

Electronic Valve Specifications  
Specification CV7551-2-3 Issue 1.  
Dated 9th September 1964.

Amendment No. 1.

Page 3.

Against CV7553 Delete: 5960-99-037-3800  
Insert: 5960-99-037-3806.

Ministry of Aviation/RRE

December 1964  
(N253617)

MILITARY SPECIFICATION  
**CV 7551-2-3**  
SEMICONDUCTOR DEVICE. DIODES

Description: This specification covers the detail requirements for Silicon fast switching diodes and is in accordance with specification K1007, Issue 3 except as otherwise stated.

Mechanical Dimensions and Outlines: K1007 10.3.3.4.

Polarity: Cathode end marked as clause 1.3.4.4.

Absolute Maximum Ratings:-

TYPE	Rating	$V_R$	$I_O$	$I_{FS}$	P	$T_{amb}$	$T_{stg}$	Shock	Vibra- tion
	Unit	V	mA	A	mW	°C	°C	g	g
CV7551	Min	-	-	-	-	-65	-	-	-
	Max	50	250	1.5	450	175	175	1500	20
CV7552	Min	-	-	-	-	-65	-	-	-
	Max	50	250	1.5	450	175	175	1500	20
CV7553	Min	-	-	-	-	-65	-	-	-
	Max	100	250	1.5	450	175	175	1500	20
NOTE				A	B			C	

- Notes:
- A. Max surge current, averaged over 20 mS period
  - B. See derating curve
  - C. Duration 0.5 mS
  - D. Commercial equivalents ZS130, ZS131, ZS132,

# CV 7551-2-3

## Primary Electrical Characteristics:

Characteristic		$I_R$	$I_R$	$I_R$	$I_R$	$V_F$	$t_{fr}$	$V_F$	$t_{rr}$	C	
Unit		$\mu A$	$\mu A$	$\mu A$	$\mu A$	V	nSecs	V	nSecs	pF	
CV7551	Min										
	Max	2.0		25		1.7	10 $\Xi$	1.0	150**	9.0	
CV7552	Min										
	Max	2.0		25		1.7	25 $\Xi$	2.5	50**	9.0	
CV7553	Min										
	Max		5.0		50	1.7	25 $\Xi$	2.5	200**	9.0	
C O N D I T I O N S	$T_{amb}$	$^{\circ}C$	25	25	100	100	25	25	25	25	
	$V_R$	V	50	100	50	100				1.0	
	$I_F$	mA					600*				
	$I_F$	mA						10 $\Xi$	10 $\Xi$	600	
	$I_R$	mA								600	

- NOTES:-
- \* Pulsed measurement
  - $\Xi$  Time to return to 110% d.c. level
  - $\Xi$  Pulse width = 350 nSecs. Rise time of the pulse 2 nSecs
  - \*\* Recovery to 100mA.

Reliability Assurance Requirements:-

Under discussion.

Requirements:

Marking

The device shall be marked as K.1007 Section B.1.3.4. Essential marking, 1.3.4.1 (a) and 1.3.4.1 (b).

Quality Assurance Provisions:

Destructive Tests

The tests listed in Table 2, Group B Inspection, Sub Groups 2, 3 and 4 and Table 3, Group C, Sub Group 2, are considered destructive.

Group C Inspection

This 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 device shall be packed according to K.1007 Issue 3 Section A 1.2(C)

N.A.T.O. Stock Numbers:

CV7551 = 5960-99-037-3804  
CV7552 = 5960-99-037-3805  
CV7553 = 5960-99-037-3800

This specification is prepared by, and the Qualification Approval Authority is:-

Ministry of Aviation, Royal Radar Establishment, Malvern, Worcs. England.

TABLE 1 GROUP A INSPECTION

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Sym-bol	LIMITS		UNITS
	K1007/NATO Ref.	Specific Conditions				Min	Max	
<u>SUB-GROUP 1</u> Visual and Mechanical Inspection	5.1	Excluding Physical Dimensions	.65	I				
<u>SUB-GROUP 2</u> Reverse Current (1)	8A.2.2	CV7551 } $V_R = 50V$ CV7552 } $V_R = 100V$ CV7553	1.0	II	$I_R$	-	2.0 2.0 5.0	$\mu A$ $\mu A$ $\mu A$
Forward Volts Drop	8A.3.2	$I_F = 600 \text{ mA (pulsed)}$			$V_F$	-	1.7	V
Forward Overshoot Voltage	8A.6.1.1	$I_F = 10 \text{ mA}$			$V_F$	-	1.1	Volts dc
		Pulse Width = 350 nS			$V_F$	-	2.5	Volts dc
		Rise Time = 2 nS P.R.F. = 100			$V_F$	-	2.5	Volts dc

TABLE 1 GROUP A INSPECTION CONT'D

Examination or Test	TEST CONDITIONS		AQL %	Insp. Level	Symbol	LIMITS		UNITS
	K1007/NATO Ref.	Specific Conditions				Min	Max	
<u>SUB-GROUP 2</u> <u>CONT'D</u>								
Forward Recovery Time	8A.6.1.1	$I_F = 10 \text{ mA}$ CV7551 Pulse Width = 350 nS CV7552 Rise Time = 2 nS			$T_{fr}$ $T_{fr}$	- -	10 25	nSecs nSecs
Reverse Recovery Time	8A.6.1.2	P.R.F. = 100 CV7553 $I_F = 600 \text{ mA}$ CV7551 $I_R = 600 \text{ mA}$ CV7552 Recovery to 100 mA CV7553			$T_{rr}$ $T_{rr}$ $T_{rr}$	- - -	25 150 50	nSecs nSecs nSecs
Capacitance	8A.5.1	$V_R = 1V$			C	-	9	pF
<u>SUB-GROUP 3</u>			2.5	I				
Reverse Current(2)	8A.2.2	$T_{amb} = 100^\circ\text{C}$ , $V_R = 50V$ CV7551 $T_{amb} = 100^\circ\text{C}$ , $V_R = 50V$ CV7552 $T_{amb} = 100^\circ\text{C}$ , $V_r = 100V$ CV7553			$I_R$ $I_R$ $I_R$	- - -	25 25 50	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
<u>SUB-GROUP 4</u> Omitted								

**TABLE 2 GROUP B INSPECTION**  
 (See Page 3 Quality Assurance Provisions, Destructive Tests)

Examination or test	TEST CONDITIONS		AQL %	Insp. Level	Sym-bol	LIMITS		UNITS
	K1007/NATO Ref.	SPECIFIC CONDITIONS				Min	Max	
<u>SUB-GROUP 1</u> Physical Dimensions	5.1	According to Section D Appendix I, Drawing 8	6.5	IC				
<u>SUB-GROUP 2</u> Solderability	5.13		4.0	IA				
Temperature Cycling	5.5	-65°C to +150°C						
Moisture Resistance	5.3.1.							
<u>SUB-GROUP 3</u> Vibration Fatigue			4.0	IA				
<u>SUB-GROUP 4</u> Lead Fatigue	5.10.2	2 Cycles	6.5	IA				
<u>SUB-GROUP 5</u> Omitted								
<u>SUB-GROUP 6</u> Omitted								

TABLE 2 GROUP B INSPECTION CONT'D

Examination or Test	K1007/NATO Ref.	TEST CONDITIONS		AQL %	Insp. Level	Sym- bol	LIMITS		UNITS
		SPECIFIC CONDITIONS					Min	Max	
<u>SUB-GROUP 7</u> High Temperature Life (non-operating)	6.2.1 6.6.1.2.2	T stg = 150°C Duration 1000 hours	4.0	I					
<u>SUB-GROUP 8</u> Operating Life	6.3. 6.6.1.2.2	Operation at an ambient temperature between 25 and 150°C. Dissipation not less than the value correspond- ing to the chosen $T_{amb}$ according to the derating curve Fig. 1 Max speci- fied Reverse Voltage applied. Duration = 1000 hours	4.5	IA					
<u>POST TEST END POINTS</u> <u>for SUB-GROUPS 2, 3,</u> <u>7, and 8.</u> Forward Volts Drop		As in Group A, Sub-group 2				V <sub>F</sub>	-	1.8	V
Reverse Current		As in Group A, Sub-group 3 CV7551 CV7552 CV7553				I <sub>R</sub> I <sub>R</sub> I <sub>R</sub>		30 30 60	µA µA µA



TABLE 3 GROUP C INSPECTION

Examination or Test	K1007/NATO Ref.	TEST CONDITIONS		AQL %	Insp. Level	Sym- bol	LIMITS		UNITS
		SPECIFIC CONDITIONS	Min				Max		
<u>SUB-GROUP 1</u>									
Omitted									
<u>SUB-GROUP 2</u>				6.5	IC				
Shock	5.17.1		Non-operating 5 blows in each of three mutually perpendicular directions						
<u>POST TEST END POINTS</u> As for Group B, Sub-Groups 2, 3, 7, and 8									

FIG 1

