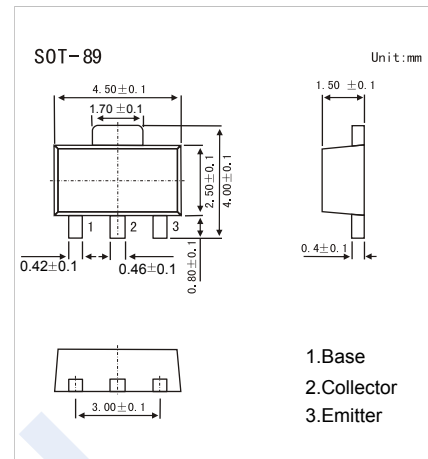


NPN Transistors

2SC3646

■ Features

- High breakdown voltage and large current capacity.
- Fast switching speed.
- Complementary to 2SA1416

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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CB0}	120	V
Collector - Emitter Voltage	V_{CE0}	100	
Emitter - Base Voltage	V_{EB0}	6	
Collector Current - Continuous	I_C	1	A
Peak Collector Current	I_{CM}	2	
Collector Power Dissipation	P_C	500	mW
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CB0}	$I_C = 100 \mu\text{A}$, $I_E = 0$	120			V
Collector- emitter breakdown voltage	V_{CE0}	$I_C = 1 \text{ mA}$, $R_{BE} = \infty$	100			
Emitter - base breakdown voltage	V_{EB0}	$I_E = 100 \mu\text{A}$, $I_C = 0$	6			
Collector-base cut-off current	I_{CBO}	$V_{CB} = 100 \text{ V}$, $I_E = 0$			0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 4 \text{ V}$, $I_C = 0$			0.1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 400 \text{ mA}$, $I_B = 40 \text{ mA}$		0.1	0.4	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 400 \text{ mA}$, $I_B = 40 \text{ mA}$		0.85	1.2	
DC current gain	h_{FE}	$V_{CE} = 5 \text{ V}$, $I_C = 100 \text{ mA}$	100		400	
Turn-ON Time	t_{on}	See specified Test Circuit.		80		ns
Storage Time	t_{stg}			850		
Fall Time	t_f			50		
Collector output capacitance	C_{ob}	$V_{CB} = 10 \text{ V}$, $f = 1 \text{ MHz}$		8.5		pF
Transition frequency	f_T	$V_{CE} = 10 \text{ V}$, $I_C = 100 \text{ mA}$		120		MHz

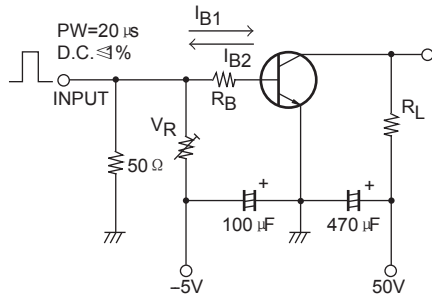
■ Classification of h_{FE}

Type	2SC3646-R	2SC3646-R	2SC3646-T
Range	100-200	140-280	200-400
Marking	CBR	CBS	CBT

NPN Transistors

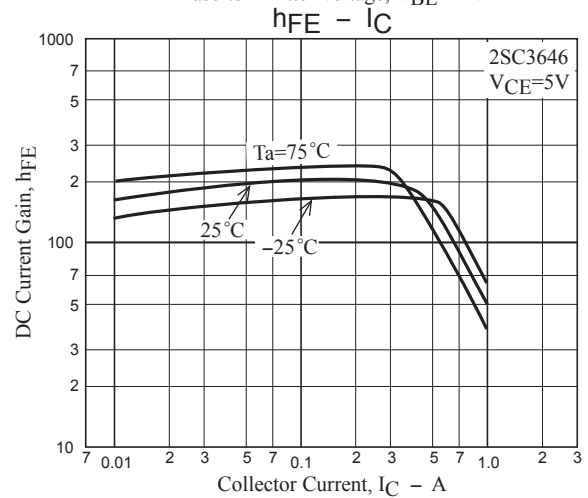
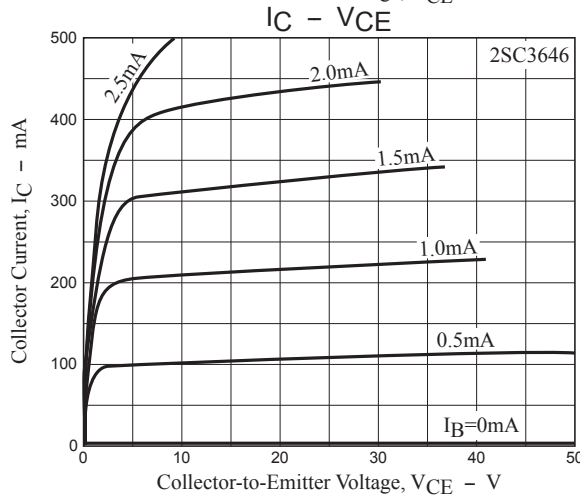
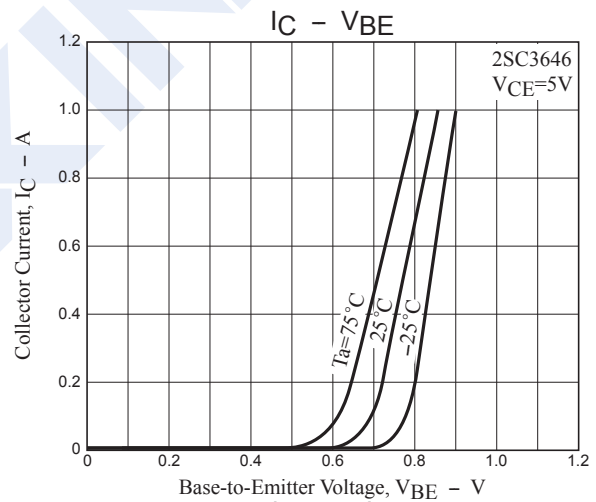
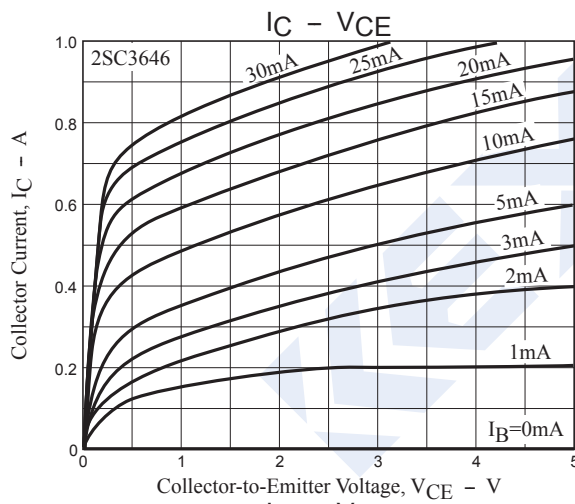
2SC3646

Switching Time Test Circuit



$I_C = 10I_{B1} = -10I_{B2} = 400\text{mA}$
 (For PNP, the polarity is reversed)

■ Typical Characteristics



NPN Transistors

2SC3646

Typical Characteristics

