

PNP general purpose transistors

BC559; BC560

FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 45 V).

APPLICATIONS

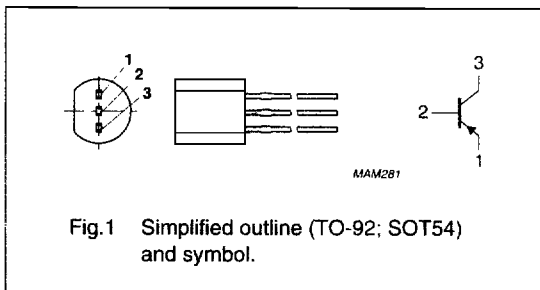
- General purpose switching and amplification.

DESCRIPTION

PNP transistor in a TO-92; SOT54 plastic package.
NPN complements: BC549 and BC550.

PINNING

PIN	DESCRIPTION
1	emitter
2	base
3	collector



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBC}	collector-base voltage	open emitter			
	BC559		–	–30	V
	BC560		–	–50	V
V_{CEO}	collector-emitter voltage	open base			
	BC559		–	–30	V
	BC560		–	–45	V
I_{CM}	peak collector current		–	–200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	–	500	mW
h_{FE}	DC current gain	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V}$	125	800	
f_T	transition frequency	$I_C = -10\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$	100	–	MHz

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LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CB0}	collector-base voltage	open emitter			
	BC559		-	-30	V
	BC560		-	-50	V
V _{CEO}	collector-emitter voltage	open base			
	BC559		-	-30	V
	BC560		-	-45	V
V _{EBO}	emitter-base voltage	open collector	-	-5	V
I _C	collector current (DC)		-	-100	mA
I _{CM}	peak collector current		-	-200	mA
I _{BM}	peak base current		-	-200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	-	500	mW
T _{stg}	storage temperature		-65	+150	°C
T _J	junction temperature		-	150	°C
T _{amb}	operating ambient temperature		-65	+150	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th(j-a)}	thermal resistance from junction to ambient	note 1	250	K/W

Note

1. Transistor mounted on an FR4 printed-circuit board.

CHARACTERISTICST_J = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{CBO}	collector cut-off current	I _E = 0; V _{CB} = -30 V	-	-1	-15	nA
		I _E = 0; V _{CB} = -30 V; T _J = 150 °C	-	-	-4	μA
I _{EBO}	emitter cut-off current	I _C = 0; V _{EB} = -5 V	-	-	-100	nA
h _{FE}	DC current gain	I _C = -2 mA; V _{CE} = -5 V; see Figs 2, 3 and 4	125	-	800	
h _{FE}	DC current gain	I _C = -2 mA; V _{CE} = -5 V; see Figs 2, 3 and 4	125	-	250	
			220	-	475	
			420	-	800	
V _{CEsat}	collector-emitter saturation voltage	I _C = -10 mA; I _B = -0.5 mA	-	-60	-300	mV
		I _C = -100 mA; I _B = -5 mA	-	-180	-650	mV
V _{BEsat}	base-emitter saturation voltage	I _C = -10 mA; I _B = -0.5 mA; note 1	-	-750	-	mV
		I _C = -100 mA; I _B = -5 mA; note 1	-	-930	-	mV

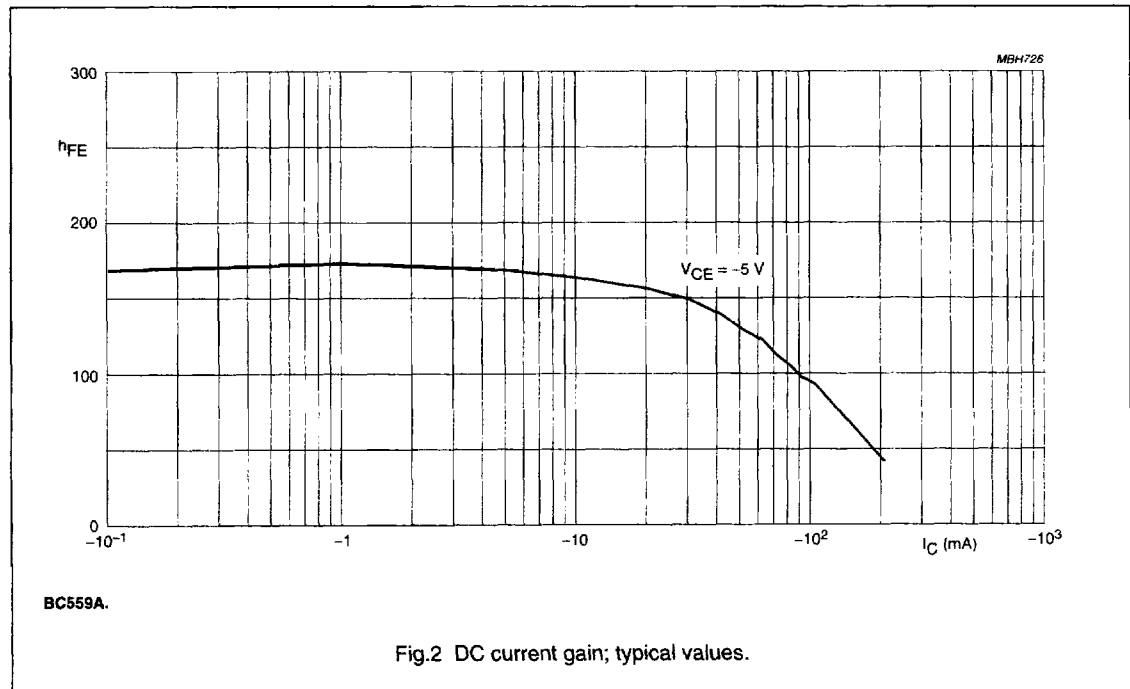
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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{BE}	base-emitter voltage	$I_C = -2 \text{ mA}; V_{CE} = -5 \text{ V}; \text{note 2}$	-600	-650	-750	mV
		$I_C = -10 \text{ mA}; V_{CE} = -5 \text{ V}; \text{note 2}$	-	-	-820	mV
C_c	collector capacitance	$I_E = I_B = 0; V_{CB} = -10 \text{ V}; f = 1 \text{ MHz}$	-	4	-	pF
f_T	transition frequency	$I_E = -10 \text{ mA}; V_{CB} = -5 \text{ V}; f = 100 \text{ MHz}$	100	-	-	MHz
F	noise figure BC559A; BC560A BC559B; BC560B; BC559C; BC560C	$I_C = -200 \mu\text{A}; V_{CE} = -5 \text{ V}; R_S = 2 \text{ k}\Omega;$ $f = 30 \text{ Hz to } 15.7 \text{ kHz}$	-	-	10	dB
			-	-	4	dB
			-	-	-	-
F	noise figure BC559A; BC560A BC559B; BC560B; BC559C; BC560C	$I_C = -200 \mu\text{A}; V_{CE} = -5 \text{ V}; R_S = 2 \text{ k}\Omega;$ $f = 1 \text{ kHz}; B = 200 \text{ Hz}$	-	-	10	dB
			-	-	4	dB
			-	-	-	-

Notes

- $V_{BE\text{sat}}$ decreases by about -1.7 mV/K with increasing temperature.
- V_{BE} decreases by about -2 mV/K with increasing temperature.



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