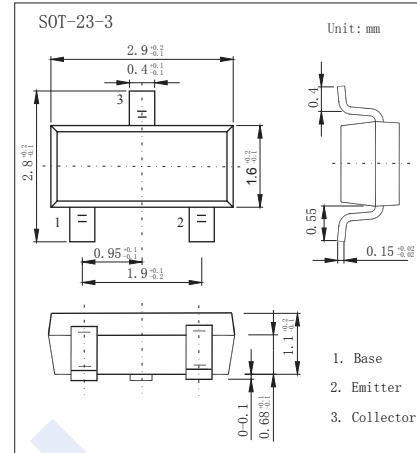


## NPN Transistors

### 2SC4104

#### ■ Features

- High  $f_r$
- Small reverse transfer capacitance
- Complementary to 2SA1580



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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CB0}$	70	V
Collector - Emitter Voltage	$V_{CE0}$	60	
Emitter - Base Voltage	$V_{EB0}$	4	
Collector Current - Continuous	$I_C$	50	mA
Peak Collector Current	$I_{CP}$	100	
Collector Power Dissipation	$P_C$	200	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	$V_{CB0}$	$I_C = 100 \mu\text{A}$ , $I_E = 0$	70			V
Collector-emitter breakdown voltage	$V_{CE0}$	$I_C = 1 \text{ mA}$ , $I_B = 0$	60			
Emitter - base breakdown voltage	$V_{EB0}$	$I_E = 100 \mu\text{A}$ , $I_C = 0$	4			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = 40 \text{ V}$ , $I_E = 0$			0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 3 \text{ V}$ , $I_C = 0$			1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 20 \text{ mA}$ , $I_B = 2 \text{ mA}$			0.5	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 20 \text{ mA}$ , $I_B = 2 \text{ mA}$			1	
DC current gain	$h_{FE}$	$V_{CE} = 10$ , $I_C = 10 \text{ mA}$	60		270	
Base-collector time constant	$r_{bb}, C_c$	$V_{CE} = 10 \text{ V}$ , $I_C = 10 \text{ mA}$		8		ps
Reverse transfer capacitance	$C_{re}$	$V_{CB} = 10 \text{ V}$ , $f = 1 \text{ MHz}$		1		pF
Output capacitance	$C_{ob}$	$V_{CB} = 10 \text{ V}$ , $f = 1 \text{ MHz}$		1.3		
Transition frequency	$f_r$	$V_{CE} = 10 \text{ V}$ , $I_E = 10 \text{ mA}$	350	700		MHz

#### ■ Classification of $h_{FE}$

Type	2SC4104-Y3	2SC4104-Y4	2SC4104-Y5
Range	60-120	90-180	135-270
Marking	YY3	YY4	YY5