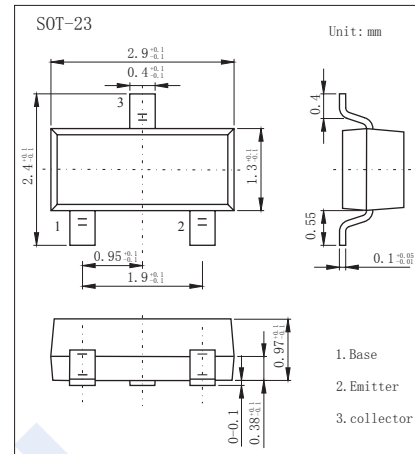


## NPN Transistors

### 2SC4168

#### ■ Features

- Fast switching speed.
- High gain-bandwidth product.
- Low saturation voltage.
- Complementary to 2SA1607.



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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V <sub>CB0</sub>	40	V
Collector - Emitter Voltage	V <sub>CEO</sub>	20	
Emitter - Base Voltage	V <sub>EB0</sub>	5	
Collector Current - Continuous	I <sub>C</sub>	150	mA
Peak Collector Current	I <sub>CP</sub>	300	
Collector Power Dissipation	P <sub>C</sub>	200	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	40			V
Collector- emitter breakdown voltage	V <sub>CEO</sub>	I <sub>C</sub> = 1 mA, R <sub>BE</sub> = ∞	20			
Emitter - base breakdown voltage	V <sub>EB0</sub>	I <sub>E</sub> = 100 μA, I <sub>C</sub> = 0	5			
Collector-base cut-off current	I <sub>CB0</sub>	V <sub>CB</sub> = 30 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> = 10 mA, I <sub>B</sub> = 1mA		0.08	0.2	V
Base - emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1mA		0.72	1	
DC current gain	h <sub>FE</sub>	V <sub>CE</sub> = 1V, I <sub>C</sub> = 10mA	60		270	
Delay time	t <sub>d</sub>	See specified Test Circuit		11	20	ns
Rise time	t <sub>r</sub>			10	20	
Storage time	t <sub>s</sub>			70	180	
Fall time	t <sub>f</sub>			15	25	
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10V, f=1MHz		2.6		pF
Transition frequency	f <sub>r</sub>	V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA		700		MHz

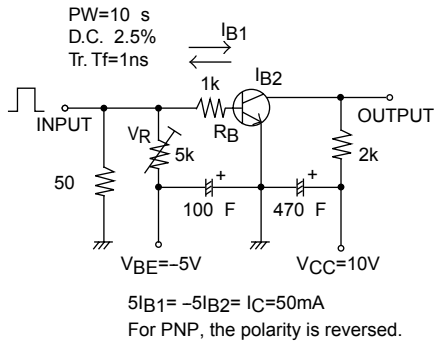
#### ■ Classification of h<sub>FE</sub>

Type	2SC4168-GT3	2SC4168-GT4	2SC4168-GT5
Range	60-120	90-180	135-270
Marking	GT3	GT4	GT5

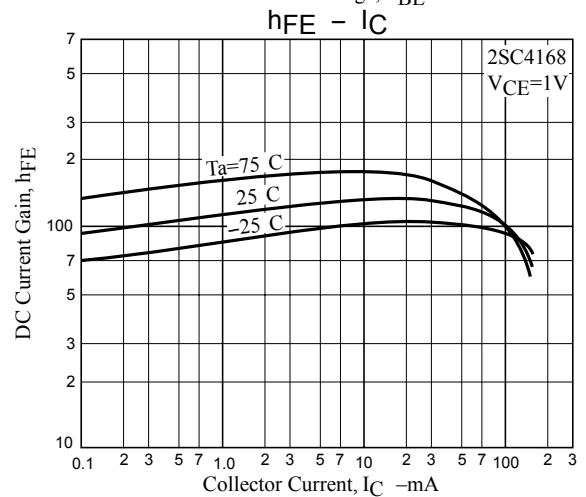
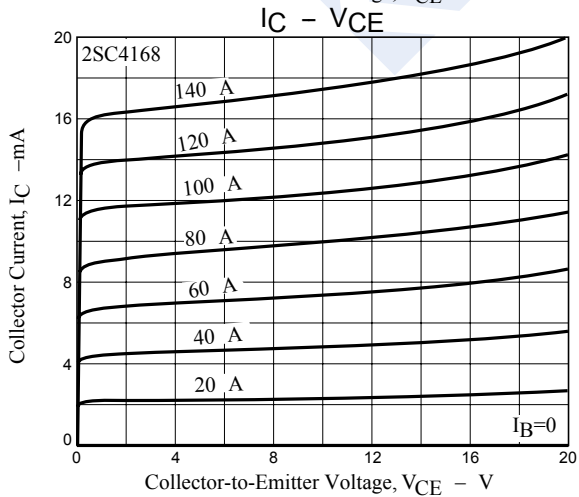
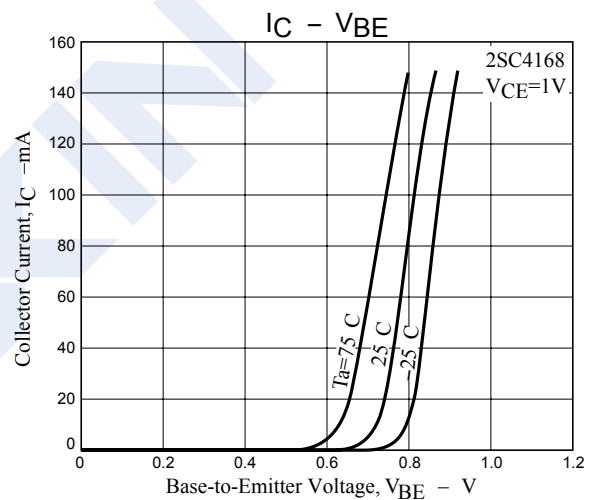
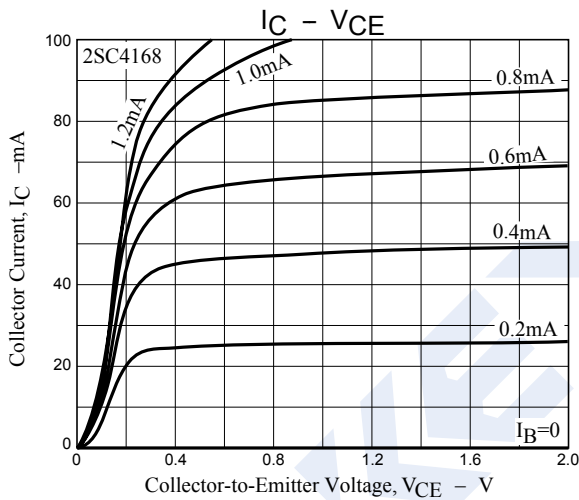
# NPN Transistors

## 2SC4168

### Switching Time Test Circuit



### Typical Characteristics



## NPN Transistors

### 2SC4168

■ Typical Characteristics

