



ELECTRONIC TUBE REFERENCE

Z15350Z

Specialized - Klystron electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
KLYSTRON

Four-cavity UHF power klystron covering 470–598 MHz, designed as the final vision or sound amplifier in television transmitters and transposers.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	5 V / —	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Klystron

No fixed ratings recorded.

Klystron electrical data are primarily beam/collector/RF parameters without direct promoted TUBE_SECTION equivalents; retained densely in TUBE_SECTION_PARAMETER.

The Z153/50Z is a four-integral-cavity UHF power klystron intended as a final amplifier in the vision and sound sections of UHF television transmitters and for television transposer service. It covers 470 to 598 MHz, uses magnetic focusing and a modulating anode for beam-current control, with vapor-cooled collector and forced-air cooling of the gun and tube body.

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 · Klystron

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
U.H.F Power Klystrons ZI1 [1]	53 W	U.H.F Power Klystrons ZI153/50Z
U.H.F Power Klystrons ZI1 [2]	50 W	U.H.F Power Klystrons ZI153/50Z
uleting anode for beam current [1]	2161 A	uleting anode for beam current 2161/50Z used in ZM161 mount
uleting anode for beam current [2]	50 A	uleting anode for beam current 2161/50Z used in ZM161 mount
uleting anode for beam current [3]	61 A	uleting anode for beam current 2161/50Z used in ZM161 mount
using the same beam voltage supply to except the Z1 [1]	53 V	using the same beam voltage supply to except the Z153/50Z series of
using the same beam voltage supply to except the Z1 [2]	50 V	using the same beam voltage supply to except the Z153/50Z series of
focus mount essembly, incorporat- Power output, saturated (kW)	15 kW	focus mount essembly, incorporat- Power output, saturated (kW) 15
ing the focus electromagnet system Power gain, typical (dB)	43 W	ing the focus electromagnet system Power gain, typical (dB) 43
in which the klystron will give Bandwidth (MHz)	8 MHz	in which the klystron will give Bandwidth (MHz) 8,0
the performance specified in these Beam voltage (kv)	13 kV	the performance specified in these Beam voltage (kv) 13
Z1 [1]	53	Z153/50Z ZM153 470 to 598 Cathode indirectly heated
Z1 [2]	50	Z153/50Z ZM153 470 to 598 Cathode indirectly heated

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Z1 [3]	53	Z153/50Z ZM153 470 to 598 Cathode indirectly heated
Z1 [4]	470	Z153/50Z ZM153 470 to 598 Cathode indirectly heated
Z1 [5]	598	Z153/50Z ZM153 470 to 598 Cathode indirectly heated
Published value [1]	7163 V	7163/502 M163 598 to 710 Heater voltage, min.
Published value [2]	502 V	7163/502 M163 598 to 710 Heater voltage, min.
Published value [3]	63 V	7163/502 M163 598 to 710 Heater voltage, min.
Published value [4]	598 V	7163/502 M163 598 to 710 Heater voltage, min.
Published value [5]	710 V	7163/502 M163 598 to 710 Heater voltage, min.
In transmitters using e third kly- Heater current range (A) [1]	38 A	In transmitters using e third kly- Heater current range (A) 38 to 44
In transmitters using e third kly- Heater current range (A) [2]	44 A	In transmitters using e third kly- Heater current range (A) 38 to 44
sound signals ss sn emergency res- current, peak, max. (A)	84 mA	sound signals ss sn emergency res- current, peak, max. (A) 84
erve, the tubes are suitable for Cathode heating time {(min)	5	erve, the tubes are suitable for Cathode heating time {(min) 5,0
power output, where the vision/ ated et	5 V	power output, where the vision/ ated et 5,0V. Heater voltage may
sound powers retio is [1]	5 W	sound powers retio is 5:1. have to be increased to 5,5V max.
sound powers retio is [2]	1 W	sound powers retio is 5:1. have to be increased to 5,5V max.
sound powers retio is [3]	5.5 W	sound powers retio is 5:1. have to be increased to 5,5V max.
U.H.F Power Klystrons Z1 [1]	53 W	U.H.F Power Klystrons Z153/50Z
U.H.F Power Klystrons Z1 [2]	50 W	U.H.F Power Klystrons Z153/50Z
Beam voltage, continuous (kV) [1]	14 kV	Beam voltage, continuous (kV) 14 Collector dissipation (kW) 45
Beam voltage, continuous (kV) [2]	45 kV	Beam voltage, continuous (kV) 14 Collector dissipation (kW) 45
Beam current, mean (A) [1]	3.5 A	Beam current, mean (A) 3,5 Load VSWR (Note 2) 1,5:1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Beam current, mean (A) [2]	2 A	Beam current, mean (A) 3,5 Load VSWR (Note 2) 1,5:1
Beam current, mean (A) [3]	1.5 A	Beam current, mean (A) 3,5 Load VSWR (Note 2) 1,5:1
Beam current, mean (A) [4]	1 A	Beam current, mean (A) 3,5 Load VSWR (Note 2) 1,5:1
Body current Note	2 A	Body current Note 2. Tubes will operate at
with zero input power (mA)	50 W	with zero input power (mA) 50 this figure without damage but
output (mA)	150	output (mA) 150 be assured only if load VSWR does
Fower output, saturated (kW) [1]	18	Fower output, saturated (kW) 18 not exceed 1,1:1 .
Fower output, saturated (kW) [2]	1.1	Fower output, saturated (kW) 18 not exceed 1,1:1 .
Fower output, saturated (kW) [3]	1	Fower output, saturated (kW) 18 not exceed 1,1:1 .
{For T.V. transmitter giving sync. power output of	12.5 kW	{For T.V. transmitter giving sync. power output of 12,5kW)
Published value [1]	7153	7153/502 44,125 producad by collector
Published value [2]	502	7153/502 44,125 producad by collector
Published value [3]	44.125	7153/502 44,125 producad by collector
Z2 [1]	163 kW	Z2163/502Z 40,1 dissipation {(m3/min/kW) 0,043
Z2 [2]	502 kW	Z2163/502Z 40,1 dissipation {(m3/min/kW) 0,043
Z2 [3]	40.1 kW	Z2163/502Z 40,1 dissipation {(m3/min/kW) 0,043
Z2 [4]	0.043 kW	Z2163/502Z 40,1 dissipation {(m3/min/kW) 0,043
vertical, collector downwards	12.5	vertical, collector downwards 12,5kW peak sync.
output, min. ([1]	1	output, min. (1/min) 2,27
output, min. ([2]	2.27	output, min. (1/min) 2,27
voltage (v)	100 V	voltage (v) 100 Air flow for gun
current (Note [1]	24 A	current (Note 24) (A) 9,0/13 envelope and tube
current (Note [2]	9 A	current (Note 24) (A) 9,0/13 envelope and tube

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
current (Note [3])	13 A	current (Note 24) (A) 9,0/13 envelope and tube
hot (@)	7.3	hot (@) 7,3 Static pressure head
input Type N coaxial panel jack [1]	2	input Type N coaxial panel jack 2 83md/min. (100Ft3/min)
input Type N coaxial panel jack [2]	83	input Type N coaxial panel jack 2 83md/min. (100Ft3/min)
input Type N coaxial panel jack [3]	100	input Type N coaxial panel jack 2 83md/min. (100Ft3/min)
Frequency range (MHz) [1]	470 MHz	Frequency range (MHz) 470-478 526-534 590-598
Frequency range (MHz) [2]	-478 MHz	Frequency range (MHz) 470-478 526-534 590-598
Frequency range (MHz) [3]	526 MHz	Frequency range (MHz) 470-478 526-534 590-598
Frequency range (MHz) [4]	-534 MHz	Frequency range (MHz) 470-478 526-534 590-598
Frequency range (MHz) [5]	590 MHz	Frequency range (MHz) 470-478 526-534 590-598
Frequency range (MHz) [6]	-598 MHz	Frequency range (MHz) 470-478 526-534 590-598
Channel [1]	21	Channel 21 28 36
Channel [2]	28	Channel 21 28 36
Channel [3]	36	Channel 21 28 36
Beam voltage (kV) [1]	13 kV	Beam voltage (kV) 13 13 13
Beam voltage (kV) [2]	13 kV	Beam voltage (kV) 13 13 13
Beam voltage (kV) [3]	13 kV	Beam voltage (kV) 13 13 13
Beam current (A) [1]	3 A	Beam current (A) 3,0 3,0 3,0
Beam current (A) [2]	3 A	Beam current (A) 3,0 3,0 3,0
Beam current (A) [3]	3 A	Beam current (A) 3,0 3,0 3,0
Modulating anode voltage (kV) [1]	13 kV	Modulating anode voltage (kV) 13 13 13
Modulating anode voltage (kV) [2]	13 kV	Modulating anode voltage (kV) 13 13 13
Modulating anode voltage (kV) [3]	13 kV	Modulating anode voltage (kV) 13 13 13
Modulating anode current (mA) [1]	1 mA	Modulating anode current (mA) 1,0 1,0 1,0

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Modulating anode current (mA) [2]	1 mA	Modulating anode current (mA) 1,0 1,0 1,0
Modulating anode current (mA) [3]	1 mA	Modulating anode current (mA) 1,0 1,0 1,0
Electromagnet current (Note [1])	3 mA	Electromagnet current (Note 3) (A) 12,2 11,8 11,5
Electromagnet current (Note [2])	12.2 mA	Electromagnet current (Note 3) (A) 12,2 11,8 11,5
Electromagnet current (Note [3])	11.8 mA	Electromagnet current (Note 3) (A) 12,2 11,8 11,5
Electromagnet current (Note [4])	11.5 mA	Electromagnet current (Note 3) (A) 12,2 11,8 11,5
Bandwidth (Notes [1])	4.5 MHz	Bandwidth (Notes 4,5) (MHZz) 8,0 8,0 8,0
Bandwidth (Notes [2])	8 MHz	Bandwidth (Notes 4,5) (MHZz) 8,0 8,0 8,0
Bandwidth (Notes [3])	8 MHz	Bandwidth (Notes 4,5) (MHZz) 8,0 8,0 8,0
Bandwidth (Notes [4])	8 MHz	Bandwidth (Notes 4,5) (MHZz) 8,0 8,0 8,0
Body current (Note with zero input power (mA) [1])	6 A 15 W	Body current (Note 6) with zero input power (mA) 15 14 13
with zero input power (mA) [2]	14 W	with zero input power (mA) 15 14 13
with zero input power (mA) [3]	13 W	with zero input power (mA) 15 14 13
at	12.5	at 12,5kW c.w. output, vision
frequency (mA) [1]	30	frequency (mA) 30 34 36
frequency (mA) [2]	34	frequency (mA) 30 34 36
frequency (mA) [3]	36	frequency (mA) 30 34 36
Drive power (Notes	7.8 W	Drive power (Notes 7,8)

TUBE TINKER

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