

AmpereX[®]

MICROWAVE DEVICES

- Microwave Diodes and Assemblies**
 - Industrial Magnetrons**
 - Radar Tubes**
- Rectifier Stacks**
 - Klystrons**

Amperex[®] Electronic Corporation...

is a pioneer in the development of industrial electronic components and for four decades has been producing high quality devices for industrial, military and commercial equipment manufacturers.

Creative engineering and precision manufacturing have been responsible for a steady growth in the facilities and operations of Amperex. Founded in 1932, the Company originally manufactured special purpose tubes. Today, the Hicksville Division of Amperex manufactures and markets computer components, instrumentation components, microwave devices, scientific products, industrial power components, and communication components.

This catalog is one in a series of six containing condensed technical data on these products. The contents of this catalog as well as the others in the series is listed below:

COMMUNICATION COMPONENTS

RF POWER TRANSISTORS
RF POWER TUBES (LARGE)
RF POWER TUBES (SMALL)
TV TETRODE CAVITIES
TEMPERATURE COMPENSATED—
CRYSTAL OSCILLATORS
VACUUM CAPACITORS
MICROWAVE DIODES AND ASSEMBLIES
RF CIRCULATORS
RECTIFIERS
KLYSTRONS

SCIENTIFIC PRODUCTS

PHOTOMULTIPLIER TUBES
RADIATION COUNTER TUBES
CHANNEL ELECTRON MULTIPLIERS
COAXIAL THERMOCOUPLE AND HEATER WIRE
SEMICONDUCTOR RADIATION DETECTORS
RECTIFIER STACKS
X-RAY COMPONENTS

MICROWAVE DEVICES

MICROWAVE DIODES AND ASSEMBLIES
INDUSTRIAL MAGNETRONS
RADAR TUBES
RECTIFIER STACKS
KLYSTRONS

INDUSTRIAL POWER COMPONENTS

RF POWER TUBES (LARGE)
VACUUM CAPACITORS
RECTIFIER STACKS
INDUSTRIAL MAGNETRONS
MERCURY RECTIFIERS
THYRATRONS
IGNITRONS

INSTRUMENTATION COMPONENTS

TEMPERATURE COMPENSATED—
CRYSTAL OSCILLATORS
REED SWITCHES
TRIGGER TUBES
PREMIUM QUALITY TUBES

COMPUTER COMPONENTS

REED SWITCHES
TEMPERATURE COMPENSATED—
CRYSTAL OSCILLATORS
TRIGGER TUBES

The Hicksville Division...



occupies seven acres in Hicksville, Long Island, New York and contains 140,000 square feet of manufacturing space and 17,000 square feet devoted to research and development activities.

Amperex is a wholly owned subsidiary of the North American Philips Corporation, an affiliation that supplements its general capabilities in electronics technology and gives it ready access to the basic product technology and international research facilities of the renowned N. V. Philips of Holland.

Microwave Diodes and Assemblies

GUNN EFFECT DIODES

Our range of Gunn effect diodes offers a wide variety of power outputs and frequencies. They are often used as fundamental oscillators in the local oscillators used in radar and in communications, and as transmitter sources in doppler radars, navigational beacons, intruder alarms and proximity detectors.

type	frequency range (GHz)	minimum power output (mW)	nominal operating voltage (V)	outline
CXY11A	8 - 12	5	7	SOD-31
CXY11B	8 - 12	10	7	SOD-31
CXY11C	8 - 12	15	7	SOD-31
CXY16A	8 - 12	50	8	SOD-31
CXY16B	8 - 12	75	8	SOD-31
CXY16C	8 - 12	100	8	SOD-31
CXY16D	8 - 12	200	8	SOD-31
CXY16E	8 - 12	300	8	SOD-31
CXY16F	8 - 12	400	8	SOD-31
CXY14A	12 - 18	5	6	SOD-31
CXY14B	12 - 18	10	6	SOD-31
CXY14C	12 - 18	15	6	SOD-31
CXY18A	12 - 18	50	6	SOD-31
CXY18B	12 - 18	75	6	SOD-31
CXY18C	12 - 18	100	6	SOD-31
CXY18D	12 - 18	200	6	SOD-31
CXY18E	12 - 18	300	6	SOD-31
CXY17A	6 - 8	50	10	SOD-31
CXY17B	6 - 8	75	10	SOD-31
CXY17C	6 - 8	100	10	SOD-31
CXY17D	6 - 8	200	10	SOD-31
CXY17E	6 - 8	300	10	SOD-31
823CXY/A	26 - 32	4	3.5	MO-21

SCHOTTKY BARRIER DIODES

A range of microwave Schottky barrier diodes for low noise mixer and detector applications up to 18 GHz. Schottky barrier diodes have the advantages of low 1/F noise and greater mechanical stability than point contact diodes. The BAV46 is specially optimised for applications requiring low 1/F noise, e.g. Doppler Radars and intruder alarms.

MATCHED PAIRS

All types are available as matched pairs. When ordering a matched pair, add the prefix 2/ and the suffix M to the basic type number. For example: 2/BAW95EM for a matched pair BAW95E.

¹⁾ Includes 1.5 dB i.f. amplifier noise.

²⁾ Measured with an i.f. of 1 kHz.

Test frequency: 9.375 GHz

type	max overall N.F. ¹⁾ (dB)	i.f. impedance (Ω)	outline
BAW95D	8.2	250 - 500	DO-22
BAW95E	7.5	250 - 500	DO-22
BAW95F	7.0	250 - 500	DO-22
BAW95G	6.5	250 - 500	DO-22
BAV96A	7.5	200 - 400	MO-26
BAV96B	7.0	200 - 400	MO-26
BAV96C	6.5	200 - 400	MO-26
BAV96D	6.0	200 - 400	MO-26
BAV46	15 ²⁾	850	DO-23
826BAY	7.5	250 - 500	MO-28
540BAY	7.0	250 - 500	MO-27

EQUIVALENTS

JEDEC	Pro-Electron	JEDEC	Pro-Electron	MATCHED PAIRS
1N23D/1N23DR	BAW95D	1N415D	BAW95D	1N415DM 2/BAW95DM etc.
1N23E/1N23ER	BAW95E	1N415E	BAW95E	
1N23WE	BAW95E	1N415F	BAW95F	
1N23F/1N23FR	BAW95F	1N415G	BAW95G	
1N23G/1N23GR	BAW95G			

Microwave Diodes and Assemblies (Cont'd)

TUNING VARACTOR DIODES

A series of high-Q gallium arsenide Schottky barrier diodes for electronic tuning in microwave circuits. These varactors offer a wide capacitance range from a 12 V supply; their low series resistance ensures low losses.

type	junction ¹⁾ capacitance (pF)	minimum breakdown voltage ²⁾ (V)	maximum series resistance ¹⁾ (Ω)	outline
821CXY/A	0.8 – 1.2	12	3.0	SOD-31
821CXY/B	1.2 – 1.8	12	2.0	SOD-31
821CXY/C	1.6 – 2.5	12	1.5	SOD-31
821CXY/D	2.5 – 3.5	12	1.0	SOD-31

¹⁾ Measured at $V_R = 0$.

²⁾ Measured at $I_R = 10 \mu A$.

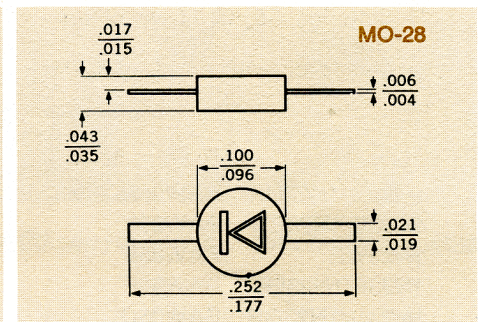
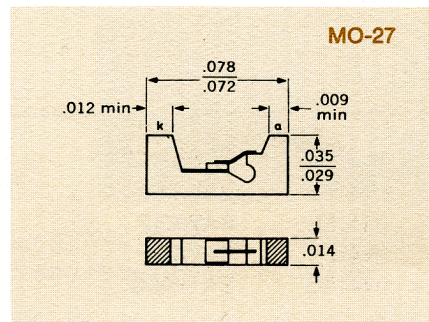
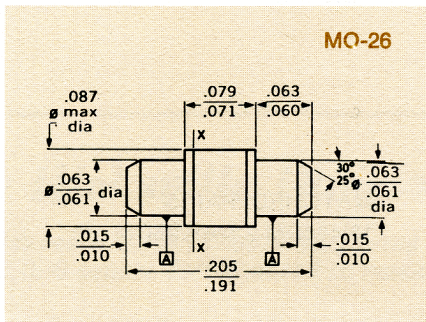
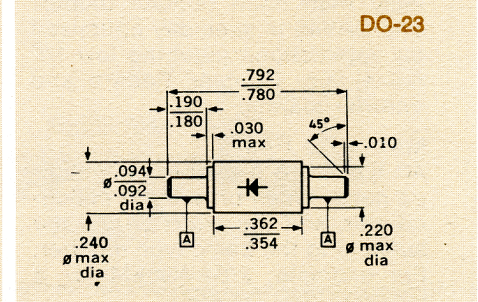
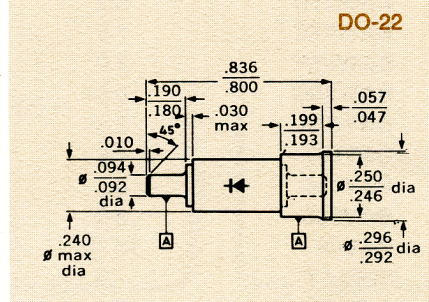
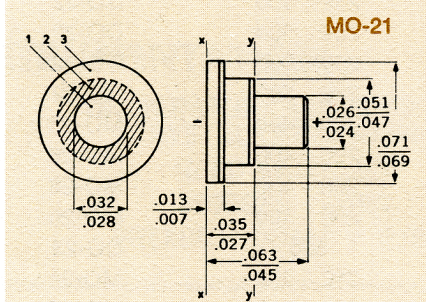
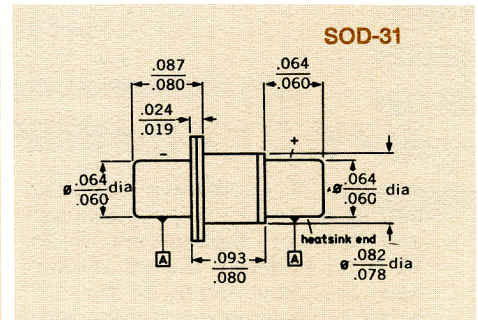
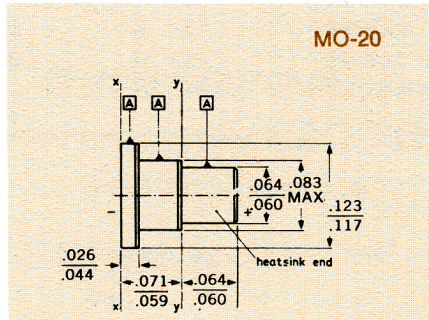
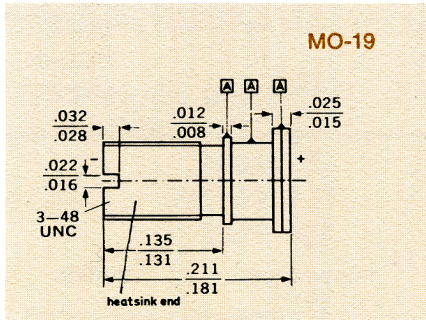
IMPATT DIODES

Impatt diodes are more efficient at high power than Gunn diodes; Their power level can be adjusted via the supply current.

The 532BXY is the first of a series of high power Impatt diodes for use as oscillators or negative resistance amplifiers in telecommunications of radar equipment.

type	frequency range (GHz)	minimum power output (mW)	operating voltage (V)	operating current (mA)	maximum thermal resistance ($^{\circ}C/W$)	outline
532BXY	7 – 9	400	100	100	15	SOD-31
194BAY/7*	6 – 8	750	—	—	—	} SOD-31 } MO-19 } MO-20
194BAY/9	8 – 10	500	—	—	—	
194BAY/11	10 – 12	500	—	—	—	
194BAY/13	12 – 14	400	—	—	—	

* 194BAY in development

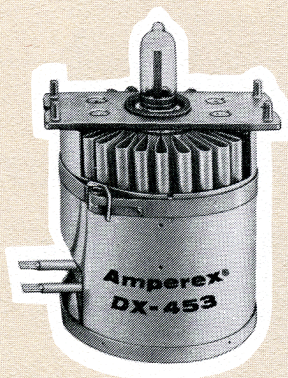


Industrial Magnetrons

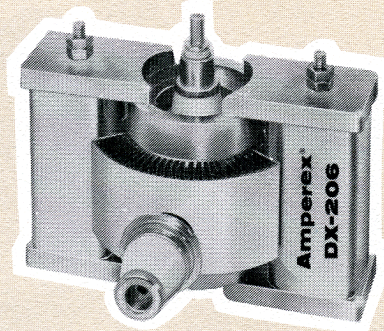
INDUSTRIAL HEATING MAGNETRONS

TYPE	OUTPUT POWER WATTS	ANODE		CATHODE/HEATER					OUTPUT SYSTEM	COOLING	WEIGHT LB.
		VOLTS	AMPS	VOLTS	AMPS	MIN. PREHEAT TIME SEC.	TYPE	SOCKET			
7090	200	1650	0.20	5.3	3.5	180	Indirect	Octal	7/8" coax	Conduction	5.0
DX401	800	3800	0.35	3.1	14	5	Direct	Screw Lug	Wave-guide (Dome)	Forced Air (Horizontal)	6.8
DX453	800	3800	0.35	3.1	14	0	Direct	1/4" Tab	Wave-guide (Dome)	Forced Air (Vertical)	4.5
DX206	1200	5600	0.38	4.0	30	10	Direct	Custom	Coax or Wave-guide	Forced Air	9.0
DX206F	1500	5600	0.45	4.0	30	10	Direct	Flying Leads	Coax or Wave-guide	Forced Air	9.0
YJ1160	2500	5000	0.85	5.0	35	120	Indirect	Custom	1 5/8" Coax	Water	10.5
YJ1162	2500	5000	0.85	5.0	35	120	Indirect	Custom	1 5/8" Coax	Forced Air	16.5
YJ1191	5000	7000	1.25	5.5	46	30	Direct	Custom	1 5/8" Coax	Water	12.5

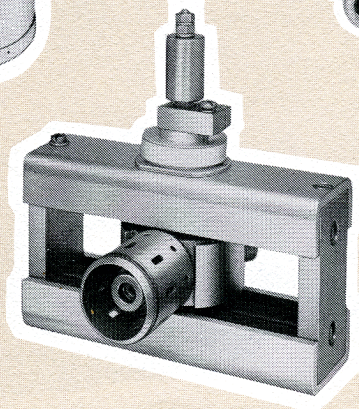
Note: For single copies of detailed data sheets on the above tube types, contact Product Manager, Microwaves.



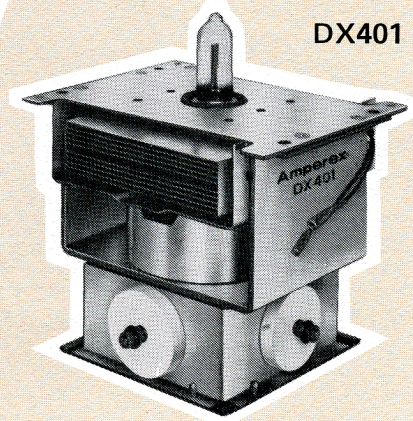
DX453



DX206



YJ1191



DX401

Radar Tubes

TRANSMITTER MAGNETRONS

TYPE	FREQUENCY (MHz)	PEAK OUTPUT (WATTS)	TYPE	FREQUENCY (MHz)	PEAK OUTPUT (WATTS)
2J42	9,375	10,000	JP-9-7L	9,375	10,000
2J42A	9,375	20,000	JP-9-15/D	9,375	20,000
2J55	9,375	50,000	JP-9-18	9,410	21,000
4J52A	9,375	80,000	YJ-1071	9,410	10,000
725-A	9,375	50,000	YJ-1110	9,375	20,000
6027H/YJ-1060	9,375	20,000	YJ-1120	9,410	25,000
6521	5,400	85,000	YJ-1121	9,445	25,000
DX373/3219	9,400	75,000	YJ-1200	9,375	25,000
JP-9-2.5D/F	9,445	3,000	YJ-1250	9,375	90,000
JP-9-2.5E	9,445	3,000	YJ-1300	9,410	7,000
JP9-2.5H	9,375	3,000	YJ-1390	9,410	1,500

RECEIVER KLYSTRONS

Type	Center Frequency (MHz)	Output Power C.W. (Milliwatts)	Type	Center Frequency (MHz)	Output Power C.W. (Milliwatts)
2K25/KS-9-20A	9,000	25	KS-9-20/D/F	9,400	25
2K26/KS-7-85	7,000	100	KS-9-40B	9,450	40
KS-9-20B	9,450	35	KS-9-40/D	9,400	40

MODULATOR SWITCH TUBES

Type	Peak Voltage (V)	Peak Current (Amps)	Type	Peak Voltage (V)	Peak Current (Amps)
A-2426	6,000	7.5	3C45	3,000	35
C-1148	14,000	12	4C35	8,000	90
C-1149/4PR-60B	20,000	18.0	5C22	16,000	325
C-1166	17,500	15	6DQ5	6,500	1.1

T.R. TUBES

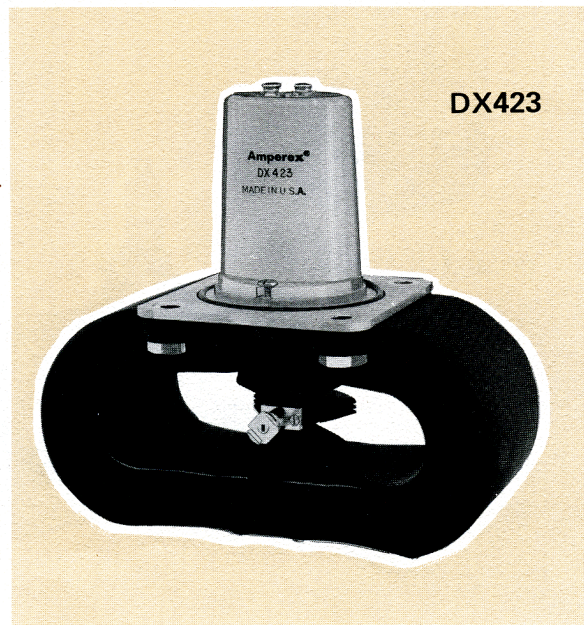
Type	Center Frequency (MHz)	Peak Power
QF451/BS810	9,410	75 kW
WF409/MD2901	9,410	100 kW

MIXER DIODES

BAV 22/CS 10 B
BAV 22R/CS 10 BR

DX423 MILLIMETER MAGNETRON

FREQUENCY 95 GHz
PEAK POWER OUTPUT 8 KW
PEAK VOLTAGE 10 KV max.
PEAK CURRENT 30.4 max
PEAK WEIGHT 7.5 POUNDS

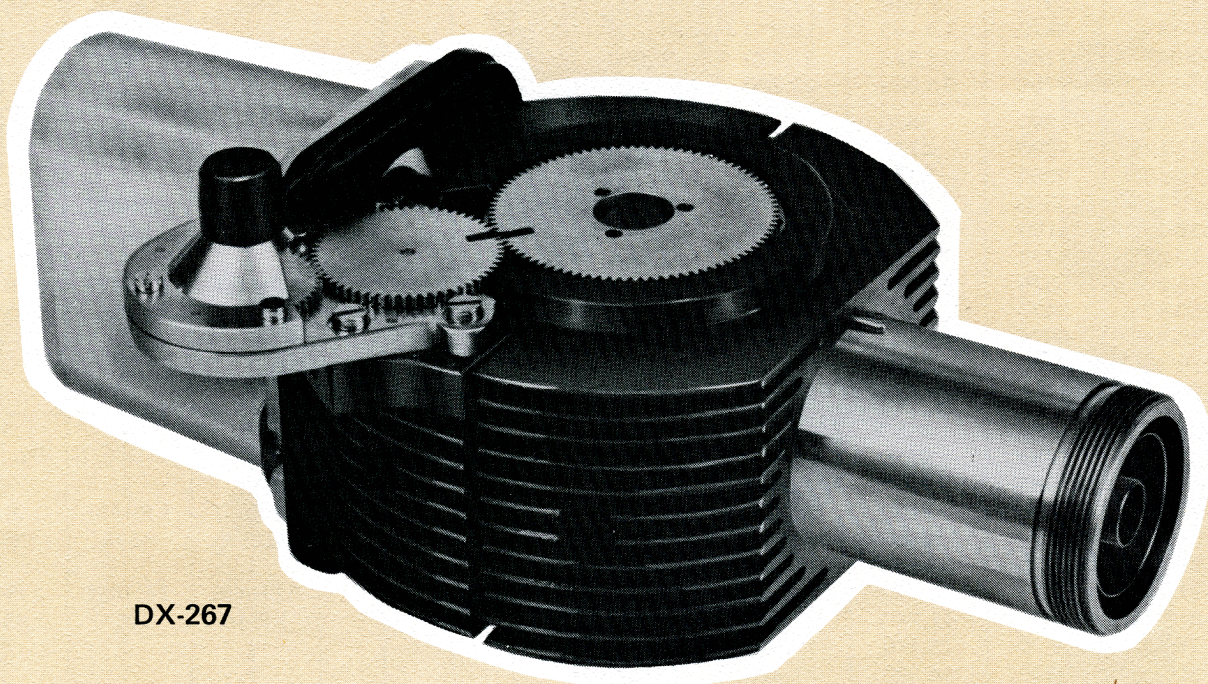


Radar Tubes (Continued)

AIR TRAFFIC CONTROL AND TARGET/SIMULATOR MAGNETRONS

TUBE TYPE	OUTPUT PULSE (TYPICAL)			INPUT PULSE (TYPICAL)		
	FREQUENCY MHz	POWER KILOWATTS		VOLTAGE KILOVOLTS	CURRENT AMPS.	WIDTH MICROSECONDS
	MIN — MAX	PEAK	AVERAGE	TYP.	TYP.	MAX.
DX-343	725- 775	100	0.150	15	12	2.0
DX-342	820- 880	500	0.500	22	50	4.0
DX-460	870- 930	500	0.500	22	50	4.0
DX-450	1000-1100	300	0.250	25	25	4.0
DX-286	1200-1350	750	0.750	32	70	4.0
5J26 (JAN)	1220-1350	450	0.450	29	46	6.0
DX-267	1220-1350	500	0.400	30	50	6.0
DX-276	2700-2900	400	0.400	25	36	2.5
5586 (JAN)	2700-2900	800	0.400	28	70	2.5
8798 (JAN)	2700-2900	800	0.525	28	70	2.0
5657 (JAN)	2900-3100	800	0.400	28	70	2.0
DX-468	3100-3300	800	0.400	28	70	2.0
6589	3300-3500	500	0.250	26	40	2.0

All types are air cooled, unpackaged, with coaxial outputs. "L" band tubes (700-1500 MHz) require a 1400 Gauss magnet similar to Arnold Engineering Co. (Marengo, Illinois) Part No. 5N447. The "S" band tubes (2500-3500 MHz) require a 2700 Gauss magnet equal to Indiana General Corporation, (Keasbey, New Jersey) Part No. 35C-Y20B.



DX-267

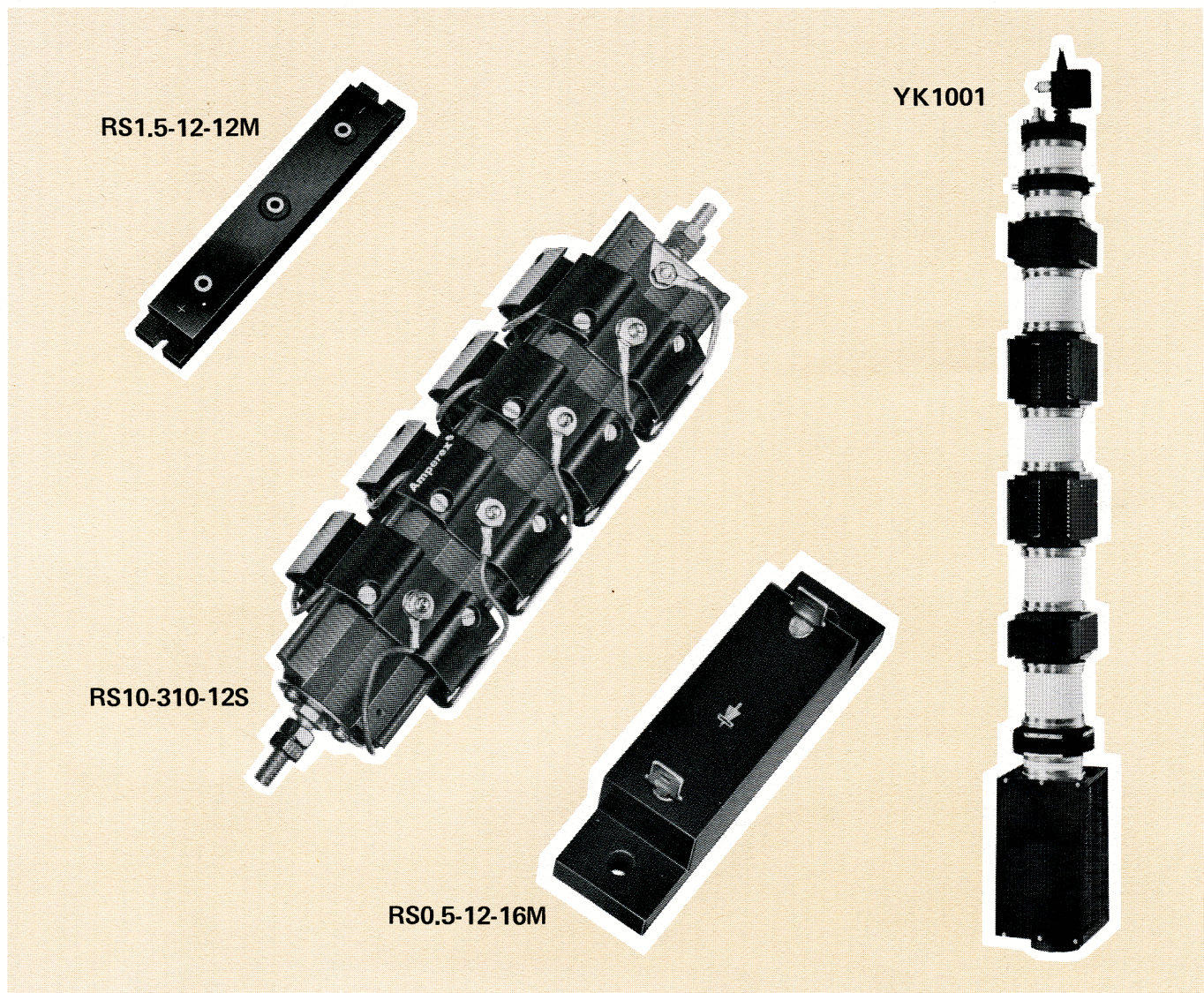
Rectifier Stacks

TYPE	MAXIMUM POWER SUPPLY AVG. D.C. OUTPUT VOLTAGE			MINIMUM STACK AVALANCHE VOLTAGE	MAX. POWER SUPPLY AVG. D.C. OUTPUT CURRENT		MAX. PWR. SUPPLY R.M.S. SHORT CIRCUIT CURRENT		
	1 ϕ C.T.	1 ϕ BRIDGE	3 ϕ BRIDGE		1 ϕ C.T. or BRIDGE	3 ϕ BRIDGE	1/2 CYCLE	4 CYCLES	10 CYCLES
RS0.5-12-16M	2870	5740	8550	18,000	1A	1.5A	1 ϕ =35.4 3 ϕ =47.5	1 ϕ =16.3 3 ϕ =21.8	1 ϕ =11.3 3 ϕ =15.2
RS1.5-12-12M	2390	4775	7150	15,000	3A	4.5A	1 ϕ =49.4A 3 ϕ =60.5A	1 ϕ =16.9A 3 ϕ =20.8A	1 ϕ =13.4A 3 ϕ =16.4A
RS3.5-24-9S	1790	3580	5350	11,250	7A	10.5A	1 PHASE 141A	1 PHASE 33.8A	1 PHASE 25.4A
RS3.5-24-12S	2390	4775	7150	15,000					
RS3.5-24-15S	2985	5970	8930	18,750					
RS3.5-24-18S	3580	7160	10,710	22,500					
RS3.5-24-21S	4180	8360	12,500	26,250					
RS3.5-24-24S	4775	9550	14,300	30,000					
RS3.5-24-27S	5375	10,750	16,100	33,750					
RS3.5-24-30S	5970	11,940	17,880	37,500					
RS3.5-24-33S	6570	13,140	19,650	41,250					
RS3.5-24-36S	7160	14,320	21,420	45,000					
RS3.5-24-39S	7760	15,520	23,200	48,750					
RS4-55-9S	1790	3580	5350	11,250	8A	12A	1 PHASE 282A	1 PHASE 77.5A	1 PHASE 53.6A
RS4-55-12S	2390	4775	7150	15,000					
RS4-55-15S	2985	5970	8930	18,750					
RS4-55-18S	3580	7160	10,710	22,500					
RS4-55-21S	4180	8360	12,500	26,250					
RS4-55-24S	4775	9550	14,300	30,000					
RS4-55-27S	5375	10,750	16,100	33,750					
RS4-55-30S	5970	11,940	17,880	37,500					
RS4-55-33S	6570	13,140	19,650	41,250					
RS4-55-36S	7160	14,320	21,420	45,000					
RS4-55-39S	7760	15,520	23,200	48,750					
RS5-110-9S	1790	3580	5350	11,250	10A	15A	1 PHASE 508A	1 PHASE 155A	1 PHASE 106A
RS5-110-12S	2390	4775	7150	15,000					
RS5-110-15S	2985	5970	8930	18,750					
RS5-110-18S	3580	7160	10,710	22,500					
RS5-110-21S	4180	8360	12,500	26,250					
RS5-110-24S	4775	9550	14,300	30,000					
RS5-110-27S	5375	10,750	16,100	33,750					
RS5-110-30S	5970	11,940	17,880	37,500					
RS5-110-33S	6570	13,140	19,650	41,250					
RS5-110-36S	7160	14,320	21,420	45,000					
RS5-110-39S	7760	15,520	23,200	48,750					
RS10-310-9S	1790	3580	5350	11,250	20A	30A	1 PHASE 1129A	1 PHASE 437A	1 PHASE 352A
RS10-310-12S	2390	4775	7150	15,000					
RS10-310-15S	2985	5970	8930	18,750					
RS10-310-18S	3580	7160	10,710	22,500					
RS10-310-21S	4180	8360	12,500	26,250					
RS10-310-24S	4775	9550	14,300	30,000					
RS10-310-27S	5375	10,750	16,100	33,750					
RS10-310-30S	5970	11,940	17,880	37,500					
RS10-310-33S	6570	13,140	19,650	41,250					
RS10-310-36S	7160	14,320	21,420	45,000					
RS10-310-39S	7760	15,520	23,200	48,750					

Klystrons

UHF T.V. HIGH POWER KLYSTRONS WITH PERMANENT MAGNET FOCUSING

TYPE	DESCRIPTION	FREQUENCY RANGE MHz	HEATER		COOLING	MAX. OUTPUT POWER kW	TYPICAL OPERATION			
			VOLTS	AMPS			DRIVING POWER W	COLLECTOR TO CATHODE VOLTAGE kV	COLLECTOR TO BODY VOLTAGE kV	CATHODE CURRENT AMPS
YK1001	FOUR CAVITIES	470-860	7.5	32	FORCED AIR	13.5	10	18	-0.5	1.9
YK1002	FOUR CAVITIES	470-860	7.5	32	WATER AND FORCED AIR	13.5	10	18	-0.5	1.9
YK1151	FOUR CAVITIES	470-860	8.0	32	FORCED AIR	25	2.5	20	-4	3.0
						12.5	2.5	16	-4	2.1

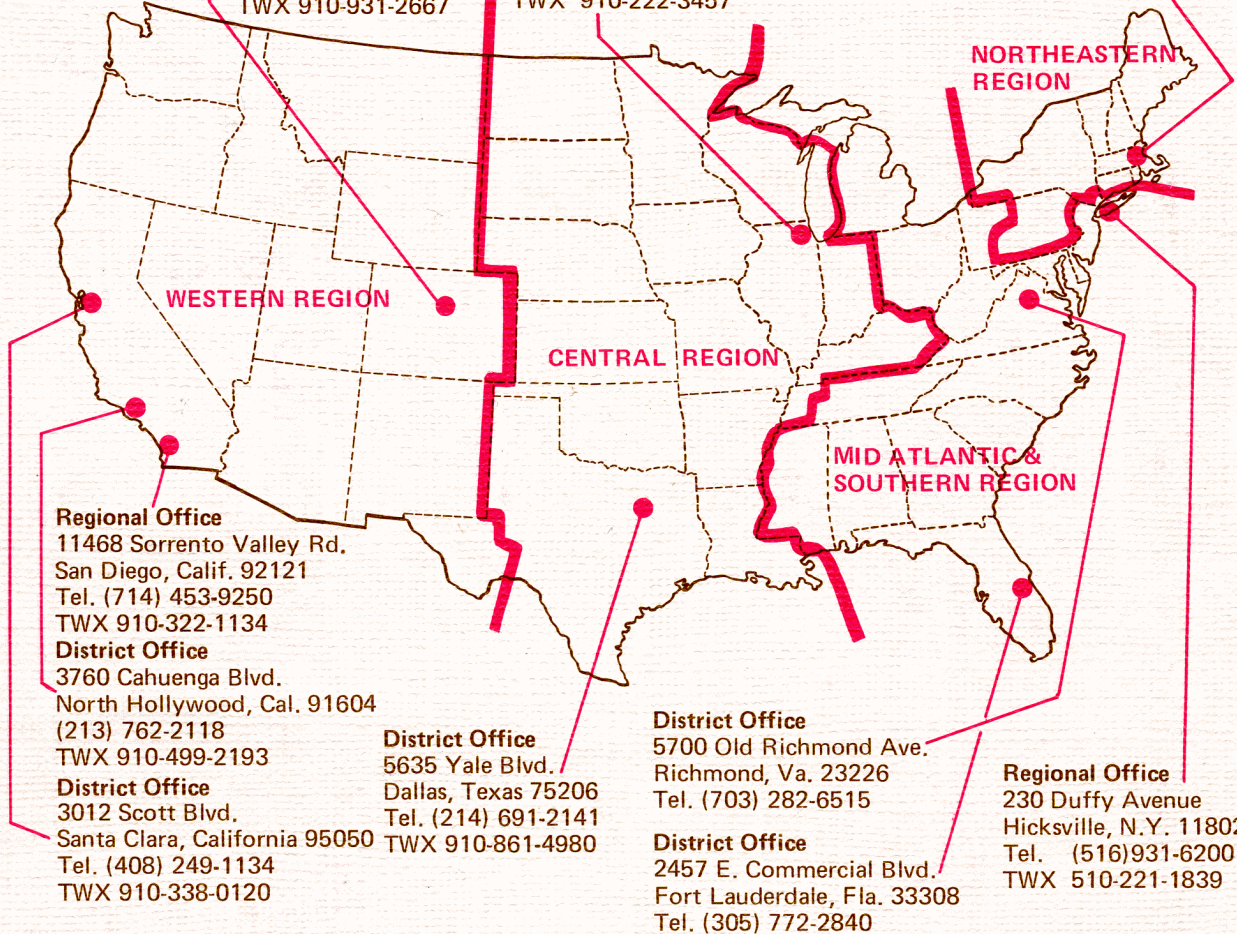


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Needham Heights, Mass. 02194
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March, 1973.