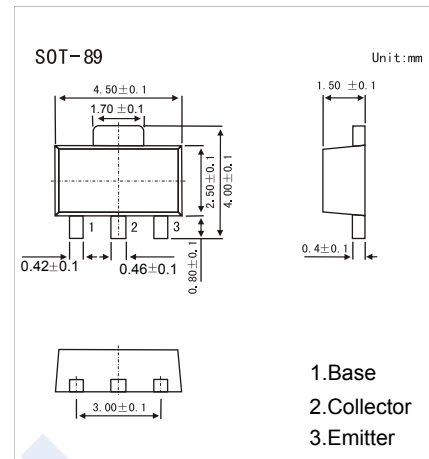


## PNP Transistors

### 2SA1213

#### ■ Features

- Low Saturation Voltage:  $V_{CE(sat)} = -0.5V$  (max) ( $I_C = -1A$ )
- High Speed Switching Time:  $t_{stg} = 1.0\mu s$  (typ.)
- Small Flat Package
- $P_c = 1$  to 2W (mounted on ceramic substrate)
- Complementary to 2SC2873



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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CBO}$	-50	V
Collector - Emitter Voltage	$V_{CEO}$	-50	
Emitter - Base Voltage	$V_{EBO}$	-5	
Collector Current - Continuous	$I_C$	-2	A
Base Current - Continuous	$I_B$	-0.4	
Collector Power Dissipation	$P_C$	500	mW
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature range	$T_{stg}$	-55 to 150	

#### ■ Electrical Characteristics $T_a = 25^\circ C$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CBO}$	$I_C = -100 \mu A, I_E = 0$	-50			V
Collector- emitter breakdown voltage	$V_{CEO}$	$I_C = -10 mA, I_B = 0$	-50			
Emitter - base breakdown voltage	$V_{EBO}$	$I_E = -100 \mu A, I_C = 0$	-5			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = -50 V, I_E = 0$			-100	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -5V, I_C = 0$			-100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -1 A, I_B = -50mA$			-0.5	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = -1 A, I_B = -50mA$			-1.2	
DC current gain	$h_{FE(1)}$	$V_{CE} = -2V, I_C = -0.5A$	70		240	
	$h_{FE(2)}$	$V_{CE} = -2V, I_C = -2A$	20			
Turn-on time	$t_{on}$	See Test Circuit.		0.1		us
Storage time	$t_{stg}$			1		
Fall time	$t_f$			0.1		
Collector output capacitance	$C_{ob}$	$V_{CB} = -10V, I_E = 0, f = 1MHz$		40		pF
Transition frequency	$f_T$	$V_{CE} = -2V, I_C = -0.5A$		120		MHz

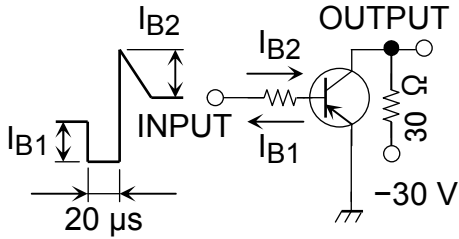
#### ■ Classification of $h_{fe(1)}$

Type	2SA1213-O	2SA1213-Y
Range	70-140	120-240
Marking	NO	NY

### PNP Transistors

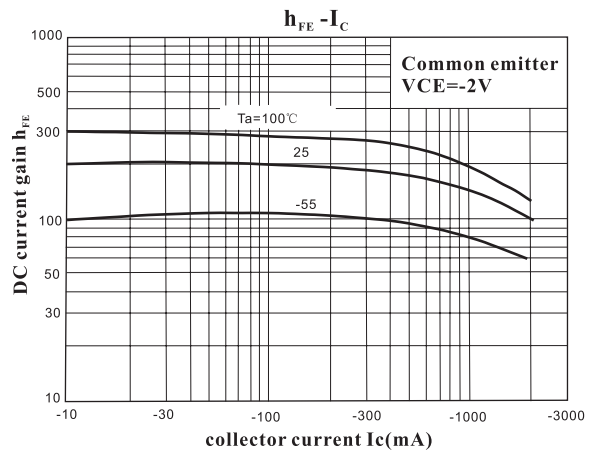
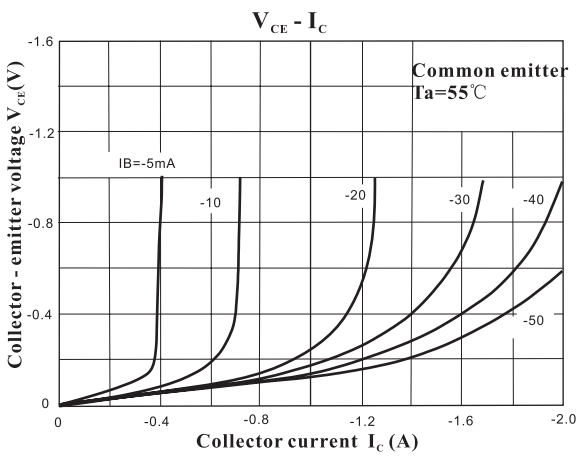
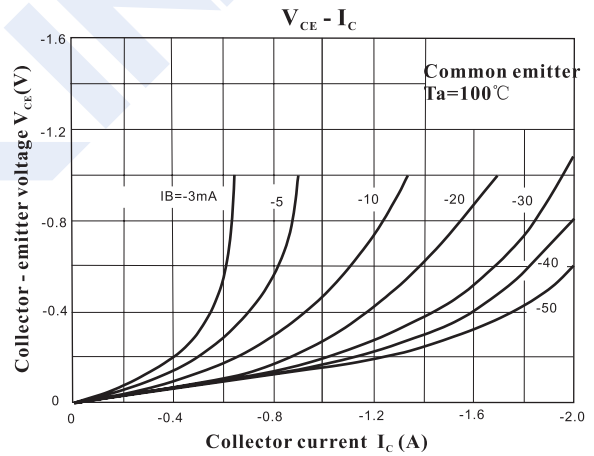
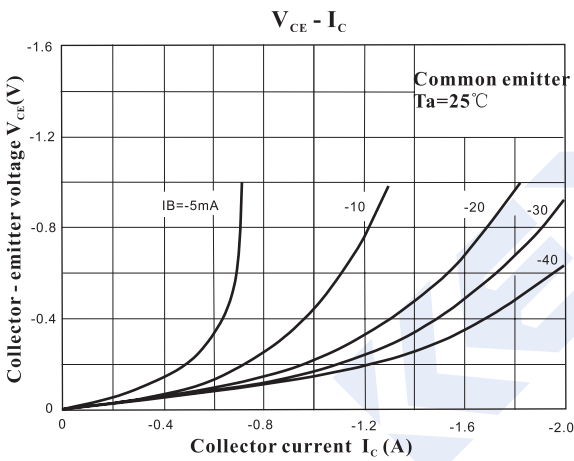
### 2SA1213

■ Test Circuit



$I_{B1} = 0.05 \text{ A}, I_{B2} = 0.05 \text{ A}$   
 DUTY CYCLE  $\leq 1\%$

■ Typical Characteristics



# PNP Transistors

## 2SA1213

### Typical Characteristics

