N-P-N SILICON PLANAR EPITAXIAL TRANSISTORS

N-P-N silicon planar epitaxial transistors in a plastic TO-92 package.

P-N-P complementary types are BCX78 and BCX79.

QUICK REFERENCE DATA

			BCX58	BCX59	
Collector-emitter voltage (open base)	V_{CEO}	max.	32	45	V
Collector-emitter voltage (emitter to base)	V_{CES}	max.	32	45	V
Emitter-base voltage (open collector)	V_{EBO}	max.	7		V
Collector current (peak)	I_{CM}	max.	200		mA
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	max.	450		mW
Junction temperature	T_j	max.	150		°C
Transition frequency at f = 100 MHz	f_T	>	100		MHz
I_C = 10 mA, V_{CE} = 5 V					

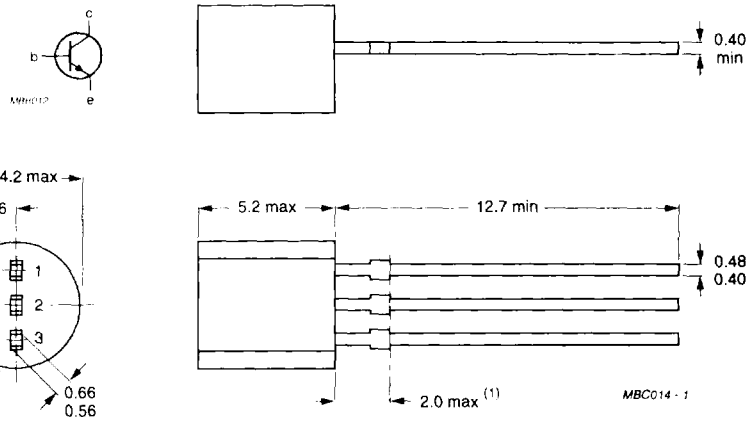
MECHANICAL DATA

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)

			BCX58	BCX59	
Collector-emitter voltage (open base)	V_{CEO}	max.	32	45	V
Collector-emitter voltage (emitter to base)	V_{CES}	max.	32	45	V
Emitter-base voltage	V_{EBO}	max.	7		V
Collector current (d.c.)	I_C	max.	100		mA
Collector current (peak value)	I_{CM}	max.	200		mA
Base current (d.c.)	I_B	max.	50		mA
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	max.	450		mW
Junction temperature	T_j	max.	150		°C
Storage temperature	T_{stg}		−55 to +150		°C

THERMAL RESISTANCE

From junction to ambient in free air	$R_{th\ j\text{-}a}$	=	280	K/W

CHARACTERISTICS

T_j = 25 °C unless otherwise specified

			BCX58	BCX59	
Collector-emitter current					
V_{CE} = 32 V	I_{CES}	<	10		nA
V_{CE} = 32 V; T_j = 125 °C	I_{CES}	<	2,5		μA
V_{CE} = 32 V; V_{BE} = 0,2 V; T_j = 100 °C	I_{CEX}	<	20		μA
Collector-emitter current					
V_{CE} = 45 V	I_{CES}	<		10	nA
V_{CE} = T_j = 125 °C	I_{CES}	<		2,5	μA
V_{CE} = 45 °C; V_{BE} = 0,2 V; T_j = 100 °C	I_{CEX}	<		20	μA
Emitter-base current					
V_{EBO} = 5 V	I_{EBO}	<	20	20	nA
Collector-emitter breakdown voltage					
I_C = 10 mA	$V_{(BR)CEO}$	>	32	45	V
Emitter-base breakdown voltage					
I_{EBO} = 1 μA	$V_{(BR)EBO}$	>	7		V
Collector-emitter saturation voltage					
I_C = 100 mA; I_B = 2,5 mA	V_{CEsat}	<	0,5		V
I_C = 100 mA; I_B = 2,5 mA	V_{BEsat}	<	1,0		V
Collector-base capacitance at 1 MHz					
V_{CBO} = 10 V	C_c	<	4,5		pF

			BCX58	BCX59
Emitter-base capacitance at 1 MHz				
V_{EBO} = 0,5 V	C_e	<	15	pF
Transition frequency at f = 100 MHz				
I_C = 10 mA; V_{CE} = 5 V	f_T	<	100	MHz
Noise figure at f = 1 kHz				
I_C = 0,2 mA; V_{CE} = 5 V; R_S = 2 kΩ	F	<	6	dB
		typ.	2	dB

type		BCX58, BCX59				BCX58
h_{FE}	group	7	8	9	10	BCX59
V_{CE} (V)	I_C (mA)	h_{FE}	h_{FE}	h_{FE}	h_{FE}	V_{BE} (V)
5	0,01	78	145 (>20)	220 (>40)	300 (>100)	0,5
5	2	170	250	350	500	0,62
		(120 – 220)	(180 – 310)	(250 – 460)	(380 – 630)	(0,55 – 0,7)
1	10	190	260	380	550	0,7
		(>80)	(120 – 400)	(160 – 630)	(240 – 1000)	
1	100	>40	>45	>60	>60	0,83