

## PNP Transistors

### 2SA1759

#### ■ Features

- Collector Current Capability  $I_C = -0.1A$
- Collector Emitter Voltage  $V_{CEO} = -400V$
- High switching speed
- Complements to 2SC4505

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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CBO}$	-400	V
Collector - Emitter Voltage	$V_{CEO}$	-400	
Emitter - Base Voltage	$V_{EBO}$	-7	
Collector Current - Continuous	$I_C$	-0.1	A
Collector Current - Pulse	$I_{CP}$	-0.2	
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	

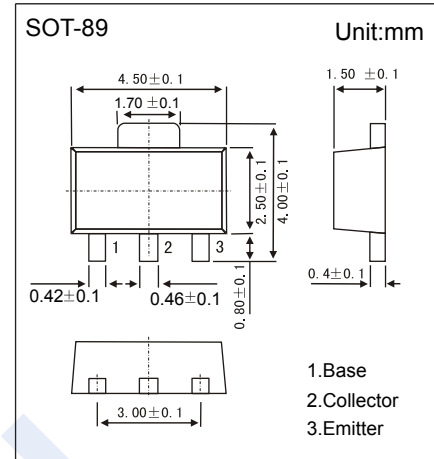
Note.1: When mounted on a 40×40×0.7 mm ceramic board.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CBO}$	$I_C = -100 \mu A, I_E = 0$	-400			V
Collector- emitter breakdown voltage	$V_{CEO}$	$I_C = -1 mA, I_B = 0$	-400			
Emitter - base breakdown voltage	$V_{EBO}$	$I_E = -100 \mu A, I_C = 0$	-7			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = -400 V, I_E = 0$			-10	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -6V, I_C = 0$			-1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -20 mA, I_B = -2mA$			-0.5	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = -20 mA, I_B = -2mA$			-1.5	
DC current gain	$h_{FE}$	$V_{CE} = -10V, I_C = -10mA$	82		180	
Turn-on time	$t_{on}$	$I_C = -100mA, R_L = 1.5k\Omega$ $I_{B1} = -I_{B2} = -10mA$ $V_{CC} = 150V$		0.7		$\mu s$
Storage time	$t_{stg}$			1.8		
Fall time	$t_f$			1		
Collector output capacitance	$C_{ob}$	$V_{CB} = -10V, I_E = 0, f = 1MHz$		13		pF
Transition frequency	$f_T$	$V_{CE} = -10V, I_E = -10mA, f = 5MHz$		12		MHz

#### ■ Classification of $h_{FE}$

Range	82-180
Marking	AHP



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### ■ Typical Characteristics

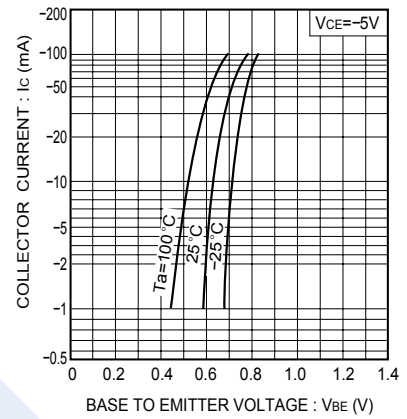
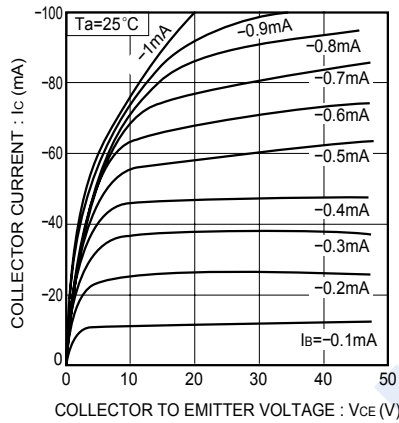
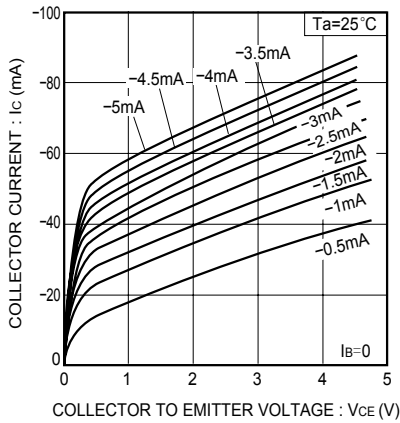


Fig.1 Ground emitter output characteristics ( I ) Fig.2 Ground emitter output characteristics ( II ) Fig.3 Ground emitter propagation characteristics

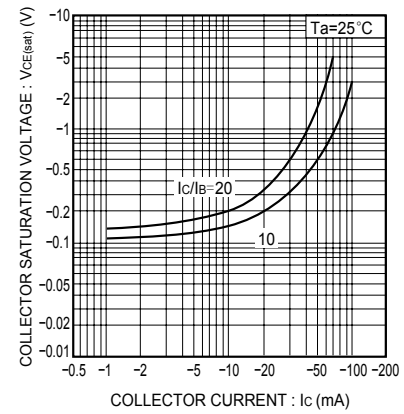
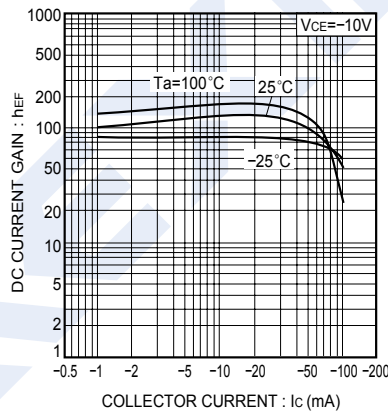
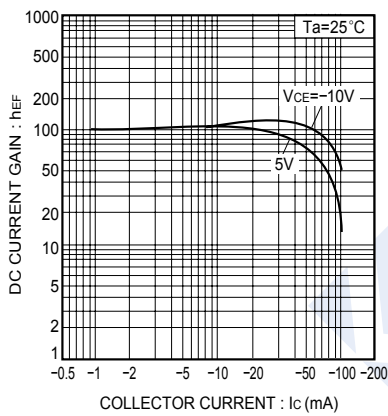


Fig.4 DC current gain vs. collector current ( I ) Fig.5 DC current gain vs. collector current ( II ) Fig.6 Collector-emitter saturation voltage vs. collector current

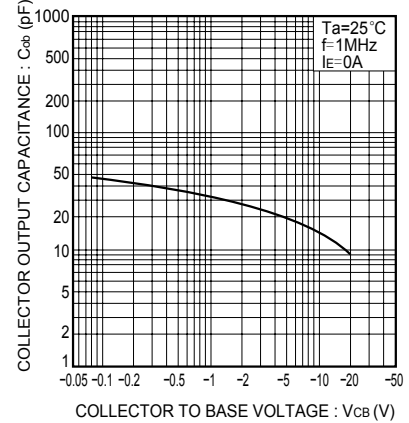
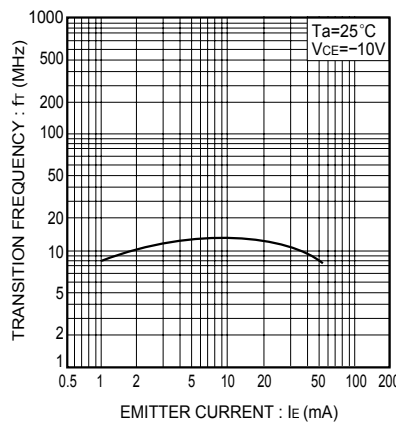
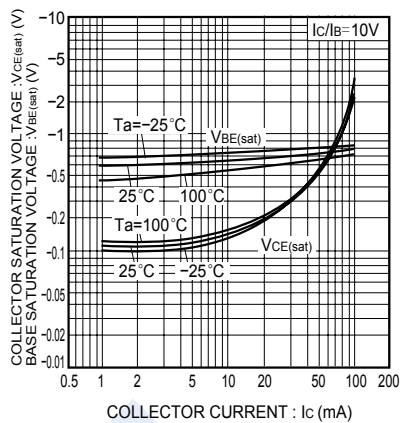


Fig.7 Collector-emitter saturation voltage vs. Collector current

Fig.8 Gain bandwidth products vs. emitter current

Fig.9 Collector output capacitance vs. collector-base voltage

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■ Typical Characteristics

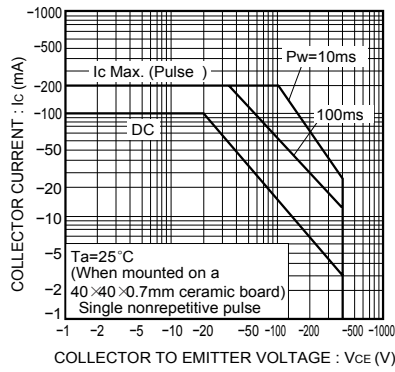


Fig.10 Safe operating area

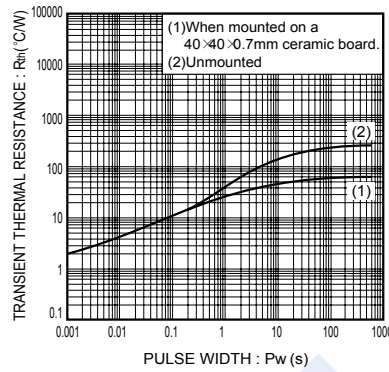


Fig.11 Transient thermal resistance

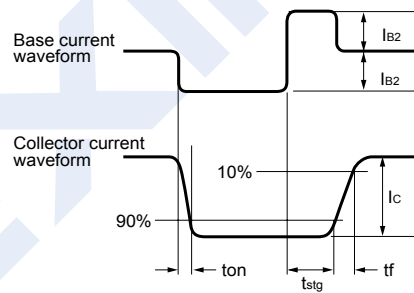
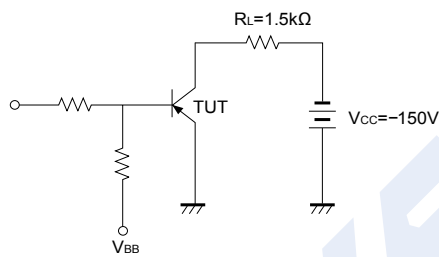


Fig.12 Switching characteristics measurement circuits