

SILICON TRANSISTOR

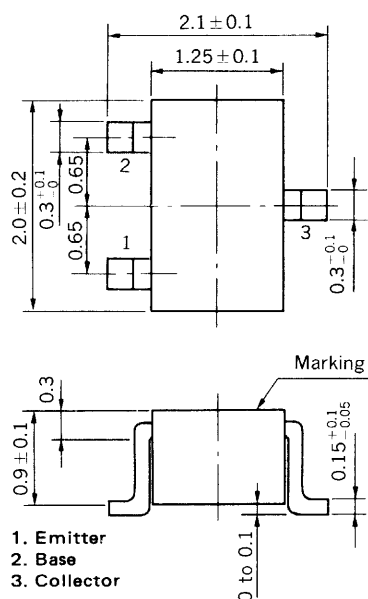
2SC4175

HIGH SPEED SWITCHING

NPN SILICON EPITAXIAL TRANSISTOR

PACKAGE DIMENSIONS

in millimeters



FEATURE

- High Speed : $t_{stg} = 20$ ns MAX.

ABSOLUTE MAXIMUM RATINGS

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

Collector to Base Voltage	V_{CBO}	40	V
Collector to Emitter Voltage	V_{CEO}	20	V
Emitter to Base Voltage	V_{EBO}	5	V
Collector Current (DC)	I_C	200	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 ($T_a = 25^\circ\text{C}$)

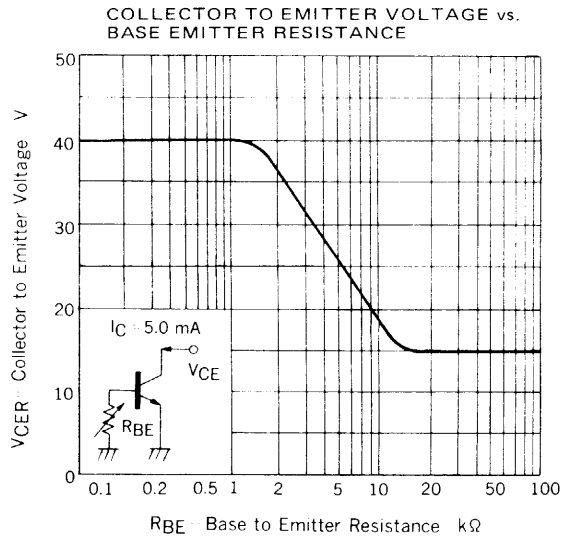
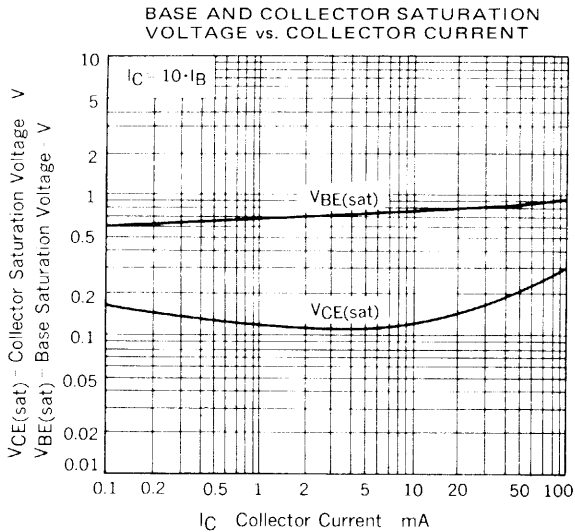
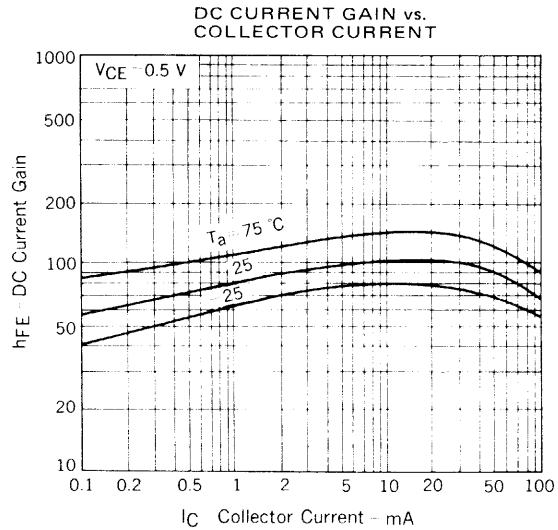
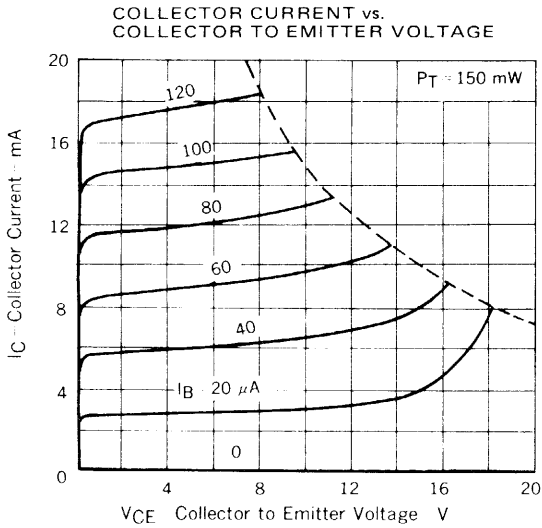
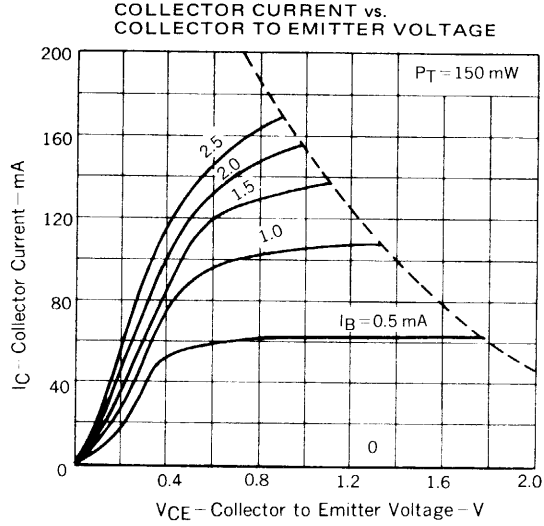
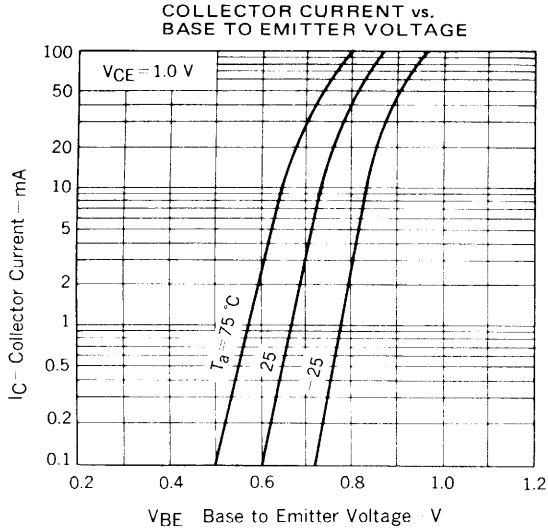
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			100	nA	$V_{CB} = 30$ V, $I_E = 0$
Emitter Cutoff Current	I_{EBO}			100	nA	$V_{EB} = 4.0$ V, $I_C = 0$
DC Current Gain	h_{FE1}^*	40	80	180		$V_{CE} = 0.5$ V, $I_C = 1.0$ mA
Collector Saturation Voltage	$V_{CE(sat)}^*$		0.13	0.25	V	$I_C = 10$ mA, $I_B = 1.0$ mA
Base Saturation Voltage	$V_{BE(sat)}^*$		0.74	0.85	V	$I_C = 10$ mA, $I_B = 1.0$ mA
Gain Bandwidth Product	f_T	200	500		MHz	$V_{CE} = 10$ V, $I_E = -10$ mA
Output Capacitance	C_{ob}		3.0	6.0	pF	$V_{CB} = 10$ V, $I_E = 0$, $f = 1.0$ MHz
Turn-on Time	t_{on}		12	20	ns	See Test Circuit
Storage Time	t_{stg}		7	20	ns	
Turn-off Time	t_{off}		18	40	ns	

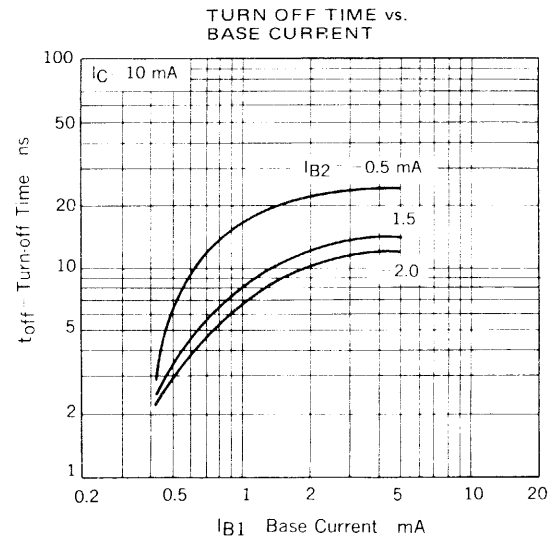
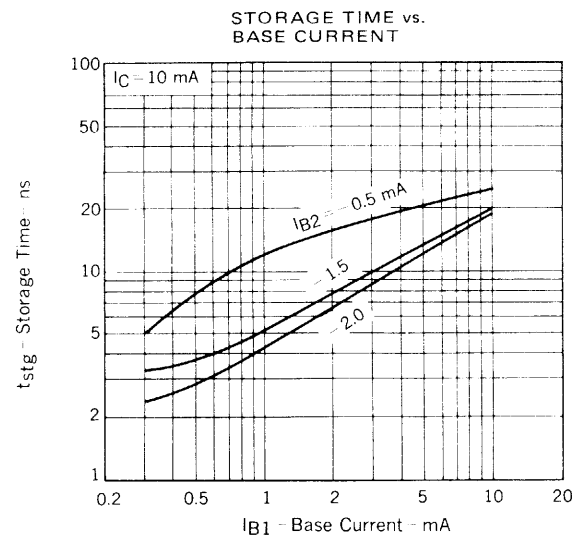
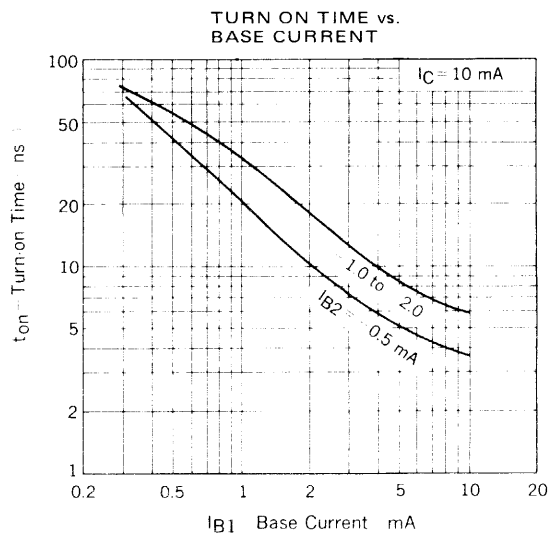
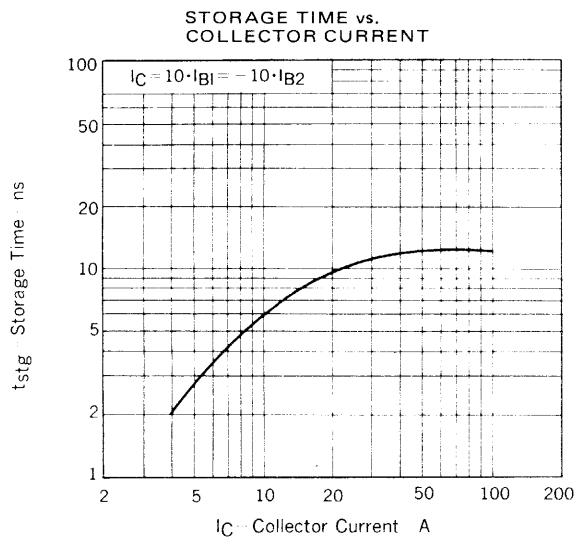
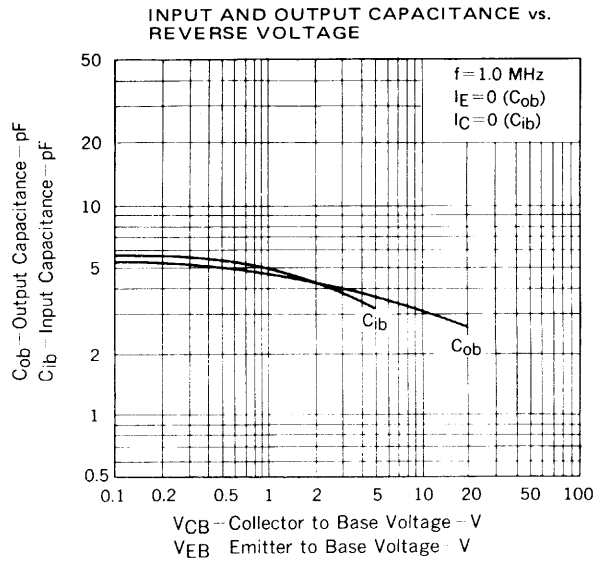
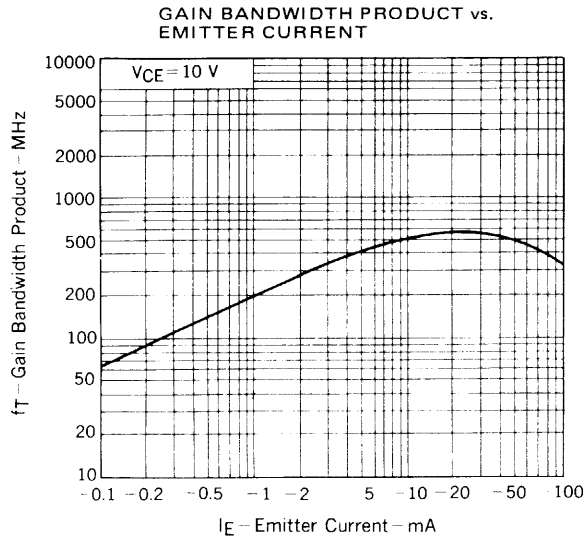
* Pulsed: $PW \leq 350$ μs , Duty Cycle $\leq 2\%$

h_{FE} Classification

Marking	B2	B3	B4
h_{FE}	40 to 80	60 to 120	90 to 180

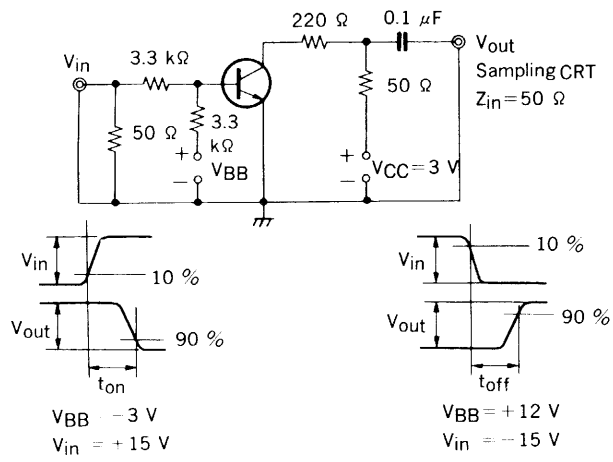
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)





SWITCHING TIME TEST CIRCUIT

t_{on}, t_{off} TEST CIRCUIT



t_{stg} TEST CIRCUIT

