

# MILLIMETER WAVE TUBES

SHORT FORM CATALOG

PRICES EFFECTIVE JUNE 30, 1967

**NOW!**  
**FROM ONE SOURCE**  
**ALL YOUR MM-WAVE**  
**NEEDS!**

BY



EST. 1881

**ADVANCED DESIGN • REPUTATION • SERVICE**

**B.W.O.'S**  
**KLYSTRONS**  
**MAGNETRONS**  
**LADDERTRONS**  
**POWER SUPPLIES**  
**WAVE GUIDE COMPONENTS**

**OKI ELECTRONICS OF AMERICA INC.**

THE OKI BUILDING, 500/506 S. E. 24th STREET  
FORT LAUDERDALE, FLORIDA 33316

TELEX: 5-14421  
FAX: FGF  
TWX: 510-955-9837

AREA CODE - 305  
TEL. 523-7202  
523-6571

OKI  
2

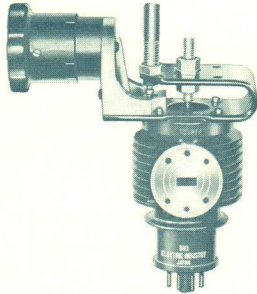
OKI MILLIMETER WAVE TUBES 6-67



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## NEW HIGHER POWER RATINGS!

OKI MM-WAVE KLYSTRON TUBES. (ALL OUTPUT LEVELS MEASURED INTO A MATCHED LOAD)



### INDEX

FX—FIXED TUNED. (SPECIFY FREQ.)  
 TT—TRIM TUNABLE. (SPECIFY CENTER FREQ.)  
 FT—FULLY TUNABLE OVER RANGE.  
 SP—SPECIAL PURPOSE HIGH POWER PACKAGED  
 KLYSTRON, TWO-CAVITY.  
 HV—HIGH VOLTAGE TUBE.  
 LV—LOW VOLTAGE TUBE.  
 BENCH—BENCH TYPE OF TUBE WITH OCTAL BASE.  
 AIRBORNE—LIGHTWEIGHT AIRBORNE TUBE,  
 3½ OZ. WEIGHT  
 LADDERTRON—SPECIAL PURPOSE HIGH POWER  
 PACKAGED KLYSTRON, TUNABLE.

OKI MODEL NR.	TYPICAL FREQUENCY RANGE IN (GHZ)	TYPE OF TUBE (SEE INDEX)	TYPICAL OUTPUT AT MIDBAND	FLANGE TYPE	SINGLE QTY. PRICE
17V10	15.5/18.5	FT HV BENCH	100 milliwatts	UG-419/U	\$ 485.00
20V10	18.0/22.0	FT HV BENCH	160 "	UG-595/U	515.00
22V10	20.0/24.0	FT HV BENCH	165 "	UG-595/U	525.00
24V10A	22.0/26.0	FT HV BENCH	250 "	UG-595/U	525.00
24V11	22.0/26.0	FT HV BENCH	600 "	UG-595/U	950.00
30V10	27.0/32.0	FT HV BENCH	75 "	UG-599/U	585.00
30V11	27.0/32.0	FT HV BENCH	225 "	UG-599/U	995.00
30V16	29.5/31.5	TT HV BENCH	250 "	UG-599/U	1065.00
33V10	31.0/36.0	FT HV BENCH	75 "	UG-599/U	650.00
35V10	32.0/37.0	FT HV BENCH	75 "	UG-599/U	695.00
35V11	32.0/37.0	FT HV BENCH	220 "	UG-599/U	1075.00
35V51	34.7/35.3	TT HV AIRBORNE	165 "	UG-599/U	955.00
35V61	34.7/35.3	TT LV AIRBORNE	30 "	UG-599/U	1230.00
35V155	34.5/35.5	TT HV BENCH	90 "	UG-599/U	725.00
40V10	37.0/42.0	FT HV BENCH	90 "	UG-383/U	885.00
45V10	43.0/48.0	FT HV BENCH	85 "	UG-383/U	925.00
47V10	44.0/51.0	FT HV BENCH	80 "	UG-383/U	975.00
47V11	44.0/51.0	FT HV BENCH	160 "	UG-383/U	1190.00
50V10	46.0/54.0	FT HV BENCH	60 "	UG-383/U & UG-385/U	1030.00
55V10	50.0/60.0	FT HV BENCH	65 "	UG-385/U	1085.00
55V11	50.0/60.0	FT HV BENCH	130 "	UG-385/U	1390.00
60V10	55.0/65.0	FT HV BENCH	65 "	UG-385/U	1595.00
70V10	66.0/76.0	FT HV BENCH	65 "	UG-385/U & UG-387/U	1995.00
70V11A	66.0/76.0	FT HV BENCH	130 "	UG-385/U & UG-387/U	2450.00
75V10	70.0/80.0	FT HV BENCH	45 "	UG-387/U	2200.00
80V10A	75.0/85.0	FT HV BENCH	40 "	UG-387/U	2350.00
90V10	85.0/95.0	FT HV BENCH	30 "	UG-387/U	2495.00
90V11	85.0/95.0	FT HV BENCH	60 "	UG-387/U	2900.00
100V10A	95.0/105.0	FT HV BENCH	25 "	UG-387/U	2675.00
120V10	107.0/122.0	FT HV BENCH	10 "	UG-387/U	3650.00

**DELIVERY:** Delivery of the more popular OKI klystrons can normally be made from our Ft. Lauderdale, Florida, facility within hours of receipt of order. Shipments are made by prepaid Air Express to any destination in the U.S.A. and Canada at no additional cost to you.



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## HIGH POWERED KLYSTRONS AND LADDERTRONS

OKI MODEL NO.	TYPICAL FREQUENCY RANGE (GHZ)	TUBE TYPE	TYPICAL OUTPUT POWER	FLANGE TYPE	SINGLE QTY. PRICE
KC31A	30.0/32.0	FX HV SP	7 Watts	UG-599/U	\$2995.00
KCT31B	30.5-31.5	FT HV SP	3 Watts	UG-599/U	3575.00
34LV20	33.2-34.8	LADDERTRON	10 Watts	UG-599/U	4250.00
45LV10	44.3-45.7	LADDERTRON	5 Watts	UG-383/U	6100.00
KC55B	53.0/57.0	FX HV SP	10 Watts	UG-385/U	4300.00
KF35P	34.5-35.5	LADDERTRON	50 Watts	UG-599/U	6250.00

## OKI MM-WAVE BACKWARD-WAVE OSCILLATORS

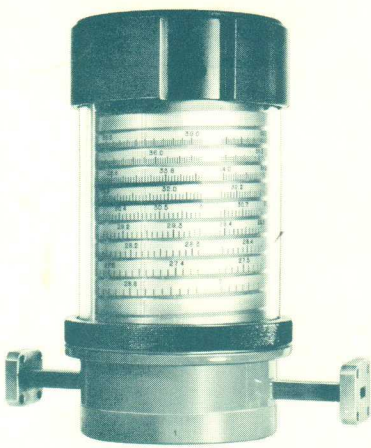
OKI MODEL NO.	FREQ. SPREAD (GHZ)	TYPICAL LIMITS POWER RANGE	SINGLE QTY. PRICE	COOLING METHOD
BA47F	43.0/52.0	30/150 milliwatts	\$3705.00	Air
BA50G	45.0/54.0	30/150 "	3705.00	Air
BA55B	50.0/59.0	20/120 "	4445.00	Air
BA60C	54.0/65.0	20/120 "	4995.00	Air
BA47H	45.0/52.0	150/600 "	6185.00	Water
BA50H	48.0/55.0	150/600 "	6185.00	Water
BA48H	45.0/50.5	300/700 "	6555.00	Water
BA54H	51.5/55.0	500/700 "	6555.00	Water
BA55H*	50.0/56.0	300/600 "	6555.00	Water
BA60H*	54.0/62.0	100/600 "	6555.00	Water
BA70H*	65.0/75.0	500/3,000 "	On request	Water
BA85B*	80.0/90.0	40/100 "	On request	Air
BA85H*	80.0/90.0	80/150 "	On request	Water
BA94H*	89.0/99.0	Up to 600 milliwatts max.	On request	Water
BA100H*	84.0/110.0	Up to 600 milliwatts max.	On request	Water
BA150H*	115.0/155.0	Up to 300 milliwatts max.	On request	Water

\*NOTE: These models available on special order. The OKI Model BWS-104, BWO power supply is recommended for the above tubes and is available either in rack or cabinet versions. Both are priced at \$5,365.00 FOB Ft. Lauderdale, Fla.

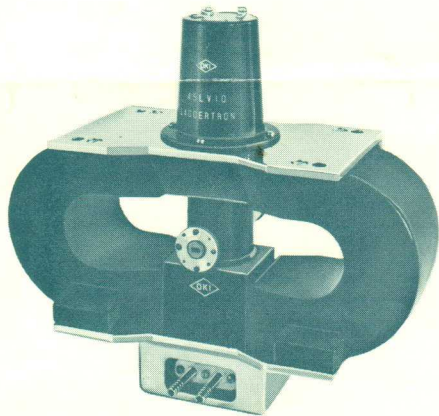
## OKI MM-WAVE MAGNETRONS

OKI M-10 Series MM-Wave Magnetrons are available at any selected frequency in the 5.58 GHz. to 95.5 GHz. range. Peak power outputs to 50 KW. are attainable. Please contact us directly for price and delivery information.

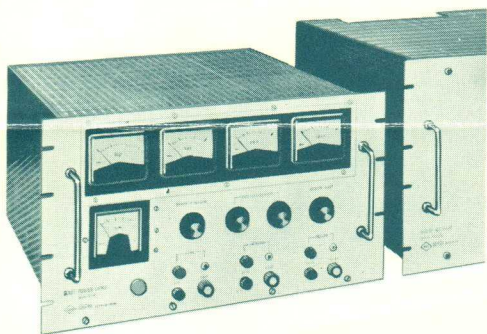
**TERMS AND PRICES:** Prices shown are NET, delivered; terms to rated organizations are thirty days NET. For quantity prices please indicate specific quantities desired, and delivery programming where necessary.



**WAVEGUIDE COMPONENTS 12-140 GHz**



**45LV10 LADDERTRON**



**BWS-104 BWO POWER SUPPLY**

## ABOUT



Shortly after the invention of the telephone by Alexander Graham Bell, the original OKI company was formed in Japan in 1881 for the manufacture of telephone and telegraph equipment. Since that time, the OKI organization has grown both in size and range of products. OKI currently employs over 10,000 people, and produces electronic equipment in 21 plants. The product line now includes all types of telecommunications equipment, scientific products, test and measuring equipment, electronic components and tubes, electronic computers and data processing equipment, as well as consumer products. Sales and service organizations are maintained by OKI throughout the world, including its U.S. affiliate, OKI ELECTRONICS OF AMERICA INC., with executive offices and laboratories at Fort Lauderdale, Florida.

### GENERAL ORDERING INFORMATION

Always order by Description, Frequency Range, Model Number and Flange Type desired.

#### PRICES:

All prices are subject to change; formal price quotations are firm for 60 days unless otherwise stipulated. All prices are net FOB destination (within the Continental United States of America and Canada), with shipments normally being made by air.

#### DELIVERY:

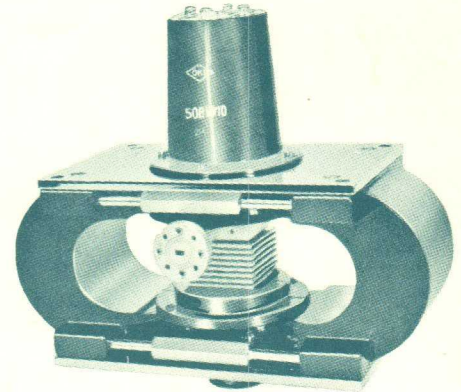
Delivery information supplied on request.

#### WARRANTY:

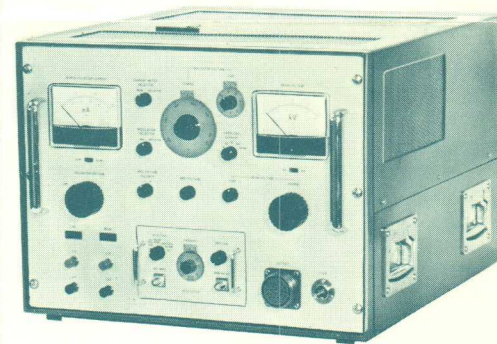
All OKI tubes are backed by a sound warranty policy for your protection. The normal warranty for REFLEX KLYSTRONS is ONE YEAR from date of delivery to original purchaser, and covers 1,000 hours operation for tubes up to 35 GHz., and 500 hours up to and including 100 GHz.; over 100 GHz. they are warranted for 200 hours of operation. Adjustments under this warranty are made on a pro-rata basis, assuming the unit has been operated in accordance with factory recommendations, (other tube type warranty information on request).

#### SPECIAL REQUIREMENTS:

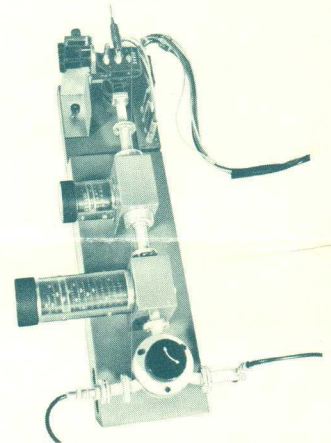
We invite your inquiries for any product not listed herein. Our laboratory and production facilities are available for the development and production of equipment and systems to meet your specific needs.



**BACKWARD-WAVE OSCILLATOR**



**MODEL KS-6A UNIVERSAL  
KLYSTRON POWER SUPPLY**



**COMPLETE CALIBRATED TEST SYSTEMS**

# OKI ELECTRONICS OF AMERICA INC.

THE OKI BUILDING, 500/506 S. E. 24th STREET  
FORT LAUDERDALE, FLORIDA 33316

TELEX: 5-14421  
FAX: FGF  
TWX: 510-955-9837

AREA CODE - 305  
TEL. 523-7202  
523-6571

- KLYSTRONS • MAGNETRONS
- LADDERTRONS • POWER SUPPLIES
- BACKWARD WAVE OSCILLATORS
- WAVEGUIDE COMPONENTS & INSTRUMENTS
- MICROWAVE & VHF SYSTEMS
- COMMUNICATIONS COMPONENTS
- TELEPHONE EQUIPMENT & SYSTEMS

# MILLIMETER WAVE TUBES

SHORT FORM CATALOG

PRICES EFFECTIVE JANUARY 1, 1969

***INCLUDING***

## **THE NEW V-12 SERIES**

**OF HIGH POWERED – WIDE TUNING RANGE**

**REFLEX KLYSTRONS**

BY



EST. 1881

***ADVANCED DESIGN • REPUTATION • SERVICE***

**B.W.O.'S**

**KLYSTRONS**

**MAGNETRONS**

**LADDERTRONS**

**POWER SUPPLIES**

**WAVE GUIDE COMPONENTS**

**OKI ELECTRONICS OF AMERICA INC.**

THE OKI BUILDING, 500/506 S.E. 24th STREET  
FORT LAUDERDALE, FLORIDA

AREA CODE - 3  
TEL. 523-72  
523-65

TWX: 510-955-9837

OKI MILLIMETER WAVE TUBES 1-69

OKI 3

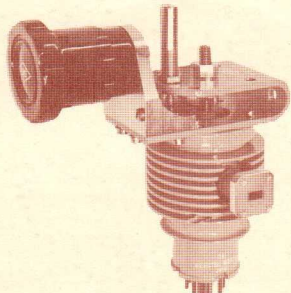


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OKI MM-WAVE KLYSTRON TUBES. (ALL OUTPUT LEVELS MEASURED INTO A MATCHED LOAD)



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- AIRBORNE—LIGHTWEIGHT AIRBORNE TUBE. 3 1/2 OZ. WEIGHT
- LADDERTRON—SPECIAL PURPOSE HIGH POWER PACKAGED KLYSTRON, TUNABLE.

OKI MODEL NR.	TYPICAL FREQUENCY RANGE IN (GHZ)	TYPE OF TUBE (SEE INDEX)	TYPICAL OUTPUT AT MIDBAND	FLANGE TYPE	SINGLE QTY. PRICE
17V10	15.5/18.5	FT HV BENCH	100 milliwatts	UG-419/U	\$ 485.00
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22V10	20.0/24.0	FT HV BENCH	165 "	UG-595/U	525.00
24V10A	22.0/26.0	FT HV BENCH	250 "	UG-595/U	525.00
24V11	22.0/26.0	FT HV BENCH	600 "	UG-595/U	950.00
30V10	27.0/32.0	FT HV BENCH	75 "	UG-599/U	585.00
30V11	27.0/32.0	FT HV BENCH	225 "	UG-599/U	995.00
30V12	27.0/32.0	FT HV BENCH	450 "	UG-599/U	1240.00
30V16	29.5/31.5	TT HV BENCH	250 "	UG-599/U	1065.00
33V10	31.0/36.0	FT HV BENCH	75 "	UG-599/U	650.00
35V10	32.0/37.0	FT HV BENCH	75 "	UG-599/U	695.00
35V11	32.0/37.0	FT HV BENCH	220 "	UG-599/U	1075.00
35V12	32.0/37.0	FT HV BENCH	400 "	UG-599/U	1310.00
35V51	34.7/35.3	TT HV AIRBORNE	165 "	UG-599/U	955.00
40V10	37.0/42.0	FT HV BENCH	90 "	UG-383/U	885.00
40V12	37.0/42.0	FT HV BENCH	350 "	UG-383/U	1350.00
45V10	43.0/48.0	FT HV BENCH	85 "	UG-383/U	925.00
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47V11	44.0/51.0	FT HV BENCH	160 "	UG-383/U	1190.00
47V12	44.0/51.0	FT HV BENCH	200 "	UG-383/U	1425.00
50V10	46.0/54.0	FT HV BENCH	60 "	UG-383/U & UG-385/U	1030.00
55V10	50.0/60.0	FT HV BENCH	65 "	UG-385/U	1085.00
55V11	50.0/60.0	FT HV BENCH	130 "	UG-385/U	1390.00
60V10	55.0/65.0	FT HV BENCH	65 "	UG-385/U	1595.00
60V12	55.0/65.0	FT HV BENCH	120 "	UG-385/U	1860.00
70V10	66.0/76.0	FT HV BENCH	65 "	UG-385/U & UG-387/U	1995.00
70V11A	66.0/76.0	FT HV BENCH	130 "	UG-385/U & UG-387/U	2450.00
75V10	70.0/80.0	FT HV BENCH	45 "	UG-387/U	2200.00
80V10A	75.0/85.0	FT HV BENCH	40 "	UG-387/U	2350.00
90V10	85.0/95.0	FT HV BENCH	30 "	UG-387/U	2495.00
90V11	85.0/95.0	FT HV BENCH	60 "	UG-387/U	2900.00
100V10A	95.0/105.0	FT HV BENCH	25 "	UG-387/U	2675.00
120V10	107.0/122.0	FT HV BENCH	10 "	UG-387/U	3650.00

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## HIGH POWERED KLYSTRONS AND LADDERTRONS

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KC31A	30.0/32.0	FX HV SP	7 Watts	UG-599/U	\$2995.00
KCT31B	30.5-31.5	FT HV SP	3 Watts	UG-599/U	3575.00
34LV20	33.2-34.8	LADDERTRON	10 Watts	UG-599/U	4250.00
45LV10	44.3-45.7	LADDERTRON	5 Watts	UG-383/U	6100.00
KC55B	53.0/57.0	FX HV SP	10 Watts	UG-385/U	4300.00
KF35P	34.5-35.5	LADDERTRON	50 Watts	UG-599/U	7000.00

## OKI MM-WAVE BACKWARD-WAVE OSCILLATORS

OKI MODEL NO.	FREQ. SPREAD (GHZ)	TYPICAL LIMITS POWER RANGE	SINGLE QTY. PRICE	COOLING METHOD
BA47F	43.0/52.0	30/150 milliwatts	\$3705.00	Air
BA50G	45.0/54.0	30/150 "	3705.00	Air
BA55B	50.0/59.0	20/120 "	4445.00	Air
BA60C	54.0/65.0	20/120 "	4995.00	Air
BA47H	45.0/52.0	150/600 "	6185.00	Water
BA50H	48.0/55.0	150/600 "	6185.00	Water
BA48H	45.0/50.5	300/700 "	6555.00	Water
BA54H	51.5/55.0	500/700 "	6555.00	Water
BA55H*	50.0/56.0	300/600 "	6555.00	Water
BA60H*	54.0/62.0	100/600 "	6555.00	Water
BA70H*	65.0/75.0	500/3,000 "	On request	Water
BA85B*	80.0/90.0	40/100 "	On request	Air
BA85H*	80.0/90.0	80/150 "	On request	Water
BA94H*	89.0/99.0	Up to 600 milliwatts max.	On request	Water
BA100H*	84.0/110.0	Up to 600 milliwatts max.	On request	Water
BA150H*	145.0/155.0	Up to 300 milliwatts max.	On request	Water

\*NOTE: These models available on special order. The OKI Model BWS-104, BWO power supply is recommended for the above tubes and is available either in rack or cabinet versions. Both are priced at \$5,365.00 FOB Ft. Lauderdale, Fla.

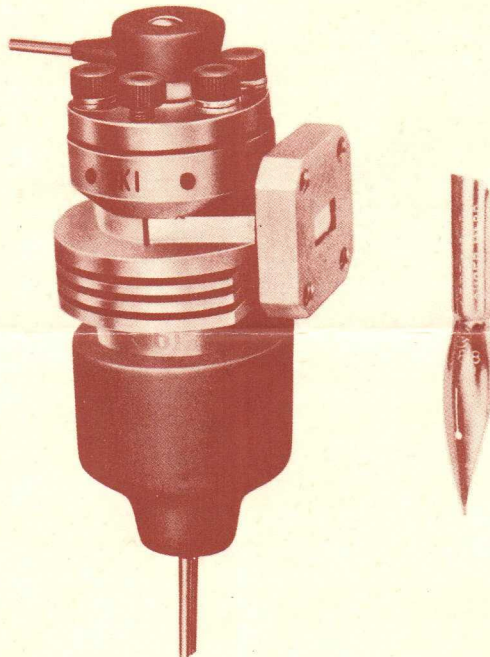
## OKI MM-WAVE MAGNETRONS

OKI M-10 Series MM-Wave Magnetrons are available at any selected frequency in the 5.58 GHz. to 95.5 GHz. range. Peak power outputs to 50 KW. are attainable. Please contact us directly for price and delivery information.

TERMS AND PRICES: Prices shown are NET, delivered; terms to rated organizations are thirty days NET, 1% ten days. For quantity prices please indicate specific quantities desired, and delivery programming where necessary.

4

# PLUS . . . .



## *A New Miniature, Low Voltage Series of Klystrons for Systems Applications*

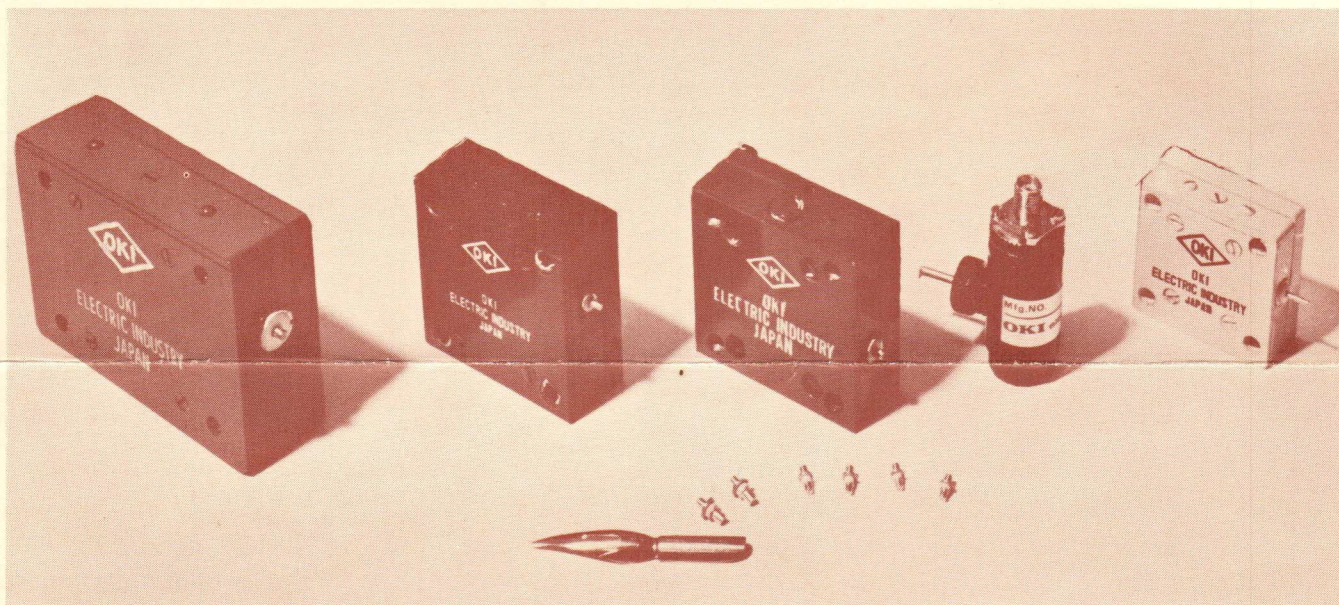
These miniature, low voltage klystrons are rugged, compact and simple to use. They require only a filament, beam and reflector voltage supply, since the control grid is designed to operate at zero volts. Their size of 1.00" x 2.15" x 1.4" makes them very attractive for packaging in systems.

OKI MODEL NO.	FREQUENCY RANGE (GHZ)	OPERATING VOLTAGE & CURRENT	TYPICAL MIDBAND POWER	FLANGE TYPE
*KL-23	22.5±1	500V. 40 ma.	80 mw. min.	UG-595/U
*KL-24	24.0±1	500V. 40 ma.	80 mw. min.	UG-595/U
*KN-24	24.0±1	700V. 50 ma.	200 mw. min.	UG-595/U
*KL-35	35.0±1	500V. 40 ma.	50 mw. min.	UG-595/U

\*Price and delivery upon request



*and Now . . .*



## OKI's AD SERIES OF IMPATT Avalanche Diode Oscillators

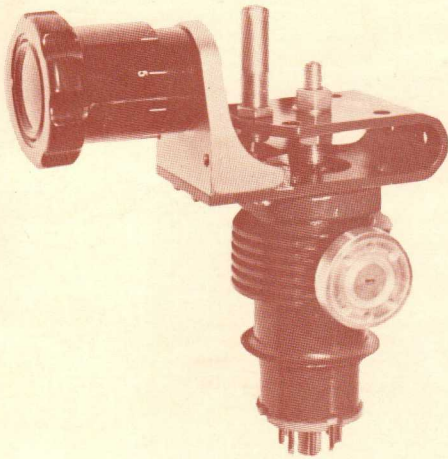
This new series of IMPATT oscillators offers several important advantages including both mechanical and electronic tuning, high power, high efficiency and long life. Due to their low noise characteristics, made possible by a specially developed OKI circuit, for which a patent is pending, many new practical applications and uses are now possible. The unique OKI circuit reduces FM noise by more than 20 db with a total power loss of less than 1 db.

Prototype units of the OKI "AD Series" have produced power output levels at 10 GHz of 300 to 500 mw. at an efficiency of 5 to 7%. Feasibility of parallel operation has been confirmed, as a result of which it will be possible to obtain power output levels exceeding 1 watt. The versatility of the OKI devices is further enhanced by their mechanical tuning range of over 1 GHz and their electronic tuning range of 100 MHz. It is felt that these advanced characteristics will allow the OKI "AD Series" to replace conventional reflex klystron oscillators in many applications, and make practical many new applications in new microwave communications, doppler radar, transponder and collision avoidance systems.

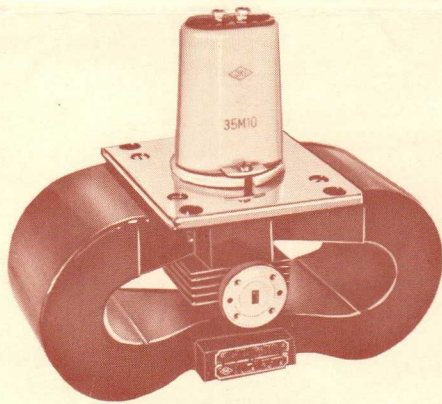
### GENERAL AD SERIES OSCILLATOR SPECIFICATIONS:

Frequency Range	—	6 - 12 GHz
Output Power	—	50 - 350 mw.
Voltage	—	75 - 90 VDC
Current	—	20 - 70 ma.
Dimensions (X Band)	1.65 Inch x 1.65 Inch x 0.59 Inch	
Weight	Approx. 8.05 Ounces (Waveguide Type) Approx. 3.50 Ounces (Coaxial Type)	

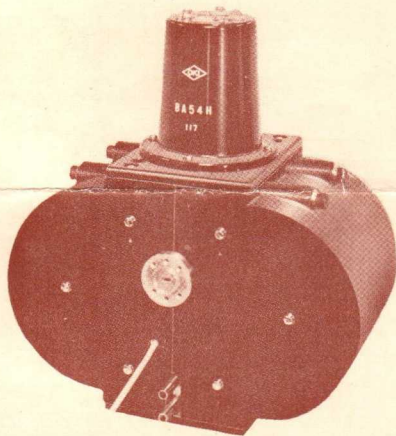
If your organization is contemplating the use of packaged oscillators such as those described, we would be most interested in learning more about your specific intended use so that we can quote on and fabricate units meeting your specific requirements.



**REFLEX KLYSTRONS**



**MAGNETRONS**



**BACKWARD-WAVE OSCILLATORS**

## ABOUT

EST.  1881

Shortly after the invention of the telephone by Alexander Graham Bell, the original OKI company was formed in Japan in 1881 for the manufacture of telephone and telegraph equipment. Since that time, the OKI organization has grown both in size and range of products. OKI currently employs over 10,000 people, and produces electronic equipment in 21 plants. The product line now includes all types of telecommunications equipment, scientific products, test and measuring equipment, electronic components and tubes, electronic computers and data processing equipment, as well as consumer products. Sales and service organizations are maintained by OKI throughout the world, including its U. S. affiliate, OKI ELECTRONICS OF AMERICA INC., with executive offices and laboratories at Fort Lauderdale, Fla.

### GENERAL ORDERING INFORMATION

Always order by Description, Frequency Range, Model Number and Flange Type desired.

#### PRICES:

All prices are subject to change; formal price quotations are firm for 60 days unless otherwise stipulated. All prices are net FOB destination (within the Continental United States of America and Canada), with shipments normally being made by air.

#### DELIVERY:

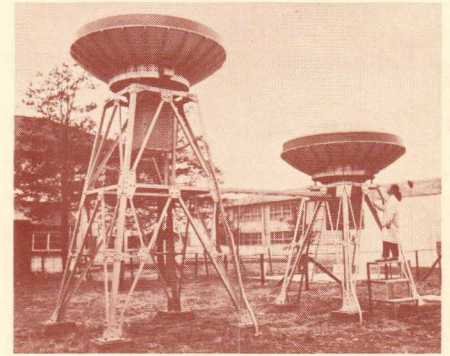
Delivery information supplied on request.

#### WARRANTY:

All OKI tubes are backed by a sound warranty policy for your protection. The normal warranty for REFLEX KLYSTRONS is ONE YEAR from date of delivery to original purchaser, and covers 1,000 hours operation for tubes up to 35 GHz., and 500 hours up to and including 100 GHz.; over 100 GHz. they are warranted for 200 hours of operation. Adjustments under this warranty are made on a pro-rata basis, assuming the unit has been operated in accordance with factory recommendations, (other tube type warranty information on request).

#### SPECIAL REQUIREMENTS:

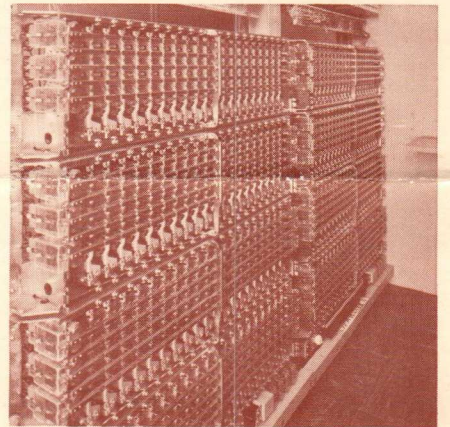
We invite your inquiries for any product not listed herein. Our laboratory and production facilities are available for the development and production of equipment and systems to meet your specific needs.



**RADAR SYSTEMS**



**TELEPHONE EQUIPMENT**



**TELEPHONE CROSS BAR EXCHANGE**

# OKI ELECTRONICS OF AMERICA INC.

THE OKI BUILDING, 500/506 S.E. 24th STREET  
FORT LAUDERDALE, FLORIDA

AREA CODE - 305  
TEL. 523-7202  
523-6571

TWX: 510-955-9837

- KLYSTRONS • MAGNETRONS
- LADDERTRONS • POWER SUPPLIES
- BACKWARD WAVE OSCILLATORS
- WAVEGUIDE COMPONENTS & INSTRUMENTS
- MICROWAVE & VHF SYSTEMS
- COMMUNICATIONS COMPONENTS
- TELEPHONE EQUIPMENT & SYSTEMS

**TECHNICAL DATA  
FOR  
MILLIMETER-WAVE TUBES**

## REFLEX TYPE KLYSTRON

The following specifications cover 39 models of the OKI reflex type Klystron oscillators. They are mechanically and electronically tunable klystrons which provide high power.

Unit Model	TYPICAL OPERATION DATA						
	Frequency Spread GHz	Resonator Voltage V	Resonator Current mA	Control Electrode Voltage V	Frequency GHz	Reflector Voltage V	Output Power mW
V10 Series							
17V10	15.0 - 19.0	1,800	12	-100	16.0 17.0 18.0	-215 -280 -360	120 100 100
20V10	18.0 - 22.0	2,000	12	-100	19.0 20.0 21.0	-170 -235 -297	120 150 130
22V10	20.0 - 24.0	2,000	12	-100	21.0 22.0 23.0	-235 -292 -350	120 150 140
24V10A	22.0 - 26.0	1,800	13	-100	23.0 24.0 25.0	-150 -250 -230	150 200 210
30V10	28.0 - 32.0	2,000	12	-100	29.0 30.0 31.0	-350 -400 -250	80 90 70
33V10	30.5 - 34.5	2,000	12	-80	32.0 33.0 34.0	-220 -250 -160	60 70 70
35V10	32.0 - 37.0	2,000	12	-90	34.0 35.0 36.0	-170 -195 -225	70 70 60
40V10	37.0 - 42.0	2,000	25	-150	38.0 40.0 42.0	-205 -250 -295	90 80 70
45V10	42.0 - 48.0	2,000	15	-130	43.0 45.0 47.0	-330 -200 -230	80 80 80
47V10	43.0 - 51.0	2,000	15	-110	45.0 47.0 49.0	-200 -230 -140	60 70 60
50V10	46.0 - 54.0	2,300	20	-100	48.0 50.0 52.0	-145 -180 -220	50 50 50
55V10	52.0 - 58.0	2,300	20	-120	53.0 55.0 57.0	-150 -185 -220	60 60 60
60V10	57.0 - 63.0	2,300	20	-120	58.0 60.0 62.0	-190 -235 -280	40 60 60
70V10	65.0 - 73.0	2,700	25	-125	67.0 70.0 73.0	-165 -195 -235	40 60 50
80V10A	75.0 - 85.0	2,500	25	-125	77.0 80.0 83.0	-170 -215 -260	30 40 35
90V10A	85.0 - 95.0	2,500	25	-125	87.5 90.0 92.5	-140 -165 -190	30 40 30
100V10A	95.0 - 105.0	2,500	25	-125	98.0 100.0 102.0	-200 -220 -150	30 30 30
105V10	100.0 - 110.0	2,500	25	-125	103.0 105.0 107.0	-230 -260 -290	30 30 30
120V10	110.0 - 122.0	2,500	25	-125	112.0 116.0 120.0	-190 -220 -170	25 25 25
125V10	120.0 - 130.0	2,500	25	-125	123.0 125.0 127.0	-160 -180 -200	20 20 20
V11 Series							
24V11	22.0 - 26.0	1,800	35	-80	23.0 24.0 25.0	-390 -460 -500	500 600 500
30V11	28.0 - 32.0	1,800	25	-80	29.0 30.0 31.0	-275 -325 -380	180 200 180
35V11	32.0 - 37.0	2,000	25	-80	34.0 35.0 36.0	-420 -275 -320	200 250 200
47V11	43.0 - 51.0	2,300	20	-110	45.0 47.0 49.0	-145 -185 -230	120 150 120
50V11	46.0 - 54.0	2,500	25	-100	47.0 50.0 53.0	-130 -210 -110	120 150 150
55V11	52.0 - 58.0	2,500	25	-120	53.0 55.0 57.0	-155 -195 -240	140 160 140
70V11A	65.0 - 75.0	2,700	25	-125	67.0 70.0 73.0	-165 -205 -250	100 125 100
80V11	75.0 - 85.0	2,700	25	-125	77.0 80.0 83.0	-170 -215 -260	120 150 150
90V11	85.0 - 95.0	2,500	25	-125	87.5 90.0 92.5	-160 -230 -150	70 80 70
100V11	95.0 - 105.0	2,500	25	-125	97.0 100.0 103.0	-100 -140 -110	70 80 70

for wideband, and have the UG output flanges for use with the standard RG type waveguides. V11 and V12 series are newly developed

		MAXIMUM RATINGS			MECHANICAL DATA	
Electronic Tuning Range	Modulation Sensitivity	Resonator Voltage	Resonator Current	Output Power	Waveguide	Flange
MHz	MHz/V	V	mA	MW (min)		
50 45 30	0.7 0.45 0.23	2,200	15	50	RG-91/U	UG-419/U
40 45 40	0.8 0.7 0.5	2,200	15	50	RG-53/U	UG-595/U
35 40 30	0.7 0.65 0.4	2,200	15	50	"	"
25 40 35	1.2 0.8 0.45	2,200	15	80	"	"
75 70 65	0.75 0.7 0.55	2,200	14	40	<i>RG-96/U</i>	<i>UG-599/U</i>
65 70 75	1.5 1.4 1.3	2,200	14	40	"	"
100 100 100	2.0 1.8 1.4	2,200	14	40	"	"
80 90 60	2.5 2.5 1.7	2,300	30	35	RG-97/U	UG-383/U
100 100 100	3.2 2.0 2.2	2,300	30	35	RG-98/U	UG-385/U
150 150 120	5.0 4.5 3.5	2,300	30	30	"	"
140 140 130	5.0 4.5 4.0	2,700	30	25	"	"
140 140 120	5.5 5.2 4.0	2,700	30	30	"	"
130 140 140	4.8 5.2 4.5	2,500	30	30	"	"
140 140 130	4.5 4.0 3.5	2,800	30	25	RG-99/U	UG-387/U
170 350 300	13.5 12.0 10.0	2,800	30	15	"	"
450 400 350	28.0 18.0 15.0	2,700	30	10	"	"
300 350 200	10.0 8.0 6.5	2,700	30	10	"	"
- - -	- - -	2,700	30	10	RG-138/U	UG-387/U
300 300 300	- - -	2,700	30	10	"	"
- - -	- - -	2,700	30	10	"	"
60 50 45	0.7 0.4 0.3	2,000	40	150	RG-53/U	UG-595/U
80 75 70	0.8 0.65 0.55	2,200	30	100	RG-96/U	UG-599/U
90 90 85	2.2 2.0 1.7	2,200	30	100	"	"
120 120 100	3.7 3.5 2.5	2,500	30	80	RG-98/U	UG-385/U
- - -	- - -	2,700	30	100	"	"
180 190 150	5.0 5.1 3.6	2,700	30	70	"	"
- - -	- - -	2,800	30	70	RG-99/U	UG-387/U
- - -	- - -	2,800	30	80	"	"
425 300 350	20.0 25.0 18.0	2,700	30	50	"	"
- - -	- - -	2,700	30	30	"	"

Unit Model	TYPICAL OPERATION DATA						
	Frequency Spread GHz	Resonator Voltage V	Resonator Current mA	Control Electrode Voltage V	Frequency GHz	Reflector Voltage V	Output Power mW
V12 Series							
28V12	26.0 - 29.0	2,300	35	-80	26.0 28.0 29.0	-590 -390 -500	600 650 600
30V12	28.0 - 32.0	2,100	35	-80	29.0 30.0 31.0	-400 -480 -300	500 700 500
34V12	31.0 - 36.0	2,300	35	-80	32.0 34.0 36.0	-560 -400 -530	520 650 700
35V12	32.0 - 37.0	2,300	35	-80	34.0 35.0 36.0	-650 -450 -540	600 650 600
36V12	33.0 - 38.0	2,300	35	-80	35.0 36.0 37.0	-450 -540 -410	650 600 530
40V12	37.0 - 42.0	2,300	35	-75	38.0 40.0 42.0	-400 -530 -380	450 530 330
45V12	42.0 - 48.0	2,500	25	-70	42.0 45.0 48.0	-300 -400 -250	175 275 350
47V12	43.0 - 51.0	2,500	25	-80	43.0 47.0 51.0	-350 -270 -410	160 250 200
60V12	57.0 - 63.0	2,500	25	-105	57.0 60.0 63.0	-440 -360 -310	150 150 200

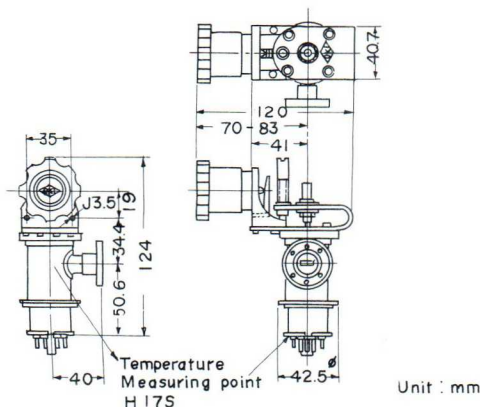
#### GENERAL ELECTRICAL DATA (ALL MODELS OF REFLEX KLYSTRON)

Heater voltage: 5.7 to 6.9V DC  
 Heater current: 0.55 to 0.85A  
 Control electrode voltage: -40 to -200V DC  
 (24V11: -10 to -100V DC)  
 Reflector voltage: -20 to -500V DC  
 (24V11 to V12 series: -20 to -750V DC)  
 Reflector current: 30 $\mu$ A DC Max.  
 Cathode warming-up time: 120 sec. Min.

#### LIFE GUARANTEE

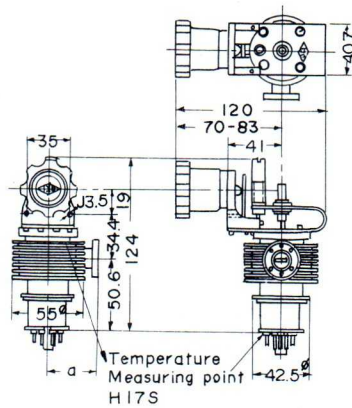
Tubes up to 38 GHz: 1 year/1,000 hours  
 Tubes 40 to 100 GHz: 1 year/500 hours  
 Tubes over 100 GHz: 1 year/200 hours

#### DIMENSIONS OF OKI REFLEX TYPE KLYSTRON



Models 17V10, 20V10, 22V10, 24V10A, 30V10, 33V10, 35V10

		MAXIMUM RATINGS			MECHANICAL DATA	
Electronic Tuning Range	Modulation Sensitivity	Resonator Voltage	Resonator Current	Output Power	Waveguide	Flange
MHz	MHz/V	V	mA	mW (min)		
--	--	2,400	40	500	RG-96U	UG-599/U
--	--	2,400	40	400	"	"
--	--	2,400	40	400	"	"
--	--	2,400	40	400	"	"
--	--	2,400	40	400	"	"
--	--	2,400	40	250	RG-97/U	UG-383/U
--	--	2,600	35	150	RG-98/U	UG-385/U
--	--	2,600	35	150	"	"
--	--	2,600	30	100	"	"



Unit : mm

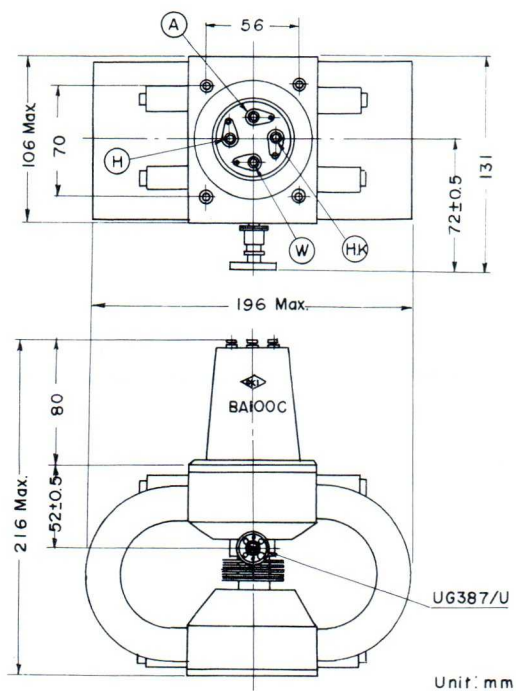
Models 24V11, 30V11, 30V12, 35V11, 35V12, 40V10, 40V12, 45V10, 47V12, 47V10, 47V11, 45V12, 50V10, 55V10, 55V11, 60V10, 60V12, 70V10, 70V11A, 80V10A, 90V10A, 90V11, 100V10A, 120V10

MODEL	DIMENSIONS OF a (mm)
24V11, 30V11, 30V12, 35V11, 35V12,	40
40V10, 40V12, 45V10, 45V12, 47V10, 47V11, 47V12, 50V10, 55V10, 55V11	36.2
60V10, 60V12, 70V10, 70V11A, 80V10A, 90V10A, 90V11, 100V10A, 120V10	35

## BACKWARD WAVE OSCILLATOR

MODEL	TYPICAL OPERATION DATA							Frequency Spread
	Frequency Spread	Output Power	Delay line Voltage	Delay line Current	Anode Voltage	Anode Current	Control Electrode Voltage	
	GHz	mW	kV	mA	V	mA	V	
BA47F	43.5 – 51.5	40 – 150	1.9 – 3.5	30	700	0	-150	43.5 – 51.5
BA50G	46.0 – 54.0	40 – 150	1.9 – 3.5	30	700	0	-150	46.0 – 54.0
BA55B	51.0 – 59.0	30 – 120	1.9 – 3.5	30	700	0	-150	51.0 – 59.0
BA60C	55.0 – 65.0	30 – 120	1.8 – 3.3	30	700	0	-150	55.0 – 65.0
BA65A	60.0 – 71.0	30 – 100	1.8 – 3.3	25	750	0	-150	60.0 – 71.0
BA70C	65.0 – 75.0	30 – 80	1.6 – 2.8	23	900	0	-20	65.0 – 75.0
BA75C	70.0 – 80.0	20 – 80	1.7 – 2.8	25	900	0	-20	70.0 – 80.0
BA85A	80.0 – 90.0	20 – 80	1.6 – 3.0	27	1,000	0	-20	80.0 – 90.0
BA95A	90.0 – 100.0	20 – 80	1.6 – 3.0	27	1,000	0	-20	90.0 – 100.0
BA100C	95.0 – 105.0	20 – 50	2.1 – 3.1	31	1,150	0	-30	95.0 – 105.0

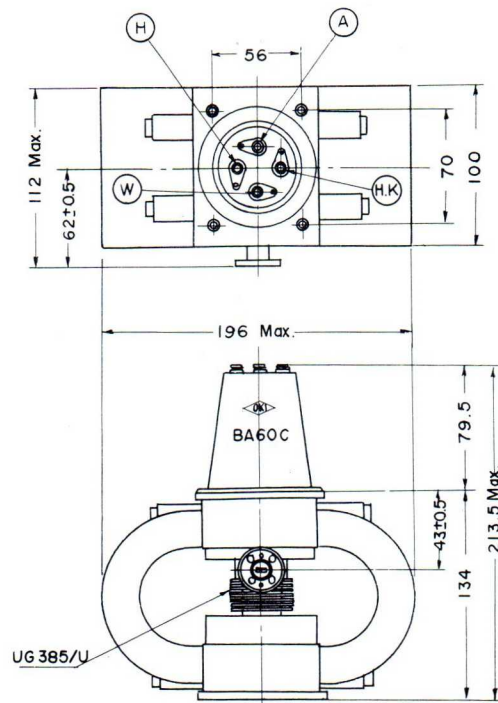
## DIMENSIONS OF BACKWARD WAVE OSCILLATOR



Type BA100C



MAXIMUM RATINGS						MECHANICAL DATA		
Power Output	Delay line Voltage	Delay line Current	Anode Voltage	Anode Current	Control Electrode Voltage	Flange	Waveguide	Cooling Method
mW	kV	mA	V	mA	V			
30 min	3.6	33	800	2	-300	UG-385/U	RG-98/U	Forced Air Cooling
30 min	3.6	33	800	2	-300	"	"	"
20 min	3.6	33	800	2	-300	"	"	"
20 min	3.6	33	800	2	-300	"	"	"
20 min	3.6	33	800	2	-300	"	"	"
20 min	3.6	33	950	2	-300	UG-387/U	RG-99/U	"
20 min	3.6	33	950	2	-300	"	"	"
15 min	3.6	33	1,250	2	-300	"	"	"
10 min	3.6	35	1,250	2	-300	"	"	"
10 min	3.6	35	1,250	2	-300	"	"	"



Unit: mm

Type BA60C

## KLYSTRON POWER SUPPLY, TYPE KS-7

### SPECIFICATIONS

#### HEATER SUPPLY

Voltage	6.3 V dc
Current	1.5 A max.
Ripple	2% max.
Regulation	± 2.5% (Due to variations in load)

#### BEAM SUPPLY

Voltage	1,500 to 3,000 V (with positive side grounded)
Current	40 mA max.
Ripple	5 mV rms. max.
Regulation	±0.02% for line var. 105 to 125V

#### GRID SUPPLY

Voltage	-300 to 0V (to negative side at Beam supply)
Current	1 mA max.
Ripple	3 mV rms. max.
Regulation	±0.01% for line var. 105 to 125 V ac.

#### REFLECTOR SUPPLY

Voltage	-750 to -20 V (to negative side at Beam supply)
Current	1 mA max.
Ripple	3 mV rms. max.
Regulation	±0.01% for line var. 105 to 125 V ac
Output impedance	—

#### MODULATOR

Sawtooth wave output voltage	0 to 150 V p-p
Sawtooth wave output frequency	40 to 400 Hz and a line frequency (synchronized)
Linearity of sawtooth wave	10% max.
Square wave output voltage	0 to 150 V p-p
Square wave output frequency	400 to 2,000 Hz
Square wave output Sag	2% or less of the output voltage
Square wave rise-time	10 $\mu$ s max.
Sine wave output voltage	0 to 150 V p-p at line frequency
External Mod. frequency	0 to 100,000 Hz sine wave
Amplifier gain	30 db approx. (Adjustable within 0 to 30 db)

DIMENSIONS 500 x 495 x 270 mm

WEIGHT 43 kg

#### ADDITIONAL SPECIFICATIONS

All modulation signals externally available at "MONITOR OUTPUT" jack.

## **OKI electric industry co., ltd.**

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Tel Tokyo 501-3111-Telex TK2627-Cable "OKIDENKI TOKYO"

**Overseas offices:** New York, Mexico City, Tegucigalpa,  
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SINCE 1881

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