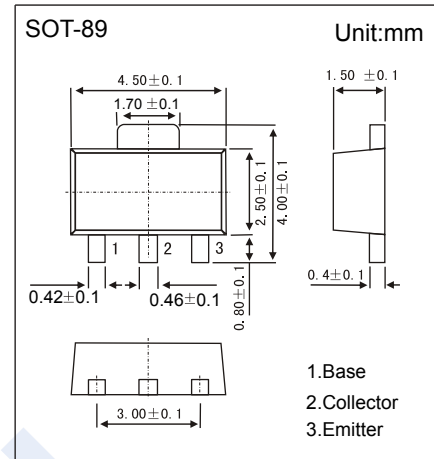


NPN Transistors

2SD2211

■ Features

- Collector Current Capability $I_C=1.5A$
- Collector Emitter Voltage $V_{CE0}=160V$

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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	160	V
Collector - Emitter Voltage	V_{CEO}	160	
Emitter - Base Voltage	V_{EBO}	5	
Collector Current - Continuous	I_C	1.5	A
Collector Current - Pulse	I_{CP}	3	
Collector Power Dissipation (Note.1)	P_C	0.5	W
		2	
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to 150	

Note.1 :Mounted on a $40 \times 40 \times 0.7$ mm ceramic substrate

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	$I_C = 100 \mu A, I_E = 0$	160			V
Collector- emitter breakdown voltage	V_{CEO}	$I_C = 1 mA, I_B = 0$	160			
Emitter - base breakdown voltage	V_{EBO}	$I_E = 100 \mu A, I_C = 0$	5			
Collector-base cut-off current	I_{CBO}	$V_{CB} = 120 V, I_E = 0$			1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 4 V, I_C = 0$			0.1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 1 A, I_B = 100 mA$			2	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 1 A, I_B = 100 mA$			1.5	
DC current gain	h_{FE}	$V_{CE} = 5 V, I_C = 100 mA$	120		390	
Collector output capacitance	C_{ob}	$V_{CB} = 10 V, I_E = 0, f = 1 MHz$		20		pF
Transition frequency	f_T	$V_{CE} = 5 V, I_E = 100 mA, f = 30 MHz$		80		MHz

■ Classification of h_{fe}

Type	2SD2211-Q	2SD2211-R
Range	120-270	180-390
Marking	DQ Q*	DQ R*

NPN Transistors 2SD2211

■ Typical Characteristics

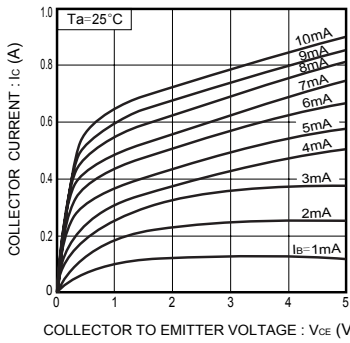


Fig.1 Ground emitter output characteristics

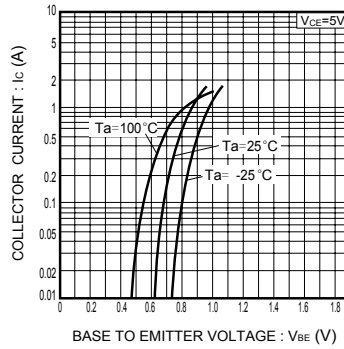


Fig.2 Ground emitter propagation characteristics

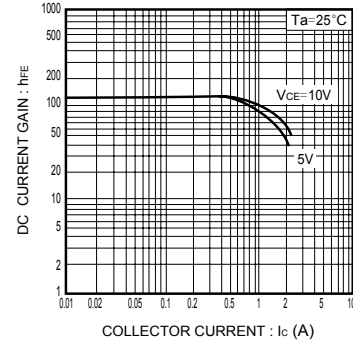


Fig.3 DC current gain vs. collector current (I)

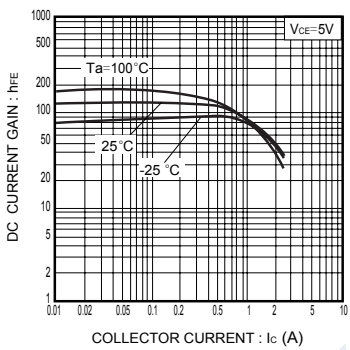


Fig.4 DC current gain vs. collector current (I)

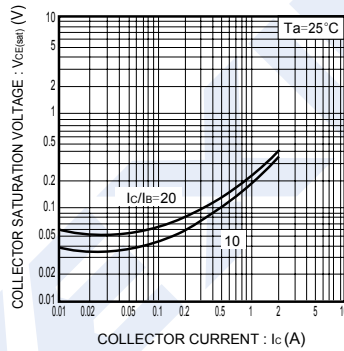


Fig.5 Collector-emitter saturation voltage vs. collector current

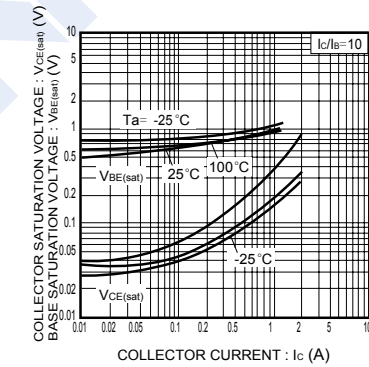


Fig.6 Collector-emitter saturation voltage vs. collector current
Base-emitter saturation voltage

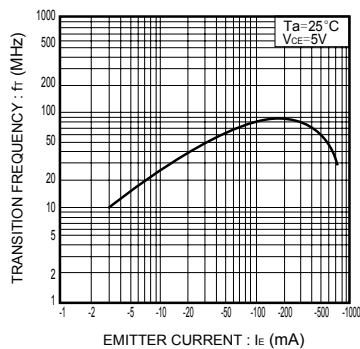


Fig.7 Gain bandwidth products vs. emitter current

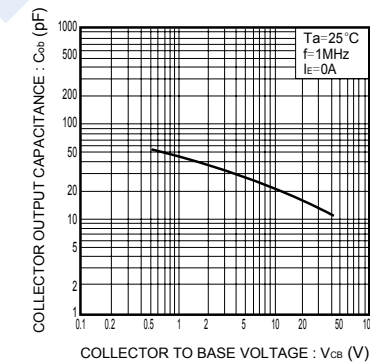


Fig.8 Collector output capacitance vs. collector-base voltage

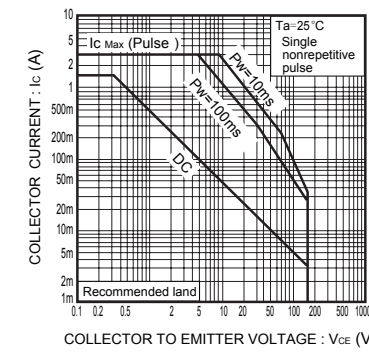


Fig.9 Safe operating area (2SD2211)