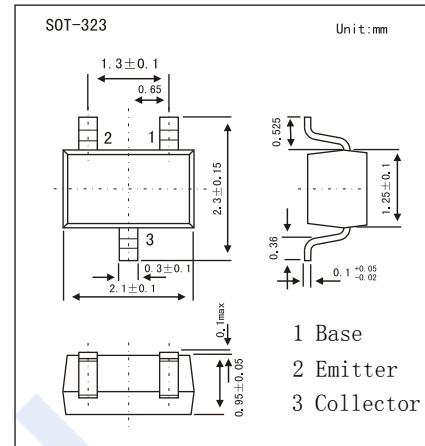


PNP Transistors

2SA1954

■ Features

- Low saturation voltage: $V_{CE(sat)}(1) = -15\text{ mV (typ.)}$
@ $I_C = -10\text{ mA}/I_B = -0.5\text{ mA}$
- Large collector current: $I_C = -500\text{ mA (max)}$

■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	-15	V
Collector - Emitter Voltage	V_{CEO}	-12	
Emitter - Base Voltage	V_{EBO}	-5	
Collector Current - Continuous	I_C	-500	mA
Base Current	I_B	-50	
Collector Power Dissipation	P_C	100	mW
Junction Temperature	T_J	125	$^\circ\text{C}$
Storage Temperature range	T_{stg}	-55 to 125	

■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	$I_C = -100\text{ }\mu\text{A}, I_E = 0$	-15			V
Collector- emitter breakdown voltage	V_{CEO}	$I_C = -1\text{ mA}, I_B = 0$	-12			
Emitter - base breakdown voltage	V_{EBO}	$I_E = -100\text{ }\mu\text{A}, I_C = 0$	-5			
Collector-base cut-off current	I_{CBO}	$V_{CB} = -15\text{ V}, I_E = 0$			-0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -5\text{ V}, I_C = 0$			-0.1	
Collector-emitter saturation voltage	$V_{CE(sat)1}$	$I_C = -10\text{ mA}, I_B = -0.5\text{ mA}$		-15	-30	mV
	$V_{CE(sat)2}$	$I_C = -200\text{ mA}, I_B = -10\text{ mA}$		-110	-250	
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = -200\text{ mA}, I_B = -10\text{ mA}$		-0.87	-1.2	V
DC current gain	h_{FE}	$V_{CE} = -2\text{ V}, I_C = -10\text{ mA}$	300		1000	
Collector-emitter on resistance	R_{on}	$I_B = -1\text{ mA}, V_{in} = -1\text{ V}_{rms}, f = 1\text{ KHz}$		0.9		Ω
Turn-ON Time	t_{on}	See specified Test Circuit.		40		ns
Storage Time	t_{stg}			280		
Turn-OFF Time	t_{off}			45		
Collector output capacitance	C_{ob}	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$		4.2		pF
Transition frequency	f_T	$V_{CE} = -2\text{ V}, I_C = -10\text{ mA}$	80	130		MHz

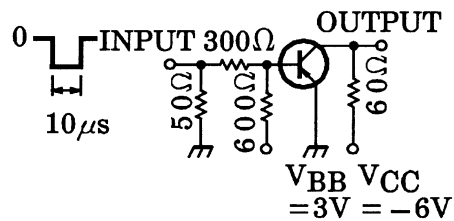
■ Classification of h_{FE}

Type	2SA1954-A	2SA1954-B
Range	300-600	500-1000
Marking	GA	GB

PNP Transistors

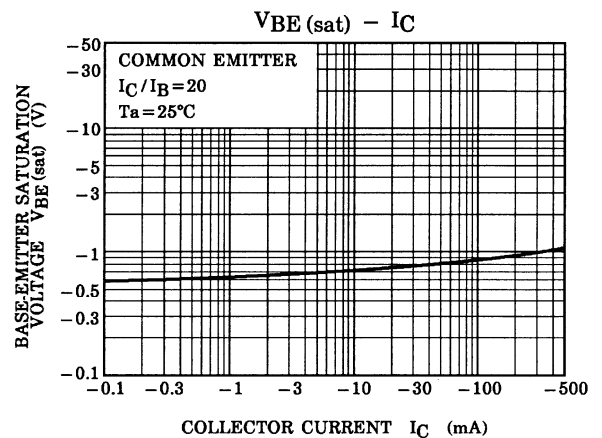
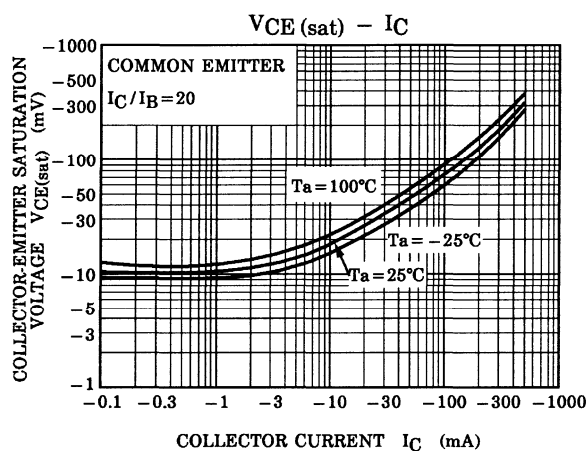
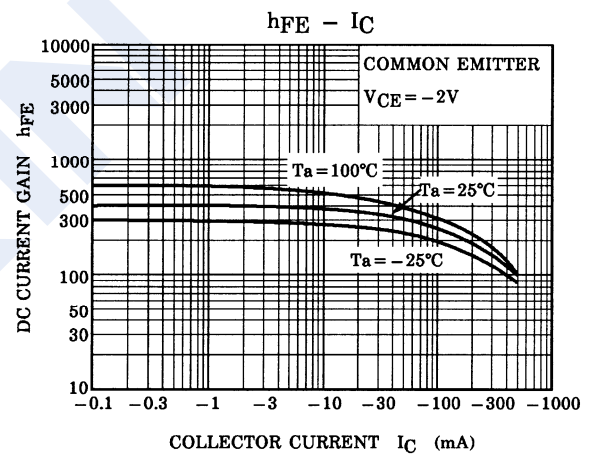
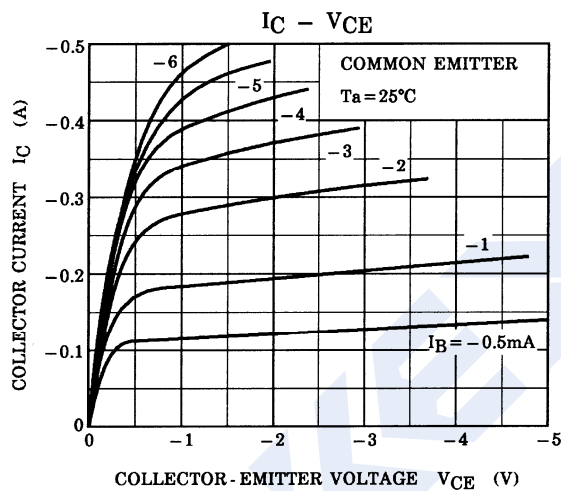
2SA1954

Switching Time Test Circuit



$$I_{B1} = -I_{B2} = 5 \text{ mA}$$

■ Typical Characteristics



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■ Typical Characteristics

