



ELECTRONIC TUBE REFERENCE

F7338

Specialized - Traveling Wave electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRAVELINGWAVE

Specialized ITT traveling-wave microwave amplifier for broadband RF service; available source extraction provides limited reliable performance detail.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	— / —	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 TravelingWave

No fixed ratings recorded.

Published maximum ratings and characteristics audited; remaining values retained densely in parameter table.

The F7338 is a one-kilowatt pulsed traveling-wave amplifier covering approximately 2 to 4 GHz, with high gain, a rugged metal envelope, helix slow-wave structure, and forced-air cooling.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1962 ITT

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

1962 ITT

Section 1 · TravelingWave

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
The F [1]	7338	The F-7338 is a 1 kilowatt pulse traveling wave amplifier tube having 40 db gain
The F [2]	1	The F-7338 is a 1 kilowatt pulse traveling wave amplifier tube having 40 db gain
The F [3]	40	The F-7338 is a 1 kilowatt pulse traveling wave amplifier tube having 40 db gain
and [1]	2000	and 2000 to 4000 mc frequency range. It is constructed in a rugged metal envelope
and [2]	4000	and 2000 to 4000 mc frequency range. It is constructed in a rugged metal envelope
Published value [1]	5	.005 and pulse lengths up to 10 microseconds can be used.
Published value [2]	10	.005 and pulse lengths up to 10 microseconds can be used.
Heater Voltage [1]	6.3 V	Heater Voltage 6.3 (±10%) volts
Heater Voltage [2]	10 V	Heater Voltage 6.3 (±10%) volts
Heater Current	5 A	Heater Current 5.0 amperes
Maximum Anode Voltage (Note [1])	1 V	Maximum Anode Voltage (Note 1) 8500 volts
Maximum Anode Voltage (Note [2])	8500 V	Maximum Anode Voltage (Note 1) 8500 volts
Maximum Shell Current (Note [1])	2 A	Maximum Shell Current (Note 2) 0.5 ampere peak
Maximum Shell Current (Note [2])	500 mA	Maximum Shell Current (Note 2) 0.5 ampere peak
Maximum Collector Voltage (Note [1])	3 V	Maximum Collector Voltage (Note 3) 9000 volts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Collector Voltage (Note [2])	9000 V	Maximum Collector Voltage (Note 3) 9000 volts
Maximum Collector Dissipation (Note [1])	4 W	Maximum Collector Dissipation (Note 4) 100 watts avg.
Maximum Collector Dissipation (Note [2])	100 W	Maximum Collector Dissipation (Note 4) 100 watts avg.
Maximum R-F Input Power	10 W	Maximum R-F Input Power 10 watts avg.
Maximum R-F Output Power	10 W	Maximum R-F Output Power 10 watts avg.
Maximum Pulse Width (Beam)	10	Maximum Pulse Width (Beam) 10 p sec,
Maximum Cathode Current	2.5 A	Maximum Cathode Current 2.5 amperes peak
Positive (Note [1])	7 V	Positive (Note 7) +6% of anode voltage
Positive (Note [2])	6 V	Positive (Note 7) +6% of anode voltage
Maximum Frequency (Note [1])	5	Maximum Frequency (Note 5) 2000 mc
Maximum Frequency (Note [2])	2000	Maximum Frequency (Note 5) 2000 mc
Minimum Frequency (Note [1])	5	Minimum Frequency (Note 5) 4000 mc
Minimum Frequency (Note [2])	4000	Minimum Frequency (Note 5) 4000 mc
Capacitance - control grid to all other elements	9 pF	Capacitance - control grid to all other elements 9 ppfd
Air flow on Collector Radiator (Note [1])	4	Air flow on Collector Radiator (Note 4) 20 cfm
Air flow on Collector Radiator (Note [2])	20	Air flow on Collector Radiator (Note 4) 20 cfm
Glass Temperature	1600	Glass Temperature 1600C max.
Center Frequency	3000	Center Frequency 3000 mc
Anode Voltage (Note [1])	1 V	Anode Voltage (Note 1) 7800 wvolts
Anode Voltage (Note [2])	7800 V	Anode Voltage (Note 1) 7800 wvolts
Cathode Current	1.8 A	Cathode Current 1.8 amperes peak
Collector Voltage (tied to shell)	7500 V	Collector Voltage (tied to shell) 7500 volts
Collector Current	1.4 A	Collector Current 1.4 amperes peak
Power Output (at center frequency)	1.8 kW	Power Output (at center frequency) 1.8 kw peak
Bandwidth (Note [1])	6	Bandwidth (Note 6) 2.0to 4.0 kmc
Bandwidth (Note [2])	2	Bandwidth (Note 6) 2.0to 4.0 kmc
Bandwidth (Note [3])	4	Bandwidth (Note 6) 2.0to 4.0 kmc

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Gain (Note [1])	6	Gain (Note 6) 40 db
Gain (Note [2])	40	Gain (Note 6) 40 db
Pulse Width	2	Pulse Width 2 p sec,
Grid Bias (for cut-off)	-100	Grid Bias (for cut-off) -100 volts
Grid Voltage during Pulse (Note [1])	8 V	Grid Voltage during Pulse (Note 8) +350 wvolts
Grid Voltage during Pulse (Note [2])	350 V	Grid Voltage during Pulse (Note 8) +350 wvolts
Grid Current during Pulse	100 mA	Grid Current during Pulse 0.1 amperes peak
Note	1 V	Note 1: All voltages shown are with respect to cathode. Anode and helix are con-
Note	2 A	Note 2: The shell current is the difference between cathode current and collector
Note	3	Note 3: The tube may be operated with the collector tied to the shell (anode and
Note	4 W	Note 4: Forced air cooling is required for average collector power in excess
of	10 W	of 10 watts. As the collector power is increased, the air flow re-
quired increases., At the maximum collector power of	100 W	quired increases., At the maximum collector power of 100 watts, a
Note [1]	5 W	Note 5: Useful gain and power output exists below 2000 mc and above 4000 mc
Note [2]	2000 W	Note 5: Useful gain and power output exists below 2000 mc and above 4000 mc
Note [3]	4000 W	Note 5: Useful gain and power output exists below 2000 mc and above 4000 mc
Note	6 W	Note 6: The following gain, power, bandwidth relations apply: The minimum
power and gain is [1]	1 kW	power and gain is 1 kw at 40 db from 2400 to 3600 mc, and 500 watts
power and gain is [2]	40 kW	power and gain is 1 kw at 40 db from 2400 to 3600 mc, and 500 watts
power and gain is [3]	2400 kW	power and gain is 1 kw at 40 db from 2400 to 3600 mc, and 500 watts
power and gain is [4]	3600 kW	power and gain is 1 kw at 40 db from 2400 to 3600 mc, and 500 watts
power and gain is [5]	500 kW	power and gain is 1 kw at 40 db from 2400 to 3600 mc, and 500 watts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
at [1]	37	at 37 db from 2000 to 4000 mc. Small signal gain is less than 50 db
at [2]	2000	at 37 db from 2000 to 4000 mc. Small signal gain is less than 50 db
at [3]	4000	at 37 db from 2000 to 4000 mc. Small signal gain is less than 50 db
at [4]	50	at 37 db from 2000 to 4000 mc. Small signal gain is less than 50 db
over the operating bandwidth, Saturated power output of at least	1 kW	over the operating bandwidth, Saturated power output of at least 1 kw
can be obtained from [1]	2200	can be obtained from 2200 to 4000 mc. Bandwidth between 6 db small
can be obtained from [2]	4000	can be obtained from 2200 to 4000 mc. Bandwidth between 6 db small
can be obtained from [3]	6	can be obtained from 2200 to 4000 mc. Bandwidth between 6 db small
signal points is greater than [1]	500	signal points is greater than 500 mc and bandwidth between 10 db
signal points is greater than [2]	10	signal points is greater than 500 mc and bandwidth between 10 db
Note	7 V	Note 7: Positive voltage must not be applied to the grid in the absence of anode
Note	8 V	Note 8: The positive grid voltage pulse should be the minimum consistent with
([1]	1 V	(1) Heater warm up of 2 minutes before applying high voltage is recommended.
([2]	2 V	(1) Heater warm up of 2 minutes before applying high voltage is recommended.
(	2 V	(2) High voltage must not be applied in the absence of proper grid bias and
Published value	1	.1 watt input "\np“t
ANODE [1]	9	ANODE 9. 625 21/251/16
ANODE [2]	625	ANODE 9. 625 21/251/16
ANODE [3]	21	ANODE 9. 625 21/251/16
ANODE [4]	251	ANODE 9. 625 21/251/16
ANODE [5]	16	ANODE 9. 625 21/251/16
c =	15	c = 15 COLLECTOR CON-

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Published value	16	16 OUTPUT NECTOR
Published value	20	20 % INPUT
= [1]	5	=5 2 HEATER CATHODE
= [2]	2	=5 2 HEATER CATHODE
Published value [1]	5	5 & 6 CONTROL GRID
Published value [2]	6	5 & 6 CONTROL GRID
g0	10	gO 10 HEATER