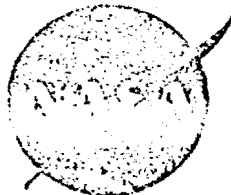


REVISIONS

SYMBOL	PREP BY	DESCRIPTION	DATE	APPROVAL

PREPARED BY: <i>G. Jacobs</i> G. Jacobs/Sperry Systems Mgt.	DATE 6-10-85	TITLE Screening Procedure for Diode, Silicon Photodetector Part No. S874-18K Hamamatsu Corporation
APPROVED: <i>G. Oberman</i> G. Oberman/Sperry Systems Mgt.	6/12/85	
APPROVED: <i>G. P. Kramer</i> G. P. Kramer/GSFC	7/29/85	
APPROVED		
		S-311-407

Parts Branch
Office of Flight Assurance



GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND

I. Screening Requirements - All devices shall be subjected to the screening tests per sequence listed in Table I of this spec, which conforms to PPL-17 requirements.

II. Special Instructions

- a. A sample from each lot, not to exceed three devices, shall be submitted to trial initial electrical tests, burn-in, and 25°C final electrical tests before the entire lot is committed to the screening sequence. The burn-in for this trial period shall be limited to 24 hours. If any failures occur during this trial period, the test configuration shall be thoroughly checked before proceeding, and the GSFC Parts Branch shall be notified (see contact point, below).
- b. These devices are considered susceptible to Electro-Static Discharge damage (ESD). The testing laboratory must use proper precautions through all phases of testing, handling, and packaging to avoid ESD damage.
- c. Burn-in temperature shall be 80^{+3}_{-0} C.
- d. The burn-in shall be performed using the test bias and stress levels per Table I.
- e. Bias shall not be removed from the device after burn-in test until device case temperatures are less than 30°C.
- f. Electrical tests shall be performed within 96 hours of reduction of burn-in temperature.
- g. Delta shall be computed for those parameters having Delta limit, only if required in Table I. Delta shall be computed using the electrical measurement taken immediately prior to the prescribed burn-in as the reference.

- h. Devices indicating failure during electrical tests shall be removed from the test socket, reinserted, and retested. If device passes the retest, it shall be considered a passing unit.
- i. Devices identified as failures and removed from test shall be stored, handled, and packaged for shipment using the same procedures used for passing units to avoid further damage. Failed units shall be clearly identified and segregated from passing units.
- j. The temperature sequence for electrical measurements shall be at +25°C, +80°C.
- k. Read and record all electrical parameters identified in Table I. Calculate deltas per Table II.
- l. Total dose radiation testing, if required shall be performed under bias $V_R = 10$ V.
- m. Deliverable data shall be comprised of all "read and record" measurements, and a summary of the attribute data.
- n. Point of contact - If in the event of failures that exceed the prescribed percent defective allowed (PDA), trial run problems, or cumulative failures during other phases of the screening sequence that exceed 15% of the lot size, then immediately notify:

The Goddard Space Flight Center
Parts Branch, Code 311
Greenbelt, MD 20771
Telephone: (301) 344-8884

All devices shall be subjected to the screening tests specified in Table I (below), which shall be performed in the order indicated.

TABLE I. Screening Tests

Examination or Test	Military Standard	Method	Details
External Visual	MIL-STD-750	2071	3 X Minimum
Electrical Measurements			See Table II for details and limits.
High Temperature Storage			48 ± 4 hours at T _A = +100°C
Thermal Shock (Temperature Cycling)	MIL-STD-202	107	Cond. B except -20°C to 80°C end temperatures. Maintain end-temperatures for 15 (+15, -0) minutes.
Acceleration	MIL-STD-750	2006	Once only, in Y ₁ -direction, at 5,000 G. One-minute hold time not applicable.
Hermetic Seal (Fine Leak) Test	MIL-STD-750	1071	Cond. G or H. Maximum allowable leakage rate = 5x10 ⁻⁸ atm-cc/sec.
Hermetic Seal (Gross Leak) Test	MIL-STD-750	1071	Condition C. at +80°C
Pre Burn-in Electrical Measurements			Measure R _S , I _{D1} and I _{D2} of Table II; Record data for delta calculations.
HTRB Burn-in			V _R = 10 V, 96 hrs. @ T _A = 80°C +0 -5°C
Post HTRB Electrical Measurements			Measure R _S , I _{D1} and I _{D2} of Table II; Record measurements and calculate deltas. Reject devices exceeding limits in Table II. PDA = 10.
Final Electrical Measurements			See Table II for details and limits. Any device that fails a test measurement shall not be supplied to this specification.
Final Visual	MIL-STD-750	2071	3 X Minimum

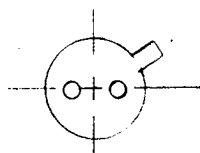
TABLE II. Electrical Requirements ^{1/}

Parameter	Symbol	Conditions	Limits at Temperature ^{2/}						Delta Limits (Δ)@25°C	Units		
			25°C								80°C	
			Min.	Max.							Min.	Max
Radiant Sensitivity	R _S	$\lambda = 850 \text{ nm}$ $V_R = 10 \text{ mV}$	0.45							+10%	A/W	
Dark Current	I _{D1}	$V_R = 10 \text{ mV}$		2					120	+50%	pA	
Dark Current	I _{D2}	$V_R = 10 \text{ V}$		20					1200	+100%	pA	

1/ Package and connections:

2/ Limits are derived from the manufacturers typical values.

TO-18



case

(-) lead common to case