

ELECTRONIC TUBE REFERENCE

EM15LS

Specialized - Magnetron electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
MAGNETRON

Rugged metal-ceramic power magnetron designed specifically for industrial processing at 915 ±15 MHz. It delivers about 25 kW RF output at roughly 80% efficiency and uses a directly heated pure-tungsten spiral cathode for severe industrial service.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	11 V / 106 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Magnetron	
MAXIMUM PLATE VOLTAGE	14000 V
MAXIMUM PLATE DISSIPATION	15000 W
Promoted fields populated only where the published value maps directly to the schema; device-specific values retained as parameters.	

The Eimac EM15LS is a rugged power magnetron designed specifically for industrial processing. It is designed to operate in the industrial and sci- entific frequency allocation of 915 =15 Mc. A power output of 25 kW can be obtained into a matched load at an efficiency of approximately 80%. Long operating life in severe industrial environment is assured through use of a directly heated pure tungsten spiral cathode. Further, ruggedness is assured through exclusive use of metal-ceramic construction. Every effort

SOURCE OPERATING CONDITIONS
[SOURCE PDF](#)

1962 Eimac

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

1962 EIMAC

Section 1 · Magnetron

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
The Eimac EM1	5	The Eimac EM15LS is a rugged power magnetron designed specifically
entific frequency allocation of [1]	915 MHz	entific frequency allocation of 915 =15 Mc. A power output of 25 kW can
entific frequency allocation of [2]	15 MHz	entific frequency allocation of 915 =15 Mc. A power output of 25 kW can
entific frequency allocation of [3]	25 MHz	entific frequency allocation of 915 =15 Mc. A power output of 25 kW can
be obtained into a matched load at an efficiency of approximately	80	be obtained into a matched load at an efficiency of approximately 80%.
Anode voltage for the EM1	5	Anode voltage for the EM15LS is normally supplied from a full wave three-phase rectifier with
Heating Time	10 s	Heating Time ----- 10 seconds
Starting Voltage (* [1])	5 V	Starting Voltage (*5%) ----- 13 volts ac
Starting Voltage (* [2])	13 V	Starting Voltage (*5%) ----- 13 volts ac
Starting Current	115 A	Starting Current ----- 115 amperes ac
Maximum Inrush Current	250 A	Maximum Inrush Current----- 250 amperes
Cold Resistance	0.03	Cold Resistance ----- 0.030hms
Output Power	25	Output Power ----- 25kilowatts
Frequency [1]	915	Frequency ----- 915*15Mc
Frequency [2]	15	Frequency ----- 915*15Mc
Output Window [1]	20	Output Window ----- 20 cfm 2" H.0
Output Window [2]	2	Output Window ----- 20 cfm 2" H.0

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Output Window [3]	0	Output Window ----- 20 cfm 2" H.0
Electromagnet Voltage,dc	50	Electromagnet Voltage,dc----- . . . 50volts
Electromagnet Current,dc	4 A	Electromagnet Current,dc----- . 4 amperes
Filament Voltage,ac	14	Filament Voltage,ac ----- 14volts
Filament Current,ac	120 A	Filament Current,ac ----- . 120 amperes
Anode Voltage (dϕ)	14	Anode Voltage (dϕ) ----- . . 14kilovolts
Anode Current (dcϕ)	3	Anode Current (dcϕ) ----- . . 3Amperes
Anode Dissipation - - - - - - - - - - <	15	Anode Dissipation ----- < - 15Kilowatts
Load VSWR [1]	2.5	Load VSWR ----- 2.5:1
Load VSWR [2]	1	Load VSWR ----- 2.5:1
Seal Temperature- - - - - - - - <«	175	Seal Temperature----- <« --- . . 175°C
Water Outlet Temperature- - - - - - . -« - - - =«	70	Water Outlet Temperature----- . -« --- =« - . 70°C
Frequency - - - - - « - - - - - G6 [1]	15 MHz	Frequency ----- « ----- G615 915 megacycles
Frequency - - - - - « - - - - - G6 [2]	915 MHz	Frequency ----- « ----- G615 915 megacycles
Output Power S S ..t	25 kW	Output Power S S ..t 25 kilowatts
Anode Voltage - - - - - - - < [1]	115	Anode Voltage ----- <. -- 115 12.5kilovoltsdc
Anode Voltage - - - - - - - < [2]	12.5	Anode Voltage ----- <. -- 115 12.5kilovoltsdc
Anode Current [1]	2.1 A	Anode Current ----- . . 2.1 2.4 amperes dc
Anode Current [2]	2.4 A	Anode Current ----- . . 2.1 2.4 amperes dc
Efficiency [1]	83 %	Efficiency ----- 83 83 percent
Efficiency [2]	83 %	Efficiency ----- 83 83 percent
Filament Voltage [1]	11 V	Filament Voltage ----- 11 10.8 volts ac
Filament Voltage [2]	10.8 V	Filament Voltage ----- 11 10.8 volts ac

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Filament Current [1]	106	Filament Current ----- 106 103 amperes ac
Filament Current [2]	103	Filament Current ----- 106 103 amperes ac
VSWR [1]	3	VSWR ----- 3:1* 25:1*
VSWR [2]	1	VSWR ----- 3:1* 25:1*
VSWR [3]	25	VSWR ----- 3:1* 25:1*
VSWR [4]	1	VSWR ----- 3:1* 25:1*
Electromagnet Current [1]	3.3 A	Electromagnet Current ----- 3.3 3.6 amperes dc
Electromagnet Current [2]	3.6 A	Electromagnet Current ----- 3.3 3.6 amperes dc
Before the anode voltage is applied, the filament current must be set for	115 A	Before the anode voltage is applied, the filament current must be set for 115 amperes and held
there for	10 s	there for 10 seconds. When the magnetron begins operating, the heater current should be re-
Published value	3	3. POWER SUPPLY
Fig	3	Fig. 3) becomes proportional to the anode current and curve of V, against I, for steady currents,
Beyond the branch point shown in Fig	5	Beyond the branch point shown in Fig. 5, the biasing current is zero and full series field behavior
self-regulating action. This leads to a power variation (see Fig	2	self-regulating action. This leads to a power variation (see Fig. 2 for example) which is mainly
temperature should not exceed	175	temperature should not exceed 175°C.
Ioz	2.4	Ioz 2.4a AND INDICATES VOLTAGE MINIMUM AT THE FLANGE.
T BIAS CURRENT_ "	4	T BIAS CURRENT_ " 4 w