

BRITISH STANDARDS INSTITUTION

2, PARK STREET, LONDON, W1A 2BS

Specification available from:—
CECC 00200 AND

TEXAS INSTRUMENTS LIMITED,
MANTON LANE, BEDFORD, MK41 7PA

TELEPHONE : BEDFORD 67466 TELEX : 82178

BS CECC 50 004-132
ISSUE 1
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ELECTRONIC COMPONENTS OF ASSESSED QUALITY
DETAIL SPECIFICATION IN ACCORDANCE WITH
BS CECC 50 000 : 1981

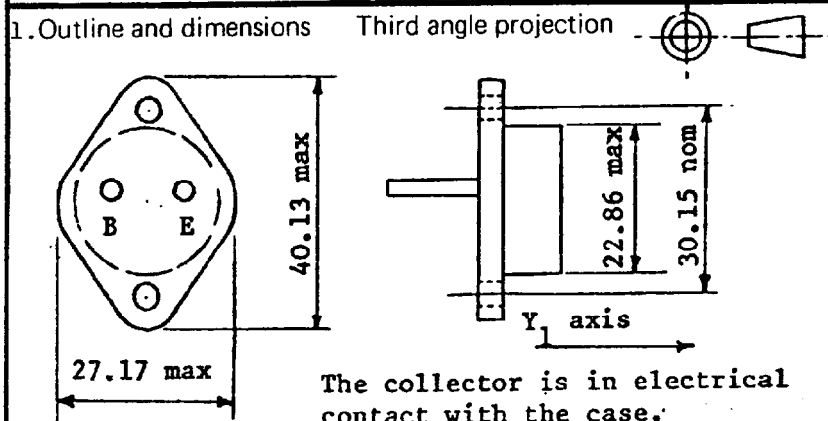
MANUFACTURER'S TYPE NUMBER
BUX 82 BUX 83

SEE PD 9002 AND CECC 00200
For ordering information
see Clause 7

2. CASE RATED BIPOLAR POWER
TRANSISTORS FOR HIGH
VOLTAGE SWITCHING
APPLICATIONS.

NPN TRIPLE DIFFUSED SILICON
PLANAR TRANSISTORS IN
HERMETICALLY SEALED METAL
CASE.

3. ASSESSMENT LEVEL F
+ ADDITIONAL TESTS



Outline BS 3934 SO-127A
IEC 191-2 C14A B18. Dimensions in millimetres.
Marking information - See Clause 6

4. LIMITING VALUES (absolute maximum system)

These apply over the operating temperature range unless otherwise stated.

4.1	T _{case}	Case operating temperature range	-65 °C to 150 °C
4.2	T _{stg}	Storage temperature range	-65 °C to 150 °C

Voltage Ratings (T_{case} = -65 °C to +125 °C.) (See Fig. 5)

		BUX 82	BUX 83
4.3	V _{CBO} Collector-base continuous (direct) voltage. I _E = 0	800V	1000V
4.4	V _{CES} Collector-emitter continuous (direct) voltage. V _{BE} = 0	800V	1000V
4.4	V _{CEO} Collector-emitter continuous (direct) voltage. I _B = 0	400V	450V
4.5	V _{EBO} Emitter-base continuous (direct) voltage. I _C = 0	10V	10V

Refer to Qualified Products List PD 9002 and/or CECC 00200 for details of manufacturers approved to this specification.

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4.6. Current Ratings

I_C	Continuous collector current	6	A
I_{CM}	Peak collector current (Note 1)	8	A

4.9. Power Ratings

4.9.1	P_{tot}	Total power dissipation, $T_{case} = 55^\circ C$ (see Figs. 3 and 4)
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5. CHARACTERISTICS (not for inspection purposes) at $T_{case} = 25^\circ C$ unless otherwise stated.

$V_{CE(SUS)}$	Collector-emitter sustaining voltage Inductive loop switching measurement $I_C = 100mA, L = 25mH$		
	BUX 82	400	V min.
	BUX 83	450	V min.
5.1	h_{21E}	Static forward current transfer ratio $V_{CE} = 5V, I_C = 600mA^*$	15 min. 60 max.
5.2	$V_{CE(SAT)}(1)$	Collector-emitter saturation voltage $I_C = 4A, I_B = 1.25A^*$	2 V max.
	$V_{CE(SAT)}(3)$	Collector-emitter saturation voltage $I_C = 2.5A, I_B = 500mA^*$	1 V max.
5.3	$V_{CE(SAT)}(2)$	Collector-emitter saturation voltage $I_C = 600mA, I_B = 60mA$	1 V max.
5.4	$V_{BE(SAT)}(1)$	Base-emitter saturation voltage $I_C = 4A, I_B = 1.25A^*$	1.4 V max.
	$V_{BE(SAT)}(2)$	Base-emitter saturation voltage $I_C = 2.5A, I_B = 500mA^*$	1.2 V max.
5.5	$I_{CES(1)}$	Collector-emitter cut-off current $V_{CE} = 800V$ BUX 82 $V_{CE} = 1000V$ BUX 83	1 μA max. 1 μA max.
5.6	$I_{CES(2)}$	Collector-emitter leakage current at $T_{amb} = 125^\circ C$ $V_{CE} = 800V$ BUX 82 $V_{CE} = 1000V$ BUX 83	150 μA max. 150 μA max.

† Measured in groups A or C

* These parameters are measured under pulsed conditions. Pulse width = 300 μs
Duty Cycle = 2%

NOTE 1 Pulse test, pulse duration = 2ms

5.0 CHARACTERISTICS (Continued)

I_{EBO}	Emitter cut-off current	1	mA max.
	$V_{EB} = 10V, I_C = 0$		

5.7 †Switching Characteristics at 25°C (unless otherwise stated)

5.7.1 Resistive Load (See Figs. 1 and 2)

t_{on}	Turn on time	0.4	µs max.
t_s	Storage time	2.50	µs max.
t_f	Fall time	0.25	µs max.
	$I_C = 2.5A \quad V_{CC} = 250V$		
	$I_{B1} = 0.5A \quad I_{B2} = 1A$		
t_{on}	Turn on time	0.8	µs max.
t_s	Storage time	3.0	µs max.
t_f	Fall time	0.5	µs max.
	$I_C = 2.5A \quad V_{CC} = 250V$		
	$I_{B1} = 0.5A \quad I_{B2} = 1.0A \quad T_{case} = 100^\circ C$		

5.9 Thermal Resistance

$R_{th(j-case)}$	Thermal resistance junction-case	1.67	°C/W max.
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† Measured in Groups A or C.

6.0 MARKING

6.1. Each device shall bear the following marking:

- (a) Terminal identification
- (b) Type number
- (c) Date code
- (d) Manufacturer's trade mark or factory identification code.

6.2. Each package containing one or more of these transistors shall bear the above markings b, c and d, and in addition, this detail specification number BS CECC 50 004-132.

7.0 ORDERING INFORMATION

The following minimum information is necessary to order a specific device, unless otherwise specified.

- precise type number
- CECC reference of detail specification with issue number and/or date when relevant.
- level of quality assessment as defined in Appendix II A of CECC 50 000, and, if required, screening sequence as defined in Appendix VI of CECC 50 000.
- any other particulars.

Example:- Type number - detail specification number - issue number - level.

RELATED DOCUMENTS

BS2011/IEC 68	Methods for the environmental testing of electronic components and electronic equipment.
BS3934/IEC 191	Dimensions of semiconductor devices.
BS E9000/ CECC 00 100 to 00 113	General requirements for electronic components of assessed quality.
BS E9007/CECC 00 007	Sampling plans and procedures for inspection by attributes.
BS/CECC 50 000	Harmonised generic specification for discrete semiconductor devices.
IEC 147-2	General principles of measuring methods.
PD 9002/CECC 00 200	Component selection guide.

8. INSPECTION REQUIREMENTS

ALL GROUP A TESTS ARE NON-DESTRUCTIVE

GROUP A
Lot by Lot

EXAMINATION OR TEST	BS CECC 50000 REF	CONDITIONS at $T_{case} = 25^{\circ}C$ unless otherwise stated	INSPECTION REQUIREMENTS				
			LIMITS			LEVEL OF ASSMT F	
			MIN	MAX	UNIT	IL	AQL
<u>SUBGROUP A1</u> Visual Inspection	4.2.1.					I	0.65%
<u>SUBGROUP A2a</u> Non- operatives Open Circuit Short Circuit	4.3.4 (1)	Device considered to be open circuit if $h_{21E}(1)$ Device considered to be short circuit if $I_{CES}(1)$	2.0 -	- 100.0	 mA	II	0.15%
<u>SUBGROUP A2b</u> Collector emitter cut-off current $I_{CES}(1)$ Collector- emitter saturation voltage $V_{CE(sat)}(1)$ Collector- cut-off current $I_{CEO}(1)$	4.3.4 4.3.4 T.003 4.3.4 T.009	$V_{CE} = 800V$ BUX 82 $V_{CE} = 1000V$ BUX 83 $V_{BE} = 0$ $I_C = 4A$ $I_B = 1.25A$ (Note 2) $V_{CE} = 400V$ BUX 82 $V_{CE} = 450V$ BUX 83 $I_B = 0$		1.0 1.0 2.0 1.0 1.0	μA μA V μA μA	II	0.65%

8. INSPECTION REQUIREMENTS

ALL GROUP A TESTS ARE NON-DESTRUCTIVE

GROUP A

Lot by Lot

EXAMINATION OR TEST	BS CECC 50000 REF	CONDITIONS at $T_{amb} = 25^{\circ}C$ unless otherwise stated	INSPECTION REQUIREMENTS				
			LIMITS			LEVEL OF ASSMT F	
			MIN	MAX	UNIT	IL	AQL
<u>SUBGROUP A3</u>						I	2.5%
Forward current transfer ratio h_{21E}	4.3.4 T.006	$V_{CE} = 5V$ $I_C = 600mA$ (Note 2)	15.0	60.0			
Collector- emitter saturation voltage $V_{CE(SAT)} (2)$	4.3.4. T.003	$I_C = 600mA, I_B = 60mA$	-	1.0	V		
$V_{CE(SAT)} (3)$		$I_C = 2.5A, I_B = 500mA$	-	1.0	V		
Base-emitter saturation voltage $V_{BE(SAT)} (1)$	4.3.4 T.003	$I_C = 4A, I_B = 1.25A$ (Note 2)	-	1.4	V		
$V_{BE(SAT)} (2)$		$I_C = 2.5A, I_B = 500mA$	-	1.2	V		
<u>SUBGROUP A4</u>						S4	4.0%
Switching times							
Turn on time t_{on}		$I_C = 2.5A, V_{CC} = 250V$ (See Figs. 1 & 2)	-	0.40	μs		
Storage time t_s		$I_{B1} = 0.5A, I_{B2} = 1.0A$	-	2.50	μs		
Fall time t_f			-	0.25	μs		