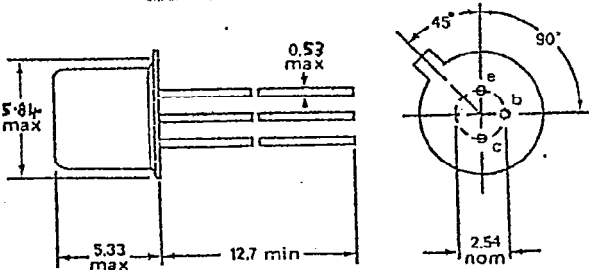


BRITISH STANDARDS INSTITUTION 2, PARK STREET, LONDON W1A 2 BS	BS E9372 F069
SPECIFICATION AVAILABLE FROM : TEXAS INSTRUMENTS LIMITED, MANTON LANE, BEDFORD MK41 7 PA	ISSUE 1 January, 1977
ELECTRONIC COMPONENTS OF ASSESSED QUALITY: DETAIL SPECIFICATION IN ACCORDANCE WITH :- BS E9372 : ISSUE 2 1976 CECC 50,002 : ISSUE 2 1975	CECC 50,002: 006 
OUTLINE DRAWING For detail dimensions see BS 3934 SO-12A/SB3-6A Equivalent to:- IEC C7/B11  The collector is electrically connected to the envelope All dimensions are in millimetres	AMBIENT RATED BIPOLAR TRANSISTORS FOR LOW FREQUENCY AMPLIFICATION
	MANUFACTURER'S TYPE NUMBER: BCY 78 AND BCY 79
	TYPICAL CONSTRUCTION: PNP EPITAXIAL SILICON PLANAR TRANSISTOR IN METAL CAN, GLASS-METAL SEALED
	ASSESSMENT LEVEL F PLUS ADDITIONAL TESTS

1. LIMITING VALUES (absolute maximum ratings)

		BCY 78	BCY 79
T_{amb}	Operating ambient temperature range	-55 °C to 200 °C	
T_{stg}	Storage temperature range	-55 °C to 200 °C	
V_{CBO}	Collector-base voltage	$I_E = 0$ 32 V	45 V
V_{CEO}	Collector-emitter voltage	$I_B = 0$ 32 V	45 V
V_{EBO}	Emitter-base voltage	$I_C = 0$	5 V
I_C	Continuous collector current	200 mA	
P_{tot}	Total power dissipation	350 mW	
$T_{amb} = 25\text{ }^{\circ}\text{C}$ max (see Fig.1, Appendix A)			

2. CHARACTERISTICS

$T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated.

h_{21E} Static forward current transfer ratio

$$V_{CE} = -5 \text{ V}, I_C = -2 \text{ mA}$$

Group 7	120 min	220 max
Group 8	180 min	400 max
Group 9	250 min	460 max
Group 10	380 min	630 max

f_T Transition frequency

100 MHz min

$$V_{CE} = -15 \text{ V}, I_C = -10 \text{ mA}, f = 100 \text{ MHz}$$

$I_{CES(1)}$ Collector-emitter leakage current

20 nA max

$$V_{BE} = 0$$

$$V_{CE} = -25 \text{ V} \quad \text{BCY 78}$$

$$= -35 \text{ V} \quad \text{BCY 79}$$

$I_{CES(2)}$ Collector-emitter leakage current

10 μA max

$$V_{BE} = 0$$

$$T_{amb} = 150^{\circ}\text{C}$$

$$V_{CE} = -25 \text{ V} \quad \text{BCY 78}$$

$$= -35 \text{ V} \quad \text{BCY 79}$$

I_{EBO} Emitter-base leakage current

20 nA max

$$I_C = 0$$

$$V_{EB} = -4 \text{ V}$$

V_{BE} Base-emitter voltage

0.60 V min

$$V_{CE} = -5 \text{ V}, I_C = -2 \text{ mA}$$

0.75 V max

Pulsed Test

h_{21e} Small signal forward current transfer ratio

$$V_{CE} = -5 \text{ V}, I_C = -2 \text{ mA}, f = 1 \text{ kHz}$$

Group 7	125 min	250 max
Group 8	175 min	350 max
Group 9	250 min	700 max
Group 10	350 min	700 max

F	Noise factor	6 dB max
	$V_{CE} = -5 \text{ V}, I_C = -200 \mu\text{A}$	
	$R_g = 2 \text{ k}\Omega, f = 1 \text{ kHz}, \text{Bandwidth} = 200 \text{ Hz}$	
C_{22b}	Common base output capacitance	7 pF max
	$V_{CB} = -10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	
$V_{CEsat(1)}$	Collector-emitter saturation voltage	0.25 V max
	$I_C = -10 \text{ mA}, I_B = -0.25 \text{ mA}$	
	Pulsed Test	
$V_{CEsat(2)}$	Collector-emitter saturation voltage	0.8 V max
	$I_C = -100 \text{ mA}, I_B = -2.5 \text{ mA}$	
	Pulsed Test	
$V_{BEsat(1)}$	Base-emitter saturation voltage	0.85 V max
	$I_C = -10 \text{ mA}, I_B = -0.25 \text{ mA}$	
	Pulsed Test	
$V_{BEsat(2)}$	Base-emitter saturation voltage	1.2 V max
	$I_C = -100 \text{ mA}, I_B = -2.5 \text{ mA}$	
	Pulsed Test	

3. MARKING

3.1 Each transistor shall bear the following markings:-

- The manufacturers type number, e.g. BCY 79.
- The date code.
- The manufacturers trade mark or the factory identification code.

3.2 Each package containing one or more of these transistors shall bear all the above markings and, in addition, this detail specification number, BS E9372 F069 Issue 1.

4. RELATED DOCUMENTS

BS 2011/ IEC 68	'Methods for the environmental testing of electronic components and electronic equipment!.
BS 3934/ IEC 191	'Dimensions of semiconductor devices'.
BS 9000/ CENEL 1	'General requirements for electronic components of assessed quality'.
PD 9002	'BS 9000 component selection guide'.
BS E9300/ CECC 50,000	'Harmonized generic specification for discrete semiconductor devices of assessed quality'.
BS E9007/ CECC 00,007	'Sampling plans and procedures for inspection by attributes'.
IEC 147-2	'General principles of measuring methods'.

5. ORDERING INFORMATION

Orders for these transistors should contain the following minimum information:-

- a) The device type number, h_{FE} group, and this detail specification number, e.g. BCY 79 to BS E9372 F069 Issue 1. (h_{FE} Group 7)
- b) The quantity required.

6. INSPECTION REQUIREMENTS

GROUP A				D = Destructive ND = Non-destructive		
Lot by Lot						
EXAMINATION OR TEST	D ND	BS E9300 REF	CONDITIONS at $T_{amb} = 25^{\circ}C$ unless otherwise stated	Inspection Requirements		
				LIMITS Min. Max.		LEVEL OF ASSMT F
						IL AQL
<u>SUBGROUP A1</u>						I 1.5%
Visual inspection	ND	4.2.1				
<u>SUBGROUP A2</u>						II 0.65%
Collector-emitter leakage current I_{CES}	ND	4.3.4 T-009	$V_{CE} = -25 V$ BCY 78 $= -35 V$ BCY 79 $V_{BE} = 0$	-	20 nA	
Static forward current transfer ratio h_{21E}	ND	4.3.4 T-006	$V_{CE} = -5 V$ $I_C = -2 mA$ Group 7 Group 8 Group 9 Group 10	120 180 250 380	220 400 460 630	
<u>SUBGROUP A3</u>						I 2.5%
Emitter-base leakage current I_{EBO}	ND	4.3.4 T-002	$V_{EB} = -4 V$ $I_C = 0$	-	20 nA	