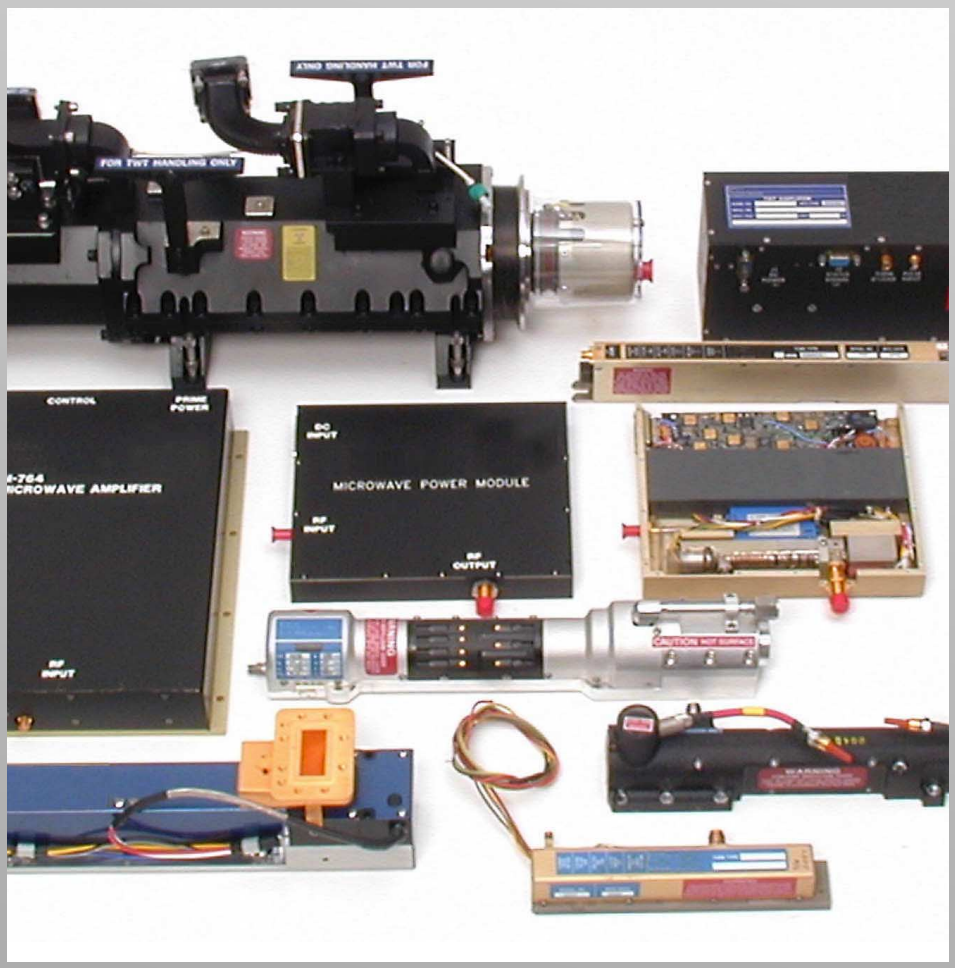
Electron Devices

For Military and Commercial Applications



L3 communications

Electron Devices

L-3 Electron Devices Product Line

The Electron Devices Division of L-3 Communications has designed and manufactured microwave vacuum devices for over 50 years. Our ISO-9001:2000 certified facilities produce hundreds of microwave tubes, amplifiers and other vacuum devices every month for use in a variety of military and commercial systems. Our military product lines meet and exceed the stringent requirements for operation and durability in today's advanced radar, EW, missile and communication systems. We are proud to have supplied products for many of the most successful programs in the United States and for our foreign allies. Electron Devices also provides commercial devices for satellite communications, medical applications, and high energy plasma research. New devices continue to advance the state of the art such as the development a line of commercial and military Microwave Power Modules (MPMs).

HELIX PULSED

Model	Frequency GHz	Output Power KW	Duty Cycle %	Rated Gain dB	Cathode Voltage KV	Cathode Current Amps
L5827	0.7 – 2.0	1.0	4.0	30	-7.7	2.10
L5873	2.5 – 8.0	1.0	8.0	45	-8.5	1.40
L5843	6.5 – 17.0	0.3	7.0	50	-6.4	0.74
L5737	7.5 – 18.0	1.0	5.0	50	-11	1.60
L5982	9.0 – 10.0	8.0	5.0	40	-15	2.60
L6046	6.0 – 18.0	1.0	5.0	40	-9.5	1.05
L5850	8.5 – 10.5	2.0	6.0	60	-11	1.40

HELIX CW

Model	Frequency GHz	Output Power Watts	Rated Gain dB	Cathode Voltage KV	Cathode Current mA	Collector Voltage KV
L2086	1.8 – 3.6	600	30	-5.6	770	4.00
L2124	2.5 – 7.5	400	35	-6.3	600	4.0 / 1.3
L2119	2.5 – 8.0	125	38	-5.0	315	3.0 / 2.0
L5841	7.5 – 18.0	125	42	-9.2	190	4.6 / 2.76

RING LOOP

Model	Frequency GHz	Output Power KW	Duty Cycle %	Rated Gain dB	Cathode Voltage KV	Cathode Current Amps
L5714	2.0 – 2.6	20.0	0.04	45	-20.0	5.2
L6028	8.7 – 9.4	8.0	2.50	60	-15.0	2.6

SATCOM

Model	Frequency GHz	Output Power Watts	Small Signal Gain dB	Cathode Voltage KV	Cathode Current Amps	Collector Voltage KV
L5894	5.85 – 6.425	170	50	-5.0	235	2.5 / 1.2
L5916	5.85 – 7.025	400	55	-9.0	320	4.5 / 2.9
L5950	5.85 – 7.025	750	50	-11.0	420	6.6 / 5.3 / 2.4
L5895	13.75 – 14.5	125	50	-6.0	196	3.0 / 1.5
L6096	13.75 – 14.5	200	50	-6.3	250	3.1 / 1.5

MINI TUBES

Model	Frequency GHz	Output Power Watts	Small Signal Gain dB	Cathode Voltage V	Cathode Current mA	Collector Voltage V
L6017	2.0 – 8.0	75	22	-2670	180	1900 / 1400 / 770
L6043	2.0 – 8.0	75	30	-2670	200	1900
L6035	4.5 – 18.0	35	30	-4550	180	2400 / 1550
L6049	4.5 – 18.0	110	30	-4800	260	2740 / 1780
L6012	6.0 – 18.0	65	23	-3750	160	2220 / 1920 / 720
L6061	9.5 – 15.0	100	33	-5000	165	2400/1550
L5990	10.0 – 10.5	140	30	-4100	165	2250
L6083	18.0 – 40.0	20	30	-8000	120	3200 / 2200
L6024	40.0 – 46.0	40	30	-8000	110	3200 / 2200

HELIX, RING LOOP and RING BAR TWTs — Electron Devices is widely recognized as an industry leader in the design and manufacture of high power Pulsed and CW Helix and Ring Loop TWTs for radar, EW and missile applications. These TWTs operate in the standard bands over the 2 to 18 GHz frequency spectrum and provide superior performance and reliability. Electron Devices is a TWT supplier for such programs as the ALQ-136, ALQ-161, ASPJ and SIRFIC ECM systems, the APS-147 Helicopter Radar and the Patriot and AMRAAM missiles.

COUPLED CAVITY TWTs — Primarily used in ground-based or airborne radar applications, our X and Ku band TWTs are available with up to 125 KW of peak power. Our TWTs have found use in a wide variety of radar systems, both in the U.S. and abroad, such as the airborne radars in the USAF F-14, F-16, F-18, the British Harrier and the French Mirage as well as the U.S. Army's TPQ-36 and MPQ-64 Battlefield Surveillance Radars.

COUPLED CAVITY

Model	Frequency GHz	Output Power KW	Max Duty %	Cathode Voltage KV	Cathode Current Amps	Rated Gain dB	Cooling	Collector Voltage KV
L5652HI	9.8 – 10.3	40.0	3.5	-35	6.0	60	Liquid	20.65 / 13.3/9.1
L5652LO	9.8 – 10.3	4.5	25.0	-35	1.4	30	Liquid	20.65 / 13.3/9.1
L5810	9.5 – 10.0	15.0	0.4	-23.5	4.0	60	Liquid	13.0
L5755	9.4 – 10.0	25.0	1.2	-26	5.8	50	Air	11.0
L5906	9.4 – 10.0	50.0	1.0	-34	7.0	55	Air	21.6 / 15.5
L6060	9.0 – 10.0	60.0	3.5	-34.5	7.6	45	Liquid	24.5 / 17.9
L5391	9.1 – 9.6	125	0.4	-45.3	13.5	45	Liquid	17
L5849	13.4 – 14.0	15.0	5.0	-32.5	2.4	50	Liquid	18.8 / 15.6

KLYSTRONS/SWITCH TUBES

Model	Frequency GHz	Output Power MW	Duty %	Instantaneous Bandwidth MHz	Rated Gain dB	Cathode Voltage KV	Cathode Current Amps
L5859	0.805	12.00	0.18	3	50	-180	155
L6048	0.805	2.75	10.0	1	45	-175	44
L5782	2.7 – 3.0	1.50	0.16	15	53	-80	44
L5892	2.8 – 3.2	3.0 – 4.5	0.20	400	33	-117	80
L5822	2.856	5.5	0.10	1	50	-120	85

Model	Hold Off Collector Voltage	Peak Collector Current	Average Collector Dissipation	Peak Mod-Anode Voltage	Pulse Width
L5097	165KV	50A	60 KW	11KV	30usec

MICROWAVE POWER MODULES

Model	Frequency GHz	Output Power Watts	Input Power dBm	Input Voltage VDC	Prime Power Input Max	Dimensions	Application
M1000	2.0 – 8.0	50	16 – 24	90 – 260 VAC	350 Watts	12 x 10.5 x 2.0	Commercial
M1020	6.0 – 18.0	60	20 – 30	90 – 260 VAC	375 Watts	10.3 x 9.6 x 2.0	Commercial
M1021	12.75 – 14.5	40	20 – 24	90 – 260 VAC	225 Watts	10.3 x 9.6 x 2.0	Commercial
M1025	12.75 – 14.5	80	20 – 24	90 – 260 VAC	325 Watts	10.3 x 9.6 x 2.0	Commercial
M1030	12.75 – 14.5	125	15 – 21	90 – 260 VAC	475 Watts	10.3 x 9.6 x 2.0	Commercial
M1040	26.0 – 40.0	20	7 – 14	90 – 260 VAC	350 Watts	12 x 10.0 x 2.0	Commercial
M1125	27.5 – 31.5	40	12 – 16	90 – 260 VAC	300 Watts	12 x 10.0 x 2.0	Commercial
M1200	2.0 – 8.0	50	0 ±1	270 VDC	325 Watts	14 x 4 x 1.2	Military
M1220	6.0 – 18.0	60	0 ±1	270 VDC	375 Watts	7.5 x 6.25 x 1.0	Military
M1221	6.0 – 18.0	60	0 ±1	+28 VDC	400 Watts	7.85 x 6.5 x 1.0	Military
M1280	26.0 – 40.0	20	7 – 14	270 VDC	300 Watts	14 x 3 x 1.25	Military

POWER SUPPLIES

Model	Input Voltage	Application	Dimensions	Weight
M702	28 VDC	For L5843	12.0 x 3.0 x 4.0	8
M713	3 Phase 50 – 400 Hz, 200 V_{LL}, or 270 VDC	For 1 – 4 kW peak TWTs	14.0 x 7.5 x 5.0	24
M755	3 Phase 50 – 400 Hz, 200 V_{LL}, or 270 VDC	For 8 Kw peak TWTs	14.25 x 6.0 x 5.0	26

KLYSTRONS — Since the development of the first 2.2 megawatt L-band Klystron in 1952, we have been a leader in support of the superpower radar community. Today, state-of-the-art Cluster Cavity™ Klystrons provide the wide-band Multimegawatt capability for the USAF AWACS system. Other megawatt Klystrons are in use at the FAA, medical radiation therapy and high energy plasma research applications.

MINI TUBES — Electron Devices has a complete line of mini tubes, covering multi-octave bandwidths over the frequency range of 2 to 46 GHz with output powers of up to 140 Watts. The tubes have multi-stage collectors for high efficiency, are of rugged thermal design and offer long life through superior gun optics and beam magnetics.

These mini tubes are used in ECM systems for the U.S. and foreign Navys and are also used in airborne decoy systems in Europe as well as the IDECM system for the USAF. A special line of low gain, high efficiency Vacuum Power Booster (VPB) tubes was developed for use in our line of Microwave Power Modules (MPMs).

MICROWAVE POWER MODULES — Electron Devices Microwave Power Module (MPM) is a super component combining a solid state driver with vacuum power booster and integrated power conditioner (IPC) in one package that is much smaller, lighter and more efficient than the traditional TWTA. The VPB and IPC are both manufactured at our San Carlos facility, providing the user with standard or custom designs at one location.

The MPM is available in bands from 2 to 46 GHz with output powers from 40 up to 150 Watts. They are offered in small and light military qualified formats or slightly larger and lower cost commercial versions. Our MPMs are used in the USAF Predator and Global Hawk UAVs as well as various satcom applications around the world.

POWER SUPPLIES — Electron Devices has built custom military high voltage TWT power supplies and specialized electronic subsystems for over 40 years. High voltage, low noise, high power density power supplies are available for CW or Pulse applications with our line of Helix and Ring-loop TWTs and are designed with full automatic protection. Our power supplies and subsystems are used in the internationally-used APS-143 surveillance Radar, the U.S. Navy's Helicopter APS-147 Radar, NATO's HADR system and the U.S. Army's ALQ-136 Helicopter ECM system.

Cleared by DoD/DFOISR for public release under DFOISR case number 03-S-1435 dated 6/23/03.

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PB JC 5/03

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