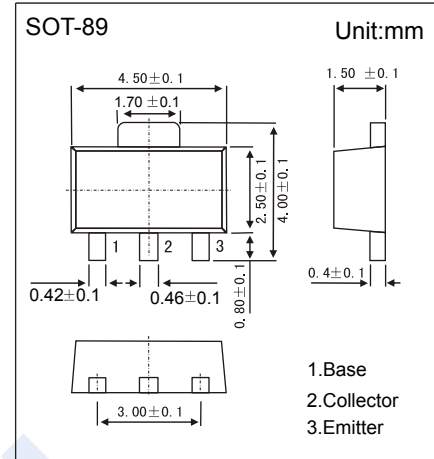


NPN Transistors

2SD2210

■ Features

- Collector Current Capability $I_C=0.5A$
- Collector Emitter Voltage $V_{CE0}=20V$



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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	25	V
Collector - Emitter Voltage	V_{CEO}	20	
Emitter - Base Voltage	V_{EBO}	12	
Collector Current - Continuous	I_C	0.5	A
Collector Current - Pulse	I_{CP}	1	
Collector Power Dissipation	P_C	1	W
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}	$I_C = 100 \mu A, I_E = 0$	25			V
Collector- emitter breakdown voltage	V_{CEO}	$I_C = 1 mA, I_B = 0$	20			
Emitter - base breakdown voltage	V_{EBO}	$I_E = 100 \mu A, I_C = 0$	12			
Collector-base cut-off current	I_{CBO}	$V_{CB} = 25 V, I_E = 0$			1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 5 V, I_C = 0$			0.1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 500 mA, I_B = 20 mA$			0.4	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 500 mA, I_B = 50 mA$			1.2	
DC current gain	h_{FE}	$V_{CE} = 2 V, I_C = 500 mA$	200		800	
		$V_{CE} = 2 V, I_C = 1 A$	60			
ON resistanse	R_{on}			1		Ω
Collector output capacitance	C_{ob}	$V_{CB} = 10 V, I_E = 0, f = 1 MHz$		10		pF
Transition frequency	f_T	$V_{CB} = 10 V, I_E = -50 mA, f = 200 MHz$		200		MHz

■ Classification of $h_{fe}(1)$

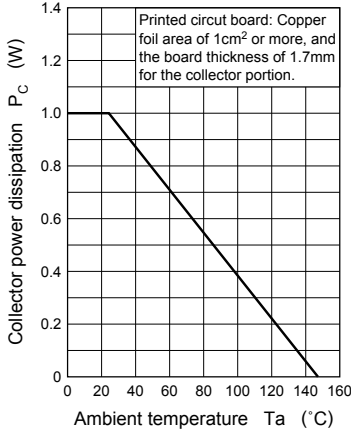
Type	2SD2210-R	2SD2210-S	2SD2210-T
Range	200-350	300-500	400-800
Marking	1KR	1KS	1KT

NPN Transistors

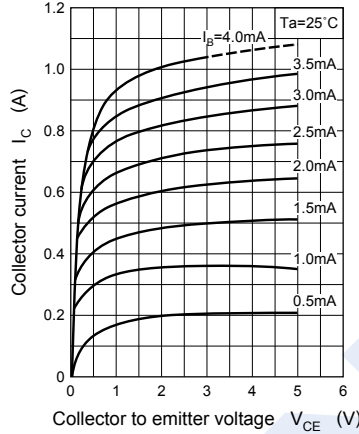
2SD2210

Typical Characteristics

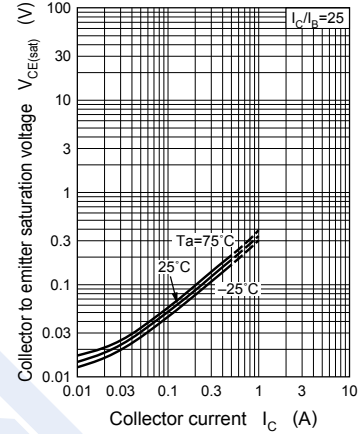
$P_C - T_a$



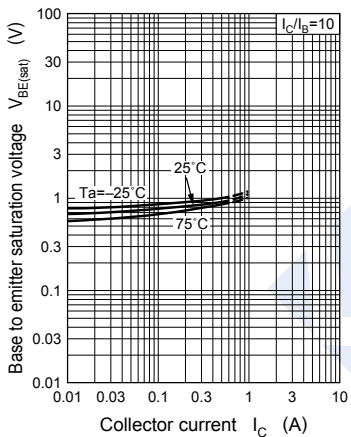
$I_C - V_{CE}$



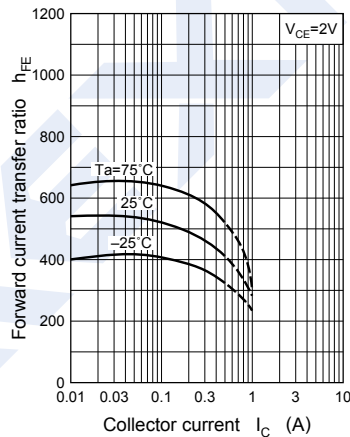
$V_{CE(sat)} - I_C$



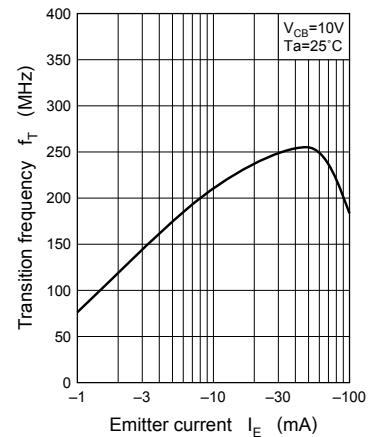
$V_{BE(sat)} - I_C$



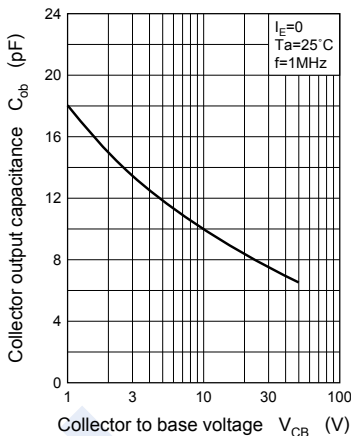
$h_{FE} - I_C$



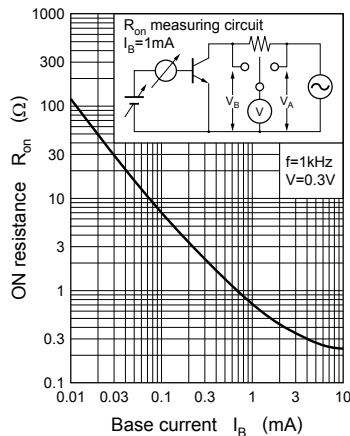
$f_T - I_E$



$C_{ob} - V_{CB}$



$R_{on} - I_B$



R_{on} Measurement circuit

