

CONFIRMED
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Electronic parts of assessed quality —

Silicon voltage regulator diode

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 26 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

Amd. No.	Date	Comments

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1. Specifications CV7780-CV7831 Issue 1 dated December 1967 with their existing amendments which are reproduced below are hereby adopted as BS 9300 C780-831.

2. Devices inspected, released and supplied to this specification shall be marked CV7780-CV7831 as appropriate and, where applicable with the letters KB.

3. The references to "Military specification", "Commercial equivalents", "Reliability assurance provisions" or requirements and "Preparation for delivery" shall be disregarded.

4. In the Groups A, B and C inspection tables the references in the "K1007/NATO Ref" column shall be superseded by the appropriate reference given in BS 9300 Appendix C (Table 1 to Table 5 inclusive).

5. Additional requirements not covered by BS 9300 Appendix C are:

None

6. Published amendments (consolidated)

None

Military specification**CV7780-7831****Semiconductor device**

Description:— This specification covers the detail requirements for Silicon Voltage Regulator Diodes and is in accordance with K1007, Issue 3, except as otherwise stated.

Mechanical Dimensions and Outlines:— K1007, Section B, **10.3.3.2.**
(10 – 32 UNF 2 B.A. thread).

Connections:— CV7780 to CV7805 Stud Anode
CV7806 to CV7831 Stud Cathode

Absolute Maximum Ratings:—

Rating	P _{tot}	T _{stud}	T _{stg}	Shock	Vibration	Torque (Stud)
Unit	W	°C	°C	g	g	in lb
Min.			– 55			12
Max.	20	175	175	1 500	20	15
Note	A			B		

Notes:— A. See derating curve Figure 1, Page 9.
B. Duration 0.5 ms.
C. Commercial equivalents BZY93 Series.

Primary Electrical Characteristics:—

1	2	3	4	5	6	7	8	9	10	11	12
CV Numbers		V _(BR) Nominal	V _(BR) Min.	V _(BR) Max.	V _(BR) Max.	I _Z Test	Z _(BR) Max.	Z _(BR) Max.	V _F Max.	V _R	S _Z
Stud Anode	Stud Cathode	V	V	V	V	A	Ω	Ω	V	V	%/°C
7780	7806	6.8	6.4	7.2	8.0	2.0	0.2	88	1.5 All Types	2.0	0.01 Min. to 0.15 Max. All Types
7781	7807	7.5	7.1	7.9	9.0	2.0	0.3	89		2.0	
7782	7808	8.2	7.7	8.7	10.0	2.0	0.3	89		5.6	
7783	7809	9.1	8.6	9.6	11.0	1.0	0.5	90		6.2	
7784	7810	10.0	9.4	10.6	12.0	1.0	0.5	90		6.8	
7785	7811	11.0	10.4	11.6	13	1.0	1.0	91		7.5	
7786	7812	12.0	11.4	12.6	14	1.0	1.0	91		8.2	
7787	7813	13.0	12.4	14.1	16	1.0	1.0	92		9.1	
7788	7814	15.0	13.9	15.6	17.5	1.0	1.2	92		10.0	
7789	7815	16.0	15.4	17.1	19	0.5	1.2	93		11.0	
7790	7816	18.0	16.9	19.1	21.5	0.5	1.5	93		12.0	
7791	7817	20.0	18.9	21.2	23.5	0.5	1.5	94		13.0	
7792	7818	22.0	20.8	23.3	26	0.5	1.8	95		15.0	
7793	7819	24.0	22.7	25.9	29	0.5	2.0	96		16.0	
7794	7820	27.0	25.1	28.9	32	0.5	2.0	97		18.0	
7795	7821	30.0	28.0	32.0	35.5	0.5	2.5	98		20.0	
7796	7822	33.0	31.0	35.0	39	0.5	3.0	100		22.0	
7797	7823	36.0	34.0	38.0	42.5	0.2	4.0	101		24.0	
7798	7824	39.0	37.0	41.0	45.5	0.2	5.0	103		27.0	
7799	7825	43.0	40.0	45.0	50	0.2	6.5	106		30.0	
7800	7826	47.0	44.0	50.0	55.5	0.2	7.0	110		33.0	
7801	7827	51.0	48.0	54.0	60	0.2	7.5	114		36.0	
7802	7828	56.0	53.0	60.0	67	0.2	8.0	120		39.0	
7803	7829	62.0	58.0	66.0	73.5	0.2	9.0	133		43.0	
7804	7830	68.0	64.0	72.0	80	0.2	10.0	150		47.0	
7805	7831	75.0	71.0	79.0	88	0.2	10.5	170		51.0	
Conditions	I _Z	See Col. 7	See Col. 7	See Col. 7	See Col. 7		See Col. 7	5 mA	I _F = 5 A	I _R max. 50 μA	See Col. 7
	T _{stud} °C	25	25	25	100		25	25	25		25

Applicable documents:—

T.V.C. Information Sheets Nos. 9 and 10.

Requirements:—

Marking. K1007, Section B, 1.3.4.

Quality assurance provisions:—

Destructive Tests. The tests listed in Table II, Group B inspection, Sub-groups 2 and 3 and in Table III, Group C Inspection, Sub-group 2 are considered destructive.

Group C Inspection. Inspection shall be conducted on the initial lot and thereafter every ninety days or every fifth lot whichever occurs first.

Preparation for delivery:—

Packaging. The devices shall be packed in accordance with K1007, Section A, 1.2(c). Nut and shakeproof washer to be packed with each diode.

Nato stock numbers:—

CV7780	5961-99-037-5498	CV7806	5961-99-037-5524
CV7781	5961-99-037-5499	CV7807	5961-99-037-5525
CV7782	5961-99-037-5500	CV7808	5961-99-037-5526
CV7783	5961-99-037-5501	CV7809	5961-99-037-5527
CV7784	5961-99-037-5502	CV7810	5961-99-037-5528
CV7785	5961-99-037-5503	CV7811	5961-99-037-5529
CV7786	5961-99-037-5504	CV7812	5961-99-037-5530
CV7787	5961-99-037-5505	CV7813	5961-99-037-5531
CV7788	5961-99-037-5506	CV7814	5961-99-037-5532
CV7789	5961-99-037-5507	CV7815	5961-99-037-5533
CV7790	5961-99-037-5508	CV7816	5961-99-037-5534
CV7791	5961-99-037-5509	CV7817	5961-99-037-5535
CV7792	5961-99-037-5510	CV7818	5961-99-037-5536
CV7793	5961-99-037-5511	CV7819	5961-99-037-5537
CV7794	5961-99-037-5512	CV7820	5961-99-037-5538
CV7795	5961-99-037-5513	CV7821	5961-99-037-5539
CV7796	5961-99-037-5514	CV7822	5961-99-037-5540
CV7797	5961-99-037-5515	CV7823	5961-99-037-5541
CV7798	5961-99-037-5516	CV7824	5961-99-037-5542
CV7799	5961-99-037-5517	CV7825	5961-99-037-5543
CV7800	5961-99-037-5518	CV7826	5961-99-037-5544
CV7801	5961-99-037-5519	CV7827	5961-99-037-5545
CV7802	5961-99-037-5520	CV7828	5961-99-037-5546
CV7803	5961-99-037-5521	CV7829	5961-99-037-5547
CV7804	5961-99-037-5522	CV7830	5961-99-037-5548
CV7805	5961-99-037-5523	CV7831	5961-99-037-5549

This specification has been prepared by and the Qualification Approval Authority is:—

Admiralty Surface Weapons Establishment,
 Portsdown, Cosham,
 Portsmouth, Hants,
 England.

Table I — Group A Inspection

Examination or Test	Test Conditions		AQL %	Insp. Level	Symbol	Limits		Units
	K1007/NATO Ref.	Specific Conditions				Min.	Max.	
<u>SUB-GROUP 1</u>			0.65	I				
Visual and Mechanical Inspection	5.1.1							
<u>SUB-GROUP 2</u>			0.65	II				
Breakdown Voltage (1)	8A.2.4	$I_Z = \text{Col. 7, Page 2}$ Pulse method Duration $\leq 200 \mu\text{s}$ Duty cycle $\leq 1 \%$			$V_{(BR)}$	Col. 4 Page 2	Col. 5 Page 2	V
Reverse Leakage Current	8A.2.2.1	V_R see Col. 11, Page 2			I_R		50	μA
Small Signal Breakdown Impedance (1)	8A.4.1	$I_Z = \text{Col. 7, Page 2}$ Pulse method Duration $\leq 200 \mu\text{s}$ Duty cycle $\leq 1 \%$			$Z_{(BR)}$		Col. 8 Page 2	Ω
<u>SUB-GROUP 3</u>			2.5	I				
Small Signal Breakdown Impedance (2)	8A.4.1	$I_Z = 5 \text{ mA}$			$Z_{(BR)}$		Col. 9 Page 2	Ω

Table I — Group A Inspection

Examination or Test	Test Conditions		AQL %	Insp. Level	Symbol	Limits		Units
	K1007/NATO Ref.	Specific Conditions				Min.	Max.	
SUB-GROUP 4								
Temperature Coefficient of Operating Voltage	8A.7.3	$I_Z = \text{Col. 7, Page 2}$ $T_1 = 25\text{ °C} \pm 5\text{ °C}$ $T_2 = 100\text{ °C} \pm 5\text{ °C}$ Pulse method Duration $\leq 200\text{ }\mu\text{s}$ Duty cycle $\leq 1\%$ NOTE Measured values of T_1 or T_2 to be used in calculating S_Z	4.0	S4	S_Z	0.01	0.15	%/°C
Breakdown Voltage (2)	8A.2.4	$T_{\text{stud}} = 100\text{ °C}$ $I_Z = \text{Col. 7, Page 2}$ Pulse method Duration $\leq 200\text{ }\mu\text{s}$ Duty cycle $\leq 1\%$			$V_{(\text{BR})}$		Col. 6 Page 2	V
Forward Voltage Drop	8A.3.2	$I_F = 5\text{ A}$			V_F		1.5	V

Table II — Group B Inspection
(See Page 2. Quality Assurance Provisions)

Examination or Test	Test Conditions		AQL %	Insp. Level	Symbol	Limits		Units
	K1007/NATO Ref.	Specific Conditions				Min.	Max.	
<u>SUB-GROUP 1</u>			6.5	S2				
Physical Dimensions	5.1.2	According to Drawing 10.3.3.2.						
<u>SUB-GROUP 2</u>			6.5	S2				
Solderability	5.13							
Temperature Cycling	5.5	– 55 to + 150 °C						
Moisture Resistance	5.3							
<u>SUB-GROUP 3</u>			6.5	S2				
Vibration Fatigue	5.15	Non-operating						
<u>SUB-GROUP 4</u>			6.5	S4				
Torque (Stud)	5.12.1	Torque = 15 in lbs						
<u>SUB-GROUP 5</u>								
Omitted								
<u>SUB-GROUP 6</u>								
Omitted								