Medium-Mu Twin Triode

9-PIN MINIATURE TYPE

For Computer and other "On-Off" Control Applications Involving Long Periods of Operation under Cutoff Conditions

GENERAL DATA

Electrical:

	Series	*Parallel*	
Heater, for Unipotential Cathodes:			
Heater arrangement			
Voltage (AC or DC)	12.6 ± 5%	6.3 ± 5%	volts
Current	0.45	0.9	amp
Direct Interelectrode Capacitances (Approx.):[a]			
Grid to plate (Each unit)	6		μμf
Grid to cathode and heater (Each unit)	4.8		μμf
Plate to cathode and heater (Unit No.1)	0.65		μμf
Plate to cathode and heater (Unit No.2)	0.55		μμf
Grid to grid	0.1		μμf
Plate to plate	1.4		μμf
Heater to cathode (Each unit)	6		μμf

Characteristics (Each Unit): ←

Plate Voltage	90	120	volts
Grid Voltage	[b]	−2	volts
Amplification Factor	−	21	
Plate Resistance (Approx.)	−	1750	ohms
Transconductance	−	12000	μmhos
Plate Current	47	36	ma
Grid Current	250	−	μa
Grid Voltage (Approx.) for plate volts = 150 and plate μa = 200	−	−11	volts

Mechanical:

Operating Position . . . Any, but for the utmost in service, tube should be vertical with base down or up, or horizontal with pins 5 and 9 in vertical plane

Maximum Overall Length . . . . . 2-5/8"

Maximum Seated Length . . . . . 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip) . . . 2" ± 3/32"

Diameter . . . . . 0.750" to 0.875"

Dimensional Outline . . . . . See *General Section*

Bulb T6-1/2

Base . . . . . Small-Button Noval 9-Pin (JEDEC No.E9-1)

←Indicates a change.

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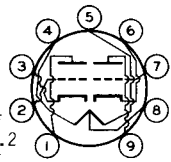
Basing Designation for BOTTOM VIEW. 9H

Pin 1 – Plate of Unit No.2
Pin 2 – Grid of Unit No.2
Pin 3 – Cathode of Unit No.2
Pins 4 & 8 – Heater of Unit No.2
Pins 5 & 8 – Heater of Unit No.1



Pin 6 – Cathode of Unit No.1
Pin 7 – Grid of Unit No.1
Pin 8 – Heater Mid-Tap
Pin 9 – Plate of Unit No.1

COMPUTER SERVICE and "ON-OFF" CONTROL SERVICE

Unless Otherwise Specified, Values are for Each Unit

Maximum Ratings, *Absolute-Maximum Values:*

PLATE VOLTAGE:			
Average.	300	max.	volts
Peak positive-pulse[c]	600	max.	volts
GRID VOLTAGE:			
DC negative.	100	max.	volts
DC positive.	1	max.	volt
Peak negative-pulse[c]	300	max.	volts
Peak positive-pulse[c]	30	max.	volts
GRID CURRENT:			
Average.	5	max.	ma
Peak[c].	200	max.	ma
CATHODE CURRENT:			
Average.	50	max.	ma
Peak[c].	400	max.	ma
PLATE DISSIPATION:			
Either plate	4.5	max.	watts
Both plates (Both units operating) . . .	8	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode.	200	max.	volts
Heater positive with respect to cathode.	200[d]	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	160	max.	°C

Maximum Circuit Values:

Grid-Circuit Resistance:			
For fixed-bias operation	0.1	max.	megohm
For cathode-bias operation	0.5	max.	megohm

[a] Without external shield.

[b] Adjusted for indicated grid current.

[c] Under the following conditions: rectangular pulse; pulse duration, 10 microseconds; pulse-repetition rate, 1 x 10^3 pps; and duty factor, 0.010 ± 0.001. The rise time shall be less than 1 microsecond, fall time less than 2 microseconds, overshoot less than 5 per cent and droop less than 10 per cent.

[d] The dc component must not exceed 100 volts.

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

Unless Otherwise Specified, Values are for Each Unit

	Note	Min.	Max.	
Heater Current	1	0.41	0.49	amp
Plate Current (1)	1,2	26	45	ma
Plate Current (2)	1,3	34	60	ma ←
Plate Current (3)	1,4	–	200	μa
Reverse Grid Current	1,2	–	-1.5	μa
Heater-Cathode Leakage Current:				
Heater negative with respect to cathode	1,5	–	30	μa
Heater positive with respect to cathode	1,5	–	30	μa
Leakage Resistance:				
Between plate and all other electrodes tied together	1,6	50	–	megohms
Between grid and all other electrodes tied together	1,7	50	–	megohms

Note 1: With heater volts = 12.6 ac or dc (Series arrangement).

Note 2: With plate volts = 120 and grid volts = -2. Each unit tested separately. Unit not under test connected to ground.

Note 3: With plate volts = 90 and grid voltage adjusted for grid μa = 250. Each unit tested separately. Unit not under test connected to ground.

Note 4: With plate volts = 150 and grid volts = -14. Each unit tested separately. Unit not under test connected to ground.

Note 5: With 100 volts dc between heater and cathode.

Note 6: With plate volts = -500.

Note 7: With grid volts = -300.

SPECIAL RATINGS & PERFORMANCE DATA

Heater-Cycling Life Performance:

This test is performed on a sample lot of tubes from each production run. A minimum of 2000 cycles of intermittent operation is applied under the following conditions: heater volts = 15 (Series heater arrangement) cycled one minute on and four minutes off, heater 180 volts positive with respect to cathode, and all other elements connected to ground. At the end of this test, tubes are checked for heater-cathode shorts and open circuits.

Cathode-Interface-Resistance Life Test: ←

A sample lot of tubes from each production run is life tested at heater volts = 12.6 (Series heater arrangement) and with zero cathode current. At the end of 1000 hours, tubes will not show a cathode-interface resistance in excess of 25 ohms when measured in accordance with Method B, the Complementary Network Method, of ASTM Standard F 300-57T at heater volts = 11.4, plate volts = 75, plate current adjusted to 6.5 milliamperes, and 50-kc, square-wave signal voltage of 0.2 volt.

← Indicates a change.

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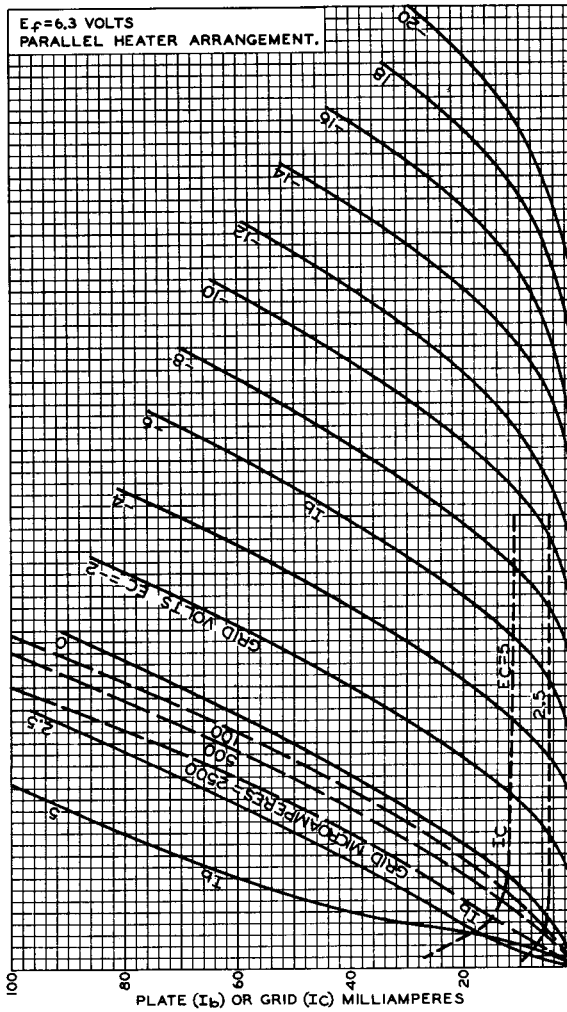
AVERAGE CHARACTERISTICS
Each Unit



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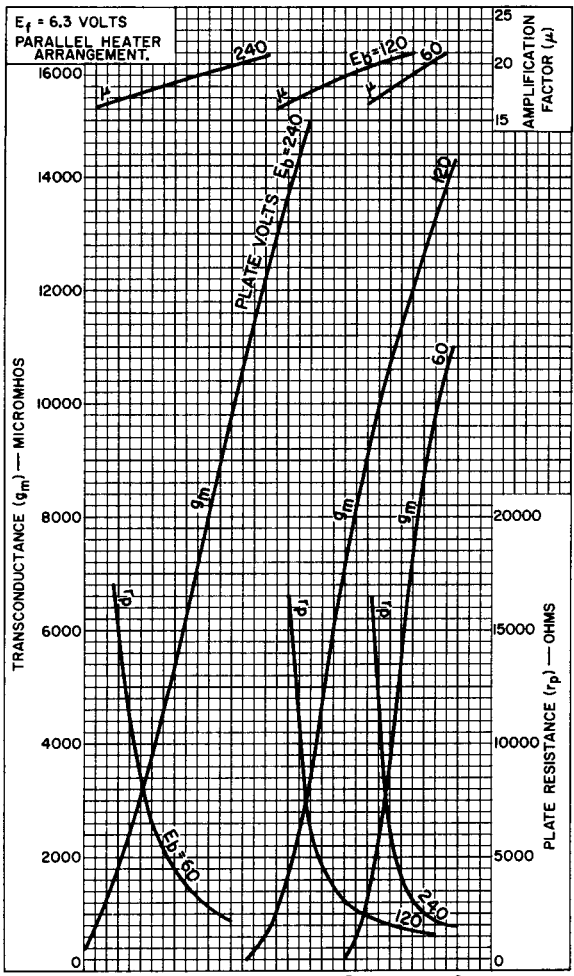
AVERAGE CHARACTERISTICS
Each Unit



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