 VALVE ELECTRONIC CV2391 CV2392

MINISTRY OF SUPPLY - DLRD/RRE

Specification MOS/CV.2391-2 Issue 2 dated 30.10.56 To be read in conjunction with K1006 unless otherwise stated	SECURITY Specification: UNCLASSIFIED Valve: UNCLASSIFIED

TYPE OF VALVE Silicon crystal diode

PROTOTYPES

CV.2391 - VX.3136

CV.2392 - VX.3171

FREQUENCY 34-35.5k Mc/s.

OPERATION

The rectified current to give the best noise factor under normal operating conditions in 0.5 mA per crystal with RL 0 to 30 ohms.

CONSTRUCTION

The crystal is designed for use in sealed conditions and will deteriorate rapidly in a humid atmosphere.

The crystal is intended to be used in conjunction with WG.22 and to be plugged into the waveguide.

POLARITY

CV.2391 The pin is equivalent to the cathode of a thermionic diode, Red Mark.

CV.2392 The pin is equivalent to the anode of a thermionic diode, Green Mark.

TEMPERATURE RATING

Maximum operating temperature 100°C

Minimum operating temperature - 40°C

HOLDER

See Note 1, page 3.

MARKING

See K1001/4, CV number, Factory Identification Code and polarity only are required.

POLARITY MARKING

CV.2391 Red Mark to indicate the polarity of the pin.

CV.2392 Green Mark to indicate the polarity of the pin.

CONNECTIONS

See POLARITY

The off-set hole in the base ensures correct orientation in the holder

DIMENSIONS

See page 3

PACKAGING

K1005. In K1005/8.1 read "metal foil" instead of "lead foil".

MOUNTING POSITION

Any

CV2391
CV2392

SILICON CRYSTAL RECTIFIER

This Specification forms a part of the latest issue of Specification K1006

Maximum Operating Temperature 100°C *Dimensions: Per Outline

Maximum Operating Altitude: Any

Test Conditions: 25° ± 5°C RL.30 ohms max.
Source impedance VSWR 1.05 max. at signal and image frequencies.
Test Holder, See Note 1.

The following tests shall be performed:-

For the purpose of inspection, use applicable paragraphs of K1006 and Acceptance Procedures for use with K1006.

For miscellaneous requirements, see paragraph 3.3 of Acceptance Procedures for use with K1006.

Ref. K1006	Test	Test Conditions	Insp. Level	AQL(%)	Symbol	Limits Min.	Limits Max.	Unit
	Qualification Approval Tests							
3.1	Qualification Approval Required							
	Ruggedness (Note 3)							
K1001/11.1	(i) Vibration	Peak acceleration 15g minimum in three mutually perpendicular directions.						
K1001/11.4	(ii) Shock	Peak acceleration 500g minimum.						
4.9.11	(iii) Pressure							
4.9.10	(iv) Temperature cycling (dry)	- 40°C to 100°C one cycle.						
	Marking	See page A						
	Measurements Acceptance Tests							
	Pin tension	10 lb. axial pull applied to pin.	IA	6.5		Pin shall not pull out.		
K1001/5C.3.3	Burnout	Note 5. Energy level = 0.1 erg. Measure noise factor before and after Note 5.	I (15 min)	25		Note 3		
	Reverse Current	E = - 0.5V dc.	II	1	Irv		50	uA
	Noise factor	Local oscillator F = 34.815 ± 20 Mc/s. P/I = 0.5 ± .05 mA dc. I.F. = 45 Mc/s. I.F. amplifier N.F. = 1.8 (ratio) Note 2.	100%		N		16.5	db.

Ref.	Test	Test Conditions	Insp. Level	AQL(%)	Symbol	Limits Min.	Limits Max.	Units
	Measurements ~~Qualification Approval Tests~~ Acceptance Tests (Cont.)							
	Rectification efficiency	F = 34860 ± 50 Mc/s. P ≤ 1 m Wrf.	II	4	Io	0.5		mA.
4.14.3.3.	I.F. Impedance	F = 34860 ± 50 Mc/s. i.f. = 45 Mc/s. P/I = 0.5 mA dc. Note 4.	II	6.5	Zif.	300	600	ohms.
	Rectifier admittance	F = 34860 ± 50 Mc/s. P/I = 0.5 mAdc. Note 1.	100%		VSWR		1.8	ratio
	Rectifier admittance over band.	F = 34860 ± 30 Mc/s. F = 34360 ± 30 Mc/s. F = 35360 ± 30 Mc/s. P/I = 0.5 mAdc. The admittance shall be referred to the value at 34860 Mc/s taken as 1.0 + j0. The admittance thus derived shall at 35360 Mc/s lie within the sector of centre 1.0 + j0 and minor arc between 0.8 + j0.6 and 1.85 + j0.45. Similarly at 34360 Mc/s the sector having centre 1.0 + j0 and minor arc between 0.62 - j0.4 and 1.4- j 0.75. Note 1	I (15 min)	6.5				

NOTES

1. All test and standard holders shall conform to R.R.E. Dwg. BRR/222727. Admittance limits quoted are absolute in standard holders; allowances for tolerances of test holders shall be made as necessary. Admittances are measured with respect to the nominal central plane of the crystal (i.e. the plane 0.086" back from the front face)

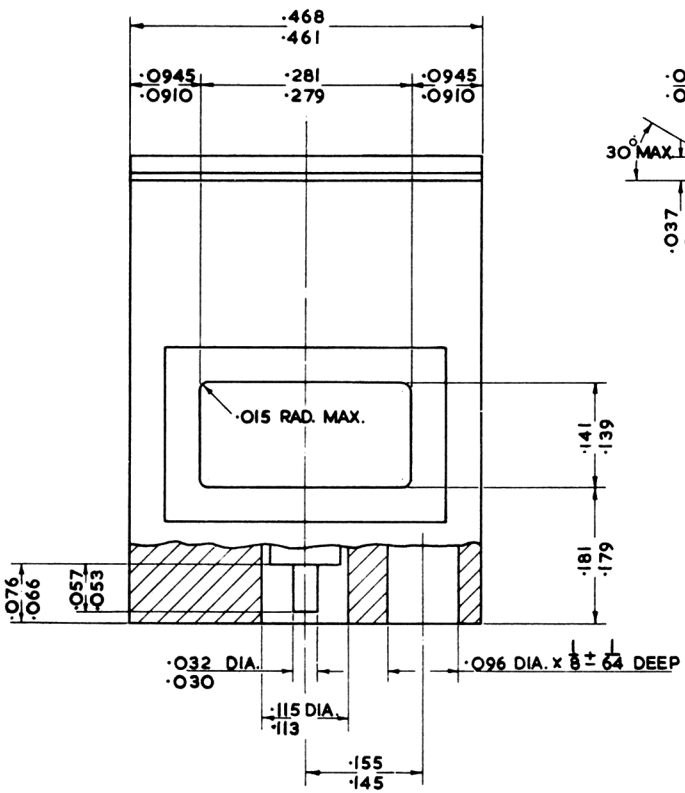
2. Crystals will not be used as standards for measurement of any parameter, but may be used as transfer standards. The standard of reference for the noise factor test shall be a gas discharge tube type VX9166, assuming a level of excess noise of 16 db. above thermal at 290°K for a discharge current of 100 mA.

3. The criterion for stability or deterioration after exposure to conditions as specified shall be that the noise factor shall not have changed by more than 2 db or, if more favourable to the crystal, shall not have changed so that the limit in the noise factor test is exceeded.

4. The standard of reference shall be an RC7K resistor within the range 450 ± 10% ohms, mounted axially in a holder having the same socket dimensions as CV2391. The lead lengths shall be less than 0.125 inch. The resistance will be assumed equal to the D.C. value.

5. Crystals which pass this test are acceptable if they pass the following 100% tests. They are not to be subjected to the following sampling tests.

THIRD ANGLE PROJECTION
DIMENSIONS IN INCHES



(a) Nickel plate, or
(b) Silver plate BS DTD 979
plus 0.00002 inch rhodium

FINISH:- BODY- ~~NICKEL PLATE~~
PIN – SILVER PLATE

SPECIFICATION CV.2391-2392. ISSUE No.1 dated 30-10-56

Amendment No.1.

PAGE 2. Columns headed "Test" and "Test Conditions"

AMEND Qualification Approval Tests (Contd).

to read Measurements Acceptance Tests (Contd.).

May, 1957 T.V.C. Office

N.87843 R.

SPECIFICATION CV.2391-2

Issue No.2 dated 30th October, 1956

AMENDMENT NO.2

Page 3

Finish:- Body Amend to read:

Finish:- Body (a) Nickel plate, or
(b) Silver plate to DTD919
plus 0.00002 inch rhodium.

October, 1958
N.44011.R

R.R.E.