



ELECTRONIC TUBE REFERENCE

19DQ3

Rectifier - Damper Diode electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

RECTIFIER

Half-wave vacuum rectifier used as a damper diode in television horizontal-deflection circuits, supplied as a heater variant of its corresponding parent type.

GENERAL CHARACTERISTICS

BASE DESIGNATION	12FX	BASE PINS	12
NOMINAL HEATER	19 V / 600 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Rectifier	
MAXIMUM PLATE DISSIPATION	6.5 W
PEAK INVERSE VOLTAGE	5000 V
NOMINAL OUTPUT CURRENT	350 mA
PEAK FORWARD CURRENT	2.1 A
FORWARD VOLTAGE DROP	25 V
WARM-UP TIME	11 s
<i>Damper-service ratings; output-current field uses published average plate current.</i>	

19DQ3 — Duodecar Half-Wave Vacuum Rectifier

The **19DQ3** (also designated as **19CG3/19DQ3**) is a duodecar half-wave vacuum rectifier designed specifically for service as a damper diode in the horizontal-deflection circuits of both color and black-and-white television receivers. Structurally and electrically, the 19DQ3 is identical to the **6CG3**, with the sole exception of its heater ratings, which are tailored for series-string heater chains.

Construction, Heater, and Pinout

The 19DQ3 is constructed in a duodecar glass envelope conforming to Outlines section 8G and requires a standard duodecar 12-contact socket for operation. The tube features a 12FX pinout arrangement, which includes several internal connections that must not be used for external circuit tie points, as well as unconnected pins.

Pin Connection Diagram (12FX)

The 12-pin base configuration is arranged as follows:

Pin Number	Connection	Description
1	IC	Internal Connection (Do Not Use)
2	NC	No Connection
3	NC	No Connection
4	H	Heater
5	IC	Internal Connection (Do Not Use)
6	K	Cathode
7	IC	Internal Connection (Do Not Use)
8	IC	Internal Connection (Do Not Use)
9	IC	Internal Connection (Do Not Use)
10	P	Plate
11	NC	No Connection
12	H	Heater

Heater Characteristics

The heater is designed for series or parallel operation with a controlled warm-up time to ensure reliable integration into television receiver power systems.

- **Heater Voltage (AC/DC):** 19 V
- **Heater Current:** 0.6 A
- **Heater Warm-up Time:** 11 seconds

- **Calculated Heater Power:** 11.4 W (calculated from a nominal heater voltage of 19 V and a heater current of 0.6 A)

Electrical Characteristics and Voltage Drop

The 19DQ3 exhibits low internal resistance, which is critical for minimizing power losses in high-efficiency damper service. The instantaneous electrical characteristics are documented under two distinct sets of conditions:

- **Standard/Family Characteristics:** A tube voltage drop of **25 V** is typical at an instantaneous plate current of **700 mA**.
- **Alternative/6CG3-Specific Characteristics:** A lower tube voltage drop of **20 V** is specified at an instantaneous plate current of **680 mA**.

Maximum Ratings

The 19DQ3 is rated under the Design-Maximum system for damper service in 525-line, 30-frame television systems. Because the 19DQ3 is identical to the [6CG3](#) except for its heater, two sets of design-maximum ratings are relevant: the standard family ratings (shared with types [6CG3](#), [6BW3](#), [6DQ3](#), [19CG3/19DQ3](#), and [25CG3](#)) and the alternative 6CG3-specific ratings.

Design-Maximum Ratings Comparison

Parameter	Standard/Family Ratings	Alternative/6CG3-Specific Ratings
Peak Inverse Plate Voltage	5000 V	5000 V
Peak Plate Current	2100 mA	1500 mA
Average Plate Current	350 mA	350 mA
Plate Dissipation	6.5 W	11 W
Maximum Bulb Temperature (Hottest Point)	—	220 °C
Heater-Cathode Voltage (Peak)	+300 V, -5000 V	+300 V, -5600 V
Heater-Cathode Voltage (Average)	+100 V, -900 V	+100 V, -900 V

The maximum peak inverse plate voltage of 5000 V is rated for a pulse duration not exceeding 15% of a horizontal scanning cycle, or a maximum of 10 microseconds.

Technical Summary

The **19DQ3** is a specialized **duodecar half-wave vacuum rectifier** designed for damper service in television horizontal-deflection circuits. Operating with a **19 V, 0.6 A** heater with an **11-second warm-up time**, it provides high-voltage insulation and high peak current capabilities. Depending on the rating system applied, it supports peak inverse plate voltages up to **5000 V**, peak plate currents of **1500 to 2100 mA**, and plate dissipation limits of **6.5 to 11 W**. Its physical construction utilizes a **12-pin duodecar base** with a **12FX pinout**, ensuring robust isolation for high-voltage pulse operation.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1975 RCA RC30

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1975 RCA RC30

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Warm-up Time –	11 s	Other;PublishedValue1
Heater Warm-up Time –	11 s	Other;PublishedValue2
Peak Inverse Plate Voltage*	5000 V	MaximumRating
Peak Plate Current	2100 mA	MaximumRating
Average Plate Current	300 mA	MaximumRating;PublishedValue1
Average Plate Current	350 mA	MaximumRating;PublishedValue2
Plate Dissipation	6.5 W	MaximumRating
Peak value	-5000 V	MaximumRating
Average value	100 V	MaximumRating;PublishedValue1
Average value	900 V	MaximumRating;PublishedValue2
Tube Voitage Drop for plate current of	700 mA	MaximumRating;PublishedValue1
Tube Voitage Drop for plate current of	25 mA	MaximumRating;PublishedValue2
Peak Inverse Plate Voltage	6000 V	Section1;Promoted