

ELECTRONIC TUBE REFERENCE

ZM1040

Nixie electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
NIXIE

Large red-filtered cold-cathode Nixie displaying decimal digits 0-9 for direct numerical indication in measuring and counting equipment.

GENERAL CHARACTERISTICS

BASE DESIGNATION	Special 13-pin	BASE PINS	13
NOMINAL HEATER	– / –	PARALLEL HEATER	– / –
HEATING	Indirect; cold cathode	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Nixie	
MAXIMUM PLATE VOLTAGE	170 V
MAXIMUM CATHODE CURRENT	20 mA
MINIMUM REGULATOR CURRENT	3 A
MAXIMUM REGULATOR CURRENT	6 A
STARTING VOLTAGE	160 V
MAINTAINING VOLTAGE	140 V
Single indicator/counting section. Nixie-specific electrical ratings and operating data are retained in TUBE_SECTION_PARAMETER.	

Gas-filled cold-cathode Nixie indicator for direct display of digits 0 through 9 in measuring and counting instruments. ZM1040 is the red-filtered member of the ZM1040/ZM1042 pair.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1965 Nixie Valvo

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

1965 NIXIE VALVO

Section 1 · Nixie

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Ignition voltage	160 V	Typical characteristic
Burning voltage	140 V	Typical glow voltage
Extinction voltage	120 V	Typical characteristic
Display digit height	30 mm	Side-view digits

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Continuous cathode current	3–6 mA	Absolute range
Maximum pulse cathode current	—24 mA	Pulse duration max 20 ms
Cathode-to-cathode voltage	—120 V	Absolute maximum
Envelope temperature	—70 degC	Absolute maximum
Recommended supply voltage	200–350 V	Published examples 200, 250, 300, 350 V
Recommended off-cathode bias	60— V	Bias operation

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1969 Nixie Mullard

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

1969 NIXIE MULLARD

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Numeral/Character Height	31 mm	Published mechanical/display data
Maximum Peak Cathode Current	20 mA	Published peak limit

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Supply Voltage	170 V	Published operating data
Cathode Current	4.5 mA	Published average/normal value



SOURCE DATA APPENDIX

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1969 Nixie Valvo

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CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Ignition voltage	160 V	Typical characteristic
Burning voltage	140 V	Typical glow voltage
Extinction voltage	120 V	Typical characteristic
Display digit height	30 mm	Side-view digits

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Continuous cathode current	3–6 mA	Absolute range
Maximum pulse cathode current	—24 mA	Pulse duration max 20 ms
Cathode-to-cathode voltage	—120 V	Absolute maximum
Envelope temperature	—70 degC	Absolute maximum
Recommended supply voltage	200–350 V	Published examples 200, 250, 300, 350 V
Recommended off-cathode bias	60— V	Bias operation

SOURCE OPERATING CONDITIONS

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196X Nixie Random Datasheets

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

196X NIXIE RANDOM DATASHEETS

Section 1 · Nixie

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Character/Numeral Height	30 mm	Published datasheet value
Ignition Voltage Maximum	170 V	Published datasheet value
Cathode/Anode Current Maximum	4.5 mA	Published datasheet value
Anode Supply Voltage	200 V	Maintaining voltage approx. 140 V
Anode Supply Voltage	250 V	Maintaining voltage approx. 140 V
Anode Supply Voltage	300 V	Maintaining voltage approx. 140 V
Anode Supply Voltage	350 V	Maintaining voltage approx. 140 V

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Supply Voltage Minimum	170 V	Published datasheet value
Extinguishing Voltage Minimum	120 V	Published datasheet value
Cathode Selecting Voltage Minimum	60 V	Published datasheet value

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1971 Nixie RFT

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

1971 NIXIE RFT

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Ignition voltage	170 V	Maximum/typical threshold shown in source table
Operating glow voltage	140 V	Approximate service voltage
Extinction voltage	120 V	Source table value
Nominal cathode current	4.5 mA	Main symbol/digit
Ignition voltage	160 V	Typical characteristic
Burning voltage	140 V	Typical glow voltage
Extinction voltage	120 V	Typical characteristic

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum supply voltage	170 V	Absolute limit table
Cathode current	3–6 mA	Main symbol/digit continuous range
Maximum peak cathode current	20 mA	Main symbol/digit
Envelope temperature minimum	-20 degC	Operating envelope temperature range
Envelope temperature maximum	70 degC	Operating envelope temperature range
Display characters	0 to 9	Translated from French source
Display orientation	side	Viewing orientation
Character height	31 mm	Display geometry
Maximum tube height	62 mm	Mechanical dimension
Maximum tube width/diameter	30 mm	Mechanical dimension as printed
Continuous cathode current	3–6 mA	Absolute range
Maximum pulse cathode current	—24 mA	Pulse duration max 20 ms
Cathode-to-cathode voltage	—120 V	Absolute maximum
Envelope temperature	—70 degC	Absolute maximum



1973 Nixie Siemens

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

1973 NIXIE SIEMENS

Section 1 · Nixie

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Ignition voltage	170 V	Maximum/typical threshold shown in source table
Operating glow voltage	140 V	Approximate service voltage
Extinction voltage	120 V	Source table value
Nominal cathode current	4.5 mA	Main symbol/digit

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum supply voltage	170 V	Absolute limit table
Cathode current	3–6 mA	Main symbol/digit continuous range
Maximum peak cathode current	20 mA	Main symbol/digit
Envelope temperature minimum	-20 degC	Operating envelope temperature range
Envelope temperature maximum	70 degC	Operating envelope temperature range
Display characters	0 to 9	Translated from French source
Display orientation	side	Viewing orientation
Character height	31 mm	Display geometry
Maximum tube height	62 mm	Mechanical dimension
Maximum tube width/diameter	30 mm	Mechanical dimension as printed



1977 Nixie Tesla

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1977 NIXIE TESLA

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Ignition voltage	160 V	Typical characteristic
Burning voltage	140 V	Typical glow voltage
Extinction voltage	120 V	Typical characteristic
Display digit height	30 mm	Side-view digits

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Continuous cathode current	3–6 mA	Absolute range
Maximum pulse cathode current	—24 mA	Pulse duration max 20 ms
Cathode-to-cathode voltage	—120 V	Absolute maximum
Envelope temperature	—70 degC	Absolute maximum
Recommended supply voltage	200–350 V	Published examples 200, 250, 300, 350 V
Recommended off-cathode bias	60— V	Bias operation



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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1999 Philips E-Z

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

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Numeral height	30 mm	Numeral height 30 mm
Cathode current	4.5 mA	Cathode current Ik 4.5 mA
Maintaining voltage	5	Maintaining voltage Vm see sheet 5
Cathode selecting voltage	6	Cathode selecting voltage Vik see sheet 6
Extinguishing voltage	120	Extinguishing voltage Vext min. 120
Maintaining voltage	140410	Maintaining voltage Vm 140410 140410 140410 140410

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode series resistor	47	Anode series resistor Ry 15 27 39 47 k2
Cathode selecting voltage	60	Cathode selecting voltage Vik min, 60 vy
Secondary transformer voltage Vi,	300 v	Secondary transformer voltage Vi, 170 220 250 300 v
Anode series resistor	27	Anode series resistor R, 5.6 12 18 27 k2
Cathode selecting voltage	60 v	Cathode selecting voltage Vkk min, 60 v}
1y With low cathode selecting voltages the current Ixk to the "off" cathodes will	1	1y With low cathode selecting voltages the current Ixk to the "off" cathodes will
LIFE EXPECTANCY at I = 4.5 mA	4.5 mA	LIFE EXPECTANCY at I = 4.5 mA
Anode voltage necessary for ignition	170 V	Anode voltage necessary for ignition Va min, 170 V
Cathode selection voltage	60	Cathode selection voltage Vik min. 60 VvV
Bulb temperature	0	Bulb temperature thulb min 0 %C D)

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Supply voltage	170 V	Supply voltage Vpg min, 170 V
Ignition voltage	170	Ignition voltage Vign max. 170
Typical operation at temperatures tamp = 10 to 30 oC	30 oC	Typical operation at temperatures tamp = 10 to 30 oC
Anode supply voltage	350	Anode supply voltage Vba 200 250 300 350
Bias voltage between anode and "off" cathodes	120 V	Bias voltage between anode and "off" cathodes Vbijag max. 120 V

TUBE TINKER

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