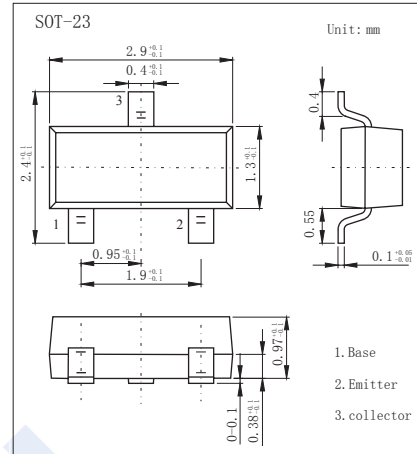


## NPN Transistors

### 2SC3513

#### ■ Features

- Collector Current Capability  $I_c=50\text{mA}$
- Collector Emitter Voltage  $V_{CE0}=11\text{V}$



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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CBO}$	15	V
Collector - Emitter Voltage	$V_{CEO}$	11	
Emitter - Base Voltage	$V_{EBO}$	2	
Collector Current - Continuous	$I_c$	50	mA
Collector Power Dissipation	$P_C$	150	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	$V_{CBO}$	$I_c = 100 \mu\text{A}$ , $I_E = 0$	15			V
Collector- emitter breakdown voltage	$V_{CEO}$	$I_c = 1 \text{ mA}$ , $I_B = 0$	11			
Emitter - base breakdown voltage	$V_{EBO}$	$I_E = 100 \mu\text{A}$ , $I_c = 0$	2			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = 12\text{V}$ , $I_E = 0$			1	$\mu\text{A}$
Collector-emitter cut-off current	$I_{CEO}$	$V_{CE} = 10\text{V}$ , $I_B = 0$			1	
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 1\text{V}$ , $I_c = 0$			1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_c = 50 \text{ mA}$ , $I_B = 5\text{mA}$			0.5	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_c = 50 \text{ mA}$ , $I_B = 5\text{mA}$			1.2	
DC current gain	$h_{FE}$	$V_{CE} = 5\text{V}$ , $I_c = 20\text{mA}$	50		250	
Power gain	PG	$V_{CE} = 5\text{V}$ , $I_c = 20\text{mA}$ , $f = 900\text{MHz}$		10		dB
Noise figure	NF	$V_{CE} = 5\text{V}$ , $I_c = 5\text{mA}$ , $f = 900\text{MHz}$		1.6		
Collector output capacitance	$C_{ob}$	$V_{CB} = 5\text{V}$ , $I_E = 0$ , $f = 1\text{MHz}$			1.5	pF
Transition frequency	$f_T$	$V_{CE} = 5\text{V}$ , $I_c = 20\text{mA}$		6		GHz

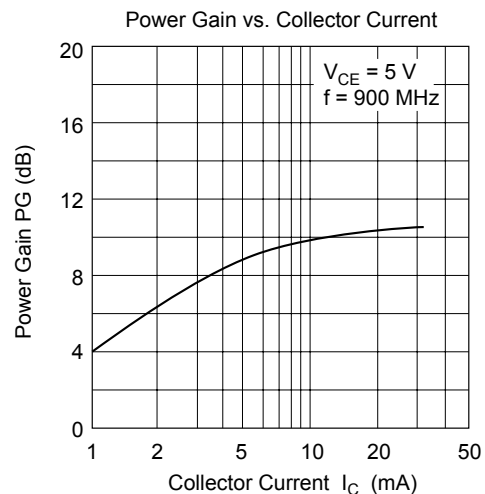
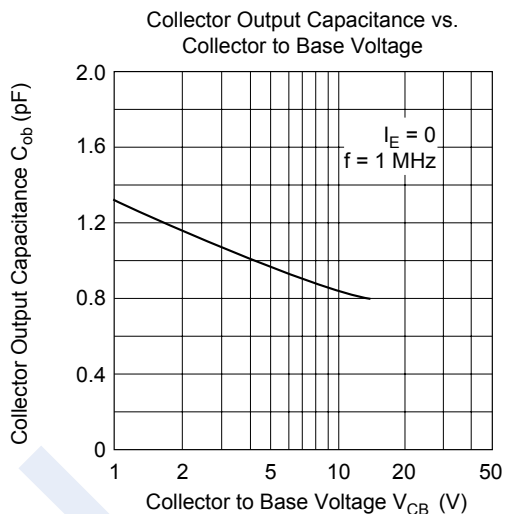
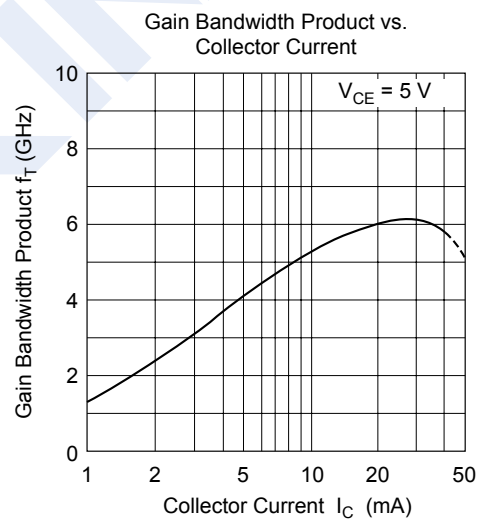
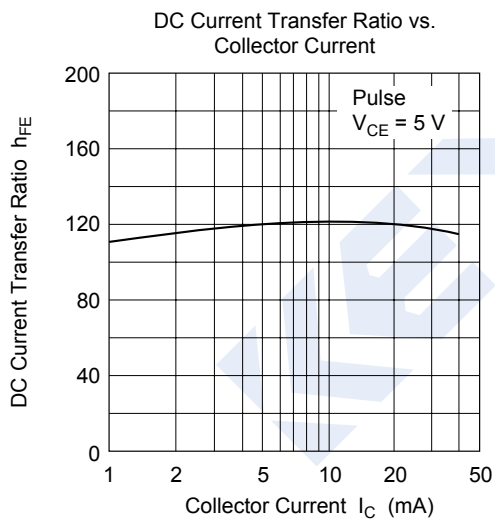
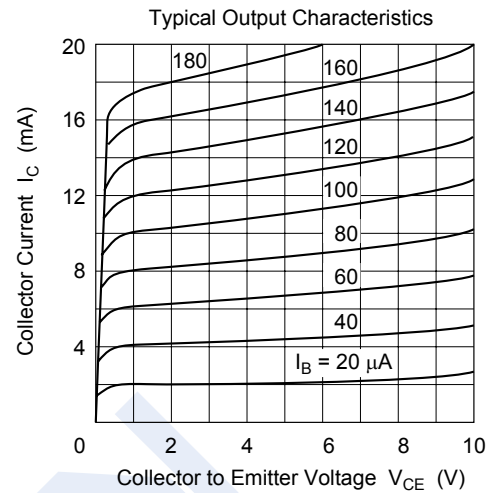
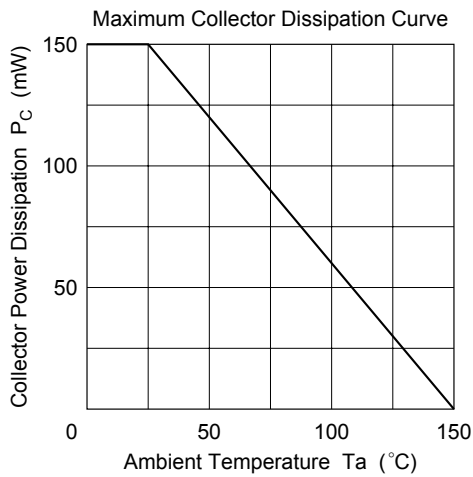
#### ■ Marking

Marking	IS*
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## NPN Transistors

## 2SC3513

## ■ Typical Characteristics



## NPN Transistors

### 2SC3513

#### ■ Typical Characteristics

