

ELECTRONIC TUBE REFERENCE

12FX8

Voltage - Triode (with diode, heptode or hexode) electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS
CONSTRUCTION
HEPTODE-TRIODE

Triode-heptode front-end tube for 12 V automobile radios. The triode serves as RF amplifier while the heptode combines local-oscillator and mixer functions directly from the vehicle supply.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9KV	BASE PINS	9
NOMINAL HEATER	12.6 V / 270 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Dissimilar

9KV - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1	A	G2 – Screen Grid	CONNECTED
PIN1	A	G4 – Fourth Grid	CONNECTED
PIN2	A	G1 – Control Grid	CONNECTED
PIN3	A	P – Plate (Anode)	CONNECTED
PIN4	–	H – Heater	CONNECTED
PIN5	B	K – Cathode	CONNECTED
PIN5	–	H – Heater	CONNECTED
PIN6	B	G1 – Control Grid	CONNECTED
PIN7	A	G5 – Fifth Grid	CONNECTED
PIN7	A	K – Cathode	CONNECTED
PIN7	–	IS – Internal Screen	CONNECTED
PIN8	B	P – Plate (Anode)	CONNECTED

TERMINAL	SECTION	ELEMENT	STATUS
PIN9	A	G3 – Suppressor Grid	CONNECTED

SECTION RATINGS

SECTION1 Heptode		
PLATE RESISTANCE		400000 Ω
MAXIMUM PLATE VOLTAGE		16 V
MAXIMUM SCREEN VOLTAGE		16 V
<i>Heptode converter section; published ratings/characteristics promoted where applicable.</i>		

SECTION2 Triode		
TRANSCONDUCTANCE		0.0014 S
AMPLIFICATION FACTOR		10
MAXIMUM PLATE VOLTAGE		16 V
<i>Triode RF-amplifier section; published ratings/characteristics promoted where applicable.</i>		

12FX8 combines a triode and heptode for superheterodyne receivers, serving as a triode RF amplifier and frequency converter from an automotive battery supply.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Tung Sol

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

1961 TUNG SOL

Section 1 · Heptode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	12.6 V	—
Heater current	270 mA	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Conversion transconductance	300 μ S	Converter
Oscillator transconductance	3600 μ S	NotOscillating

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
RF input capacitance	6 pF	—

1961 TUNG SOL

Section 2 · Triode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-to-plate capacitance	1.3 pF	—



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1966 Tung Sol Electronic Tubes 2 of 4

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

1966 TUNG SOL ELECTRONIC TUBES 2 OF 4

Section 1 · Heptode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MIXER GRID TO RLATE (G3 TO P) (MAX.)	0.28 pF	Interelectrode capacitances
MIXER GRID TO	0 pF	Interelectrode capacitances; published column 1
MIXER GRID TO	0.12 pF	Interelectrode capacitances; published column 2
MIXER	0 pF	Interelectrode capacitances; published column 1
MIXER	24 pF	Interelectrode capacitances; published column 2
MIXER	5 pF	Interelectrode capacitances; published column 3

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HEATER VOLTAGE A	12.6 V	Maximum ratings
MAXIMUM HEP7	0 V	Maximum ratings; published column 1
MAXIMUM HEP7	16 V	Maximum ratings; published column 2
MAXIMUM GRIDS #2 & #4 VOLTAGE	16 V	Maximum ratings
MAXIMUM GRIDS #2 & #4 SUPPLY VOLTAGE	16 V	Maximum ratings
MAXIMUM NEGATIVE DC GRID #3 VOLTAGE	16 V	Maximum ratings
MAXIMUM POSITIVE GRID #} VOLTAGE	0 V	Maximum ratings
MAXIMUM GRID #3 CIRCUIT RESISTANCE	10000000 ohm	Maximum ratings
HEATER VOLTAGE	126 V	Typical operating conditions
GRID #1 VOLTAGE (	0 V	Typical operating conditions; published column 1
GRID #1 VOLTAGE (	1.6 V	Typical operating conditions; published column 2
GRID #2 & #4 VOLTAGE (SCREEN GRID)	12.6 V	Typical operating conditions

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
GRID #3 VOLTAGE (SIGNAL GRID)	50 V	Typical operating conditions
PLATE RESISTANCE	5000000 ohm	Typical operating conditions
TRANSCONDUCTANCE	1400 uS	Typical operating conditions
PLATE CURRENT	29 uA	Typical operating conditions; published column 1
PLATE CURRENT	0 uA	Typical operating conditions; published column 2
PLATE CURRENT	1300 uA	Typical operating conditions; published column 3
GRID #2 CURRENT	1250 uA	Typical operating conditions
CONVERSION TRANSCONDUCTANCE	3 uS	Typical operating conditions; published column 1
CONVERSION TRANSCONDUCTANCE	0 uS	Typical operating conditions; published column 2
GRID VOLTAGE FOR	1 V	Typical operating conditions; published column 1
GRID VOLTAGE FOR	0 V	Typical operating conditions; published column 2
GRID VOLTAGE FOR	-3.2 V	Typical operating conditions; published column 3
CONDUCTANCE	0 uS	Typical operating conditions; published column 1
CONDUCTANCE	10 uS	Typical operating conditions; published column 2
CONDUCTANCE	-3 uS	Typical operating conditions; published column 3
GRID #3 VOLTAGE	0 V	Typical operating conditions
GRIDS #2 & #4~CONNECTED TO PLATE	12.6 V	Typical operating conditions
CONNECTED TO PLATE	3600 uS	Typical operating conditions
CATHODE CURRENT	4.4 mA	Typical operating conditions
GRID #1 VOLTAGE (APPROX.) FOR	1 V	Typical operating conditions; published column 1
GRID #1 VOLTAGE (APPROX.) FOR	10 V	Typical operating conditions; published column 2
GRID #1 VOLTAGE (APPROX.) FOR	-4.5 V	Typical operating conditions; published column 3

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
CCONVERTER SERVICE-SELF E%CITATION, SCREEN fEEO BALK	0 ohm	Maximum ratings; published column 1
CCONVERTER SERVICE-SELF E%CITATION, SCREEN fEEO BALK	11 ohm	Maximum ratings; published column 2
Ef =	12.6 V	Maximum ratings
Ebb =	12.6 V	Maximum ratings
Et =	12.6 V	Maximum ratings
Ebb =	400 V	Maximum ratings; published column 2
Maximum plate voltage	16 V	Published datasheet; promoted section value
Maximum screen voltage	16 V	Published datasheet; promoted section value

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	500000 ohm	Published datasheet; promoted section value
Conversion transconductance	300 uS	Heptode converter

1966 TUNG SOL ELECTRONIC TUBES 2 OF 4

Section 2 · Triode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
TRIODE GRID TO MIXER GRID (MAX.)	1 pF	Interelectrode capacitances
TRIODE PLATE TO MIXER GRID (MAX.)	0.18 pF	Interelectrode capacitances
TRIODE PLATE TO HEPTODE PLATE (MAX.)	0.2 pF	Interelectrode capacitances

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAXIMUM TRIODE PLATE VOLTAGE]	6 V	Maximum ratings
MAXIMUM TRIODE GRID CIRCUIT RESISTANCE	10000000 ohm	Maximum ratings
Maximum plate voltage	16 V	Published datasheet; promoted section value

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	0.0014 A/V	Published datasheet; promoted section value

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification factor	10	Published datasheet; promoted section value

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