S19G6F

SPECIAL QUALITY HALF-WAVE RECTIFIER

Indirectly heated

GENERAL

The S19G6F is a special quality, indirectly heated, high vacuum half-wave rectifier with flying leads. It is intended for use in high voltage power supplies. A special shock resistant construction is employed which gives increased reliability and life expectancy. Quality tests are performed on electrical characteristics, vibration noise, lead fragility, glass strain, electrode resonance, vibration fatigue, shock resistance, heater cycling, stability, and life.

RATING‡

Heater Voltage	V_h	4·0	V
Heater Current	I_h	0·5	A
Maximum r.m.s. Anode Voltage	$V_{a(r.m.s.)max}$	2·0	kV
Maximum Working Peak Inverse Voltage		5·0	kV
Maximum No Load Peak Inverse Voltage		6·0	kV
Maximum Mean Anode Current	$I_{a(av)max}$	30	mA
Maximum Peak Heater/Cathode Voltage	$V_{h-k(pk)max}$	10*	V
Maximum Peak Anode Current	$i_{a(pk)max}$	180	mA
Maximum Reservoir Capacitor (50 c/s)	$C_{(max)}$	1·1	μF
Minimum Surge Limiting Resistance	$R_{(lim)min}$	4,500†	Ω
Minimum H.T. Switching Delay for Full Rating	$t_{sd(min)}$	20	s
Maximum Shock (short duration)		500	g
Maximum Acceleration (continuous operation)		2·5	g

* Cathode and heater should normally be tied, externally.

† This resistance can be obtained in the distributed resistance of the transformer winding.

‡ All limiting values are Absolute Values, not Design Centres.

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LIMITS OF CHARACTERISTICS

The test limits are for guidance in equipment design. The quality is controlled statistically to ensure that only a small percentage are outside these limits. The quality control levels are related to the importance of the characteristic being tested.

Test	Conditions V_h (V)	V_a (V)	$V_{h\text{-}k}$ (V)	C (μF)	Life Period	Limits Min.	Limits Max.	Units
Heater Current	4	.	.	.	Initial	0·45	0·55	A
					500 hrs.	0·45	0·55	A
Anode Current	4	55	.	.	Initial	50	.	mA
					500 hrs.	48	.	mA
Change in Anode Current	4	55	.	.	Initial to 1 hr.	.	10	%
Heater/Cathode Leakage Current	4	.	10	.	Initial	.	10	μA
Voltage Breakdown, tested in half-wave rectifier circuit. R_{lim} = 4·5kΩ, R_L = 68kΩ, I_a = 30mA approximately.	4	2kV rms	.	1	Initial	.	.	

Load conditions maintained for 10 seconds then supply voltage switched on and off three times at five second intervals. There must be no persistent sparking, blue glow or other abnormal manifestations.

Life Test Conditions

Tested in half-wave rectifier circuit. R_{lim} = 4·5kΩ, R_L = 68kΩ, I_a = 30mA approx.

4	2kV rms	.	1	

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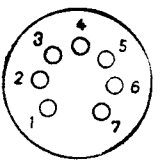
DIMENSIONS

Maximum Seated Height	54 mm
Maximum Diameter	19 mm
Minimum Lead Length	38 mm

MOUNTING POSITION—Unrestricted

CAP—CT1 and flying lead.

BASE—B7G/F



Viewed from free end.

CONNECTIONS

Pin 1	Internal Connection	IC
Pin 2	Cathode	k
Pin 3	Heater	h
Pin 4	Heater	h
Pin 5	Internal Connection	IC
Pin 6	Internal Connection	IC
Pin 7	Internal Connection	IC
Top Cap	Anode	a

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Glass Envelope Strain Test

A statistical sample is tested to control glass quality. No voltages are applied to the electrodes.
The valves are completely immersed in boiling water at a temperature between 97°C and 100°C for 15 seconds and then immediately plunged into ice cold water for 5 seconds. The valves are then examined for glass cracks.

Base Strain Test

A Lead Fragility Test is carried out in place of the Base Strain Test.

Fatigue Test

A statistical sample is tested to control heater failures and other mechanical defects. The heaters are successively run at 4·0V for one minute and switched off for three minutes, no other voltages applied. The valves are rigidly mounted on a vibrating machine and vibrated for at least 100 hours, for not less than 30 hours in each of three mutually perpendicular planes at a frequency of 170 c/s with a minimum peak acceleration of 5g.

Shock Test

A statistical sample is tested to control mechanical defects likely to be caused by shock. No voltages are applied to the electrodes. The valves are subjected to five blows of approximately 500g acceleration in each of four directions.

Holding Period—Inoperatives Control

After completing the test specification the valves are held for at least 28 days and then retested to ensure that there has been no deterioration on storage.

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