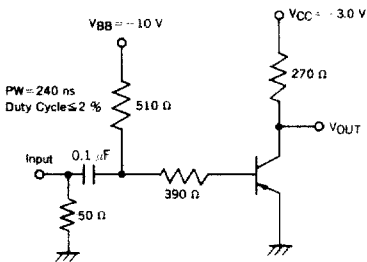
SWITCHING TIME TEST CIRCUIT



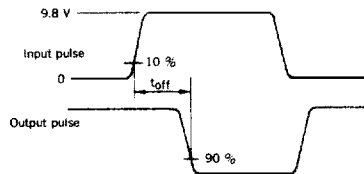
t_{on}, t_{off} Switching



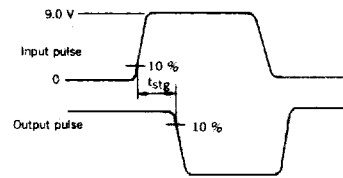
t_{on} Voltage Waveforms ($V_{BB} = \text{GROUND}$)



t_{stg} Switching



t_{off} Voltage Waveforms ($V_{BB} = -8.0\text{ V}$)



t_{stg} Voltage Waveforms

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

