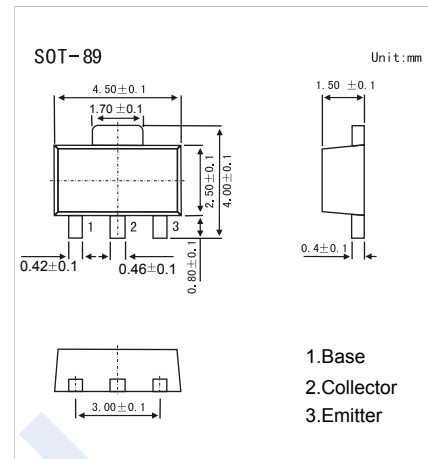


## NPN Transistors

### 2SC3646-HF

#### ■ Features

- High breakdown voltage and large current capacity.
- Fast switching speed.
- Complementary to 2SA1416-HF
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish



#### ■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V <sub>CB0</sub>	120	V
Collector - Emitter Voltage	V <sub>CE0</sub>	100	
Emitter - Base Voltage	V <sub>EB0</sub>	6	
Collector Current - Continuous	I <sub>C</sub>	1	A
Peak Collector Current	I <sub>CM</sub>	2	
Collector Power Dissipation	P <sub>C</sub>	500	mW
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to 150	

#### ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V <sub>CB0</sub>	I <sub>C</sub> = 100 μA, I <sub>E</sub> = 0	120			V
Collector- emitter breakdown voltage	V <sub>CE0</sub>	I <sub>C</sub> = 1 mA, R <sub>BE</sub> = ∞	100			
Emitter - base breakdown voltage	V <sub>EB0</sub>	I <sub>E</sub> = 100 μA, I <sub>C</sub> = 0	6			
Collector-base cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 100 V, I <sub>E</sub> = 0			0.1	μA
Emitter cut-off current	I <sub>EB0</sub>	V <sub>EB</sub> = 4V, I <sub>C</sub> =0			0.1	
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =400 mA, I <sub>B</sub> =40mA		0.1	0.4	V
Base - emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =400 mA, I <sub>B</sub> =40mA		0.85	1.2	
DC current gain	h <sub>FE</sub>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 100mA	100		400	
Turn-ON Time	t <sub>on</sub>	See specified Test Circuit.		80		ns
Storage Time	t <sub>stg</sub>			850		
Fall Time	t <sub>f</sub>			50		
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10V, f=1MHz		8.5		pF
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = 10V, I <sub>C</sub> = 100mA		120		MHz

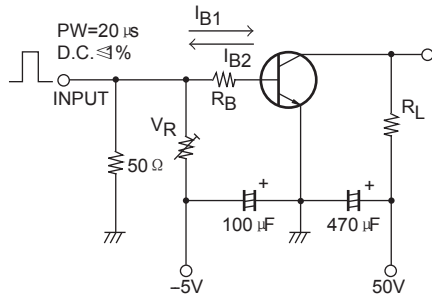
#### ■ Classification of h<sub>FE</sub>

Type	2SC3646-R-HF	2SC3646-S-HF	2SC3646-T-HF
Range	100-200	140-280	200-400
Marking	CBR <sub>F</sub>	CBS <sub>F</sub>	CBT <sub>F</sub>

### NPN Transistors

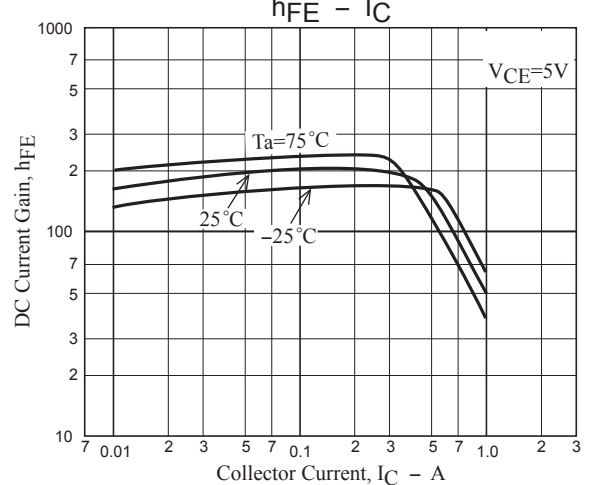
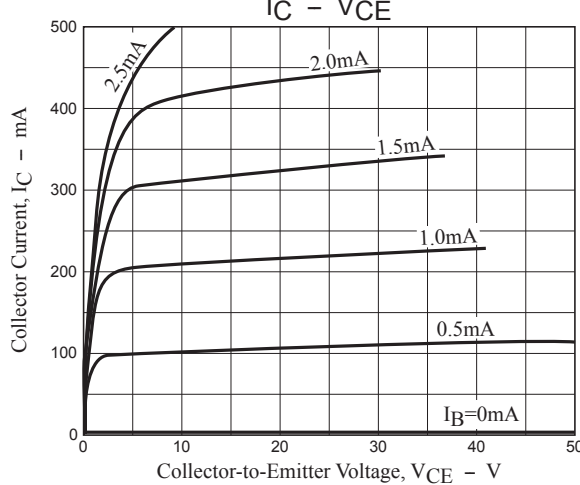
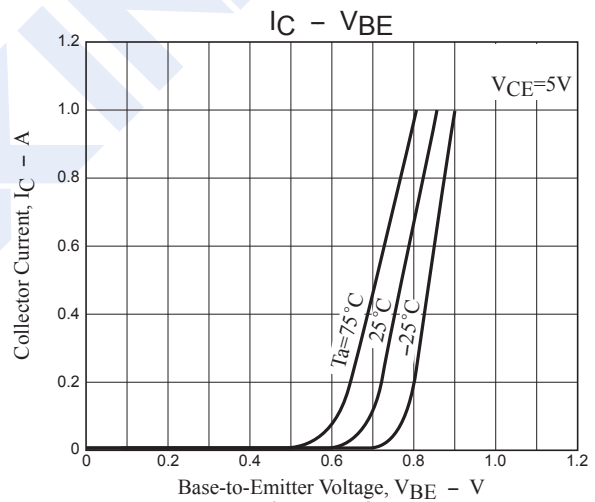
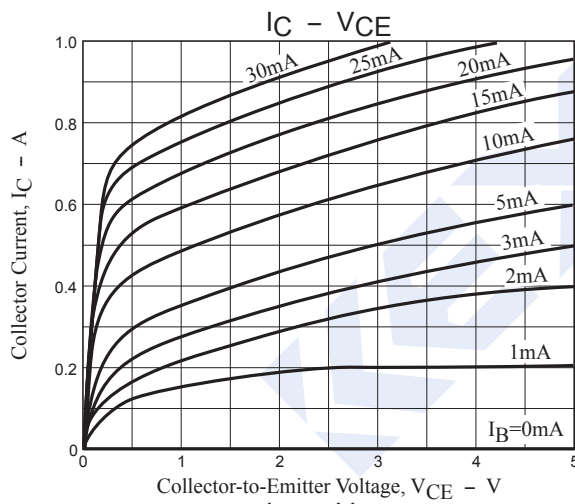
### 2SC3646-HF

#### Switching Time Test Circuit



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

#### Typical Characteristics



## NPN Transistors

### 2SC3646-HF

■ Typical Characteristics

