SILICON PLANAR EPITAXIAL TRANSISTORS

P-N-P transistors in a plastic TO-92 package.

QUICK REFERENCE DATA

			BC559	BC560	
Collector-emitter voltage (+ V_{BE} = 0 V)	$-V_{CES}$	max.	30	50	V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	30	45	V
Collector current (peak value)	$-I_{CM}$	max.	200	200	mA
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	max.	500	500	mW
Junction temperature	T_j	max.	150	150	°C
D.C. current gain $-I_C$ = 2 mA; $-V_{CE}$ = 5 V	h_{FE}	>	125	125	
		<	800	800	
Transition frequency at f = 100 MHz $-I_C$ = 10 mA; $-V_{CE}$ = 5 V	f_T	>	100	100	MHz
Noise figure at R_S = 2 kΩ $-I_C$ = 200 μA; $-V_{CE}$ = 5 V f = 30 Hz to 15 kHz	F	typ.	1,2	1	dB
		<	4	3	dB
f = 1 kHz; B = 200 Hz	F	<	4	4	dB
f = 10 kHz to 50 Hz (equivalent noise voltage)	Vn	<	–	0,11	μV

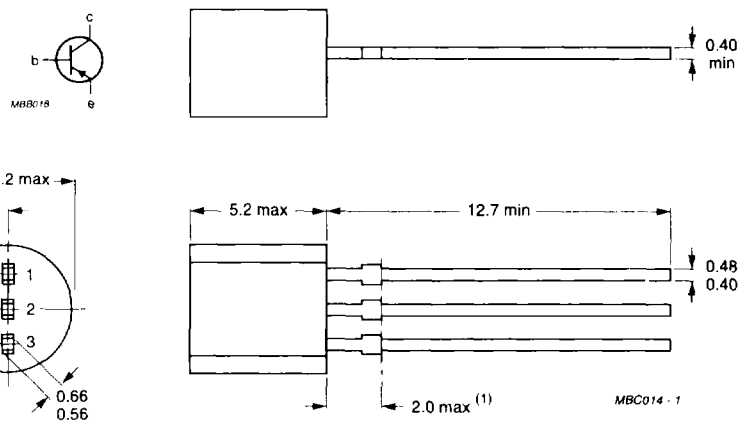
MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-92.

Pinning

1 = emitter
2 = base
3 = collector



Note (1) Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

			BC559	BC560	
Collector-base voltage (open emitter)	$-V_{CBO}$	max.	30	50	V
Collector-emitter voltage ($+V_{BE} = 0$ V)	$-V_{CES}$	max.	30	50	V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	30	45	V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.	5	5	V
Collector current (d.c.)	$-I_C$	max.	100		mA
Collector current (peak value)	$-I_{CM}$	max.	200		mA
Emitter current (peak value)	I_{EM}	max.	200		mA
Base current (peak value)	$-I_{BM}$	max.	200		mA
Total power dissipation up to $T_{amb} = 25\ ^oC$	P_{tot}	max.	500		mW
Storage temperature	T_{stg}		−65 to +150		°C
Junction temperature	T_j	max.	150		°C

THERMAL RESISTANCE

From junction to ambient in free air	$R_{th\ j\text{-}a}$	=	250	K/W
From junction to case	$R_{th\ j\text{-}c}$	=	150	K/W

CHARACTERISTICS

$T_j = 25\ ^oC$ unless otherwise specified

Collector cut-off current				
$I_E = 0$; $-V_{CB} = 30$ V; $T_j = 25\ ^oC$	$-I_{CBO}$	typ.	1	nA
	$-I_{CBO}$	<	15	nA
$T_j = 150\ ^oC$	$-I_{CBO}$	<	4	μA
Base-emitter voltage*				
$-I_C = 2$ mA; $-V_{CE} = 5$ V	$-V_{BE}$	typ.	650	mV
			600 to 750	mV
$-I_C = 10$ mA; $-V_{CE} = 5$ V	$-V_{BE}$	<	820	mV
Saturation voltages**				
$-I_C = 10$ mA; $-I_B = 0{,}5$ mA	$-V_{CEsat}$	typ.	60	mV
		<	300	mV
	$-V_{BEsat}$	typ.	750	mV
$-I_C = 100$ mA; $-I_B = 5$ mA	$-V_{CEsat}$	typ.	180	mV
		<	650	mV
	$-V_{BEsat}$	typ.	930	mV

* $-V_{BE}$ decreases by about 2 mV/K with increasing temperature.
** $-V_{BEsat}$ decreases by about 1,7 mV/K with increasing temperature.

Collector capacitance at f = 1 MHz

$I_E = I_e = 0$; $-V_{CB} = 10$ V — C_c typ. 4 pF

Transition frequency at f = 100 MHz

$-I_C = 10$ mA; $-V_{CE} = 5$ V — f_T typ. 100 MHz

Small-signal current gain at f = 1 kHz

$-I_C = 2$ mA; $-V_{CE} = 5$ V — h_{fe} 125 to 800

Noise figure at $R_S = 2$ kΩ

$-I_C = 200$ μA; $-V_{CE} = 5$ V

			BC559	BC560	
f = 30 Hz to 15 kHz	F	typ.	1,2	1	dB
		<	4	3	dB
f = 1 kHz; B = 200 Hz	F	typ.	1	1	dB
		<	4	4	dB

Equivalent noise voltage at $R_S = 2$ kΩ

$-I_C = 200$ μA; $-V_{CE} = 5$ V
f = 10 Hz to 50 Hz; $T_{amb} = 25$ °C — V_n < – 0,11 μV

D.C. current gain

$-I_C = 2$ mA; $-V_{CE} = 5$ V — h_{FE}

		BC559 BC560	BC559A BC560A	BC559B BC560B	BC559C BC560C
>	125	125	220	420
<	800	250	475	800