6386

TWIN TRIODE

MINIATURE TYPE

MEDIUM MU

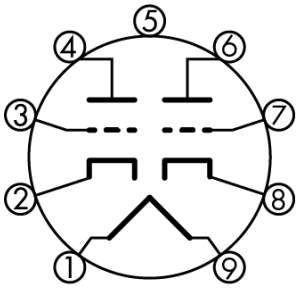
For Remote-Cutoff Cascode-Amplifier applications.

DESCRIPTION

The 6386 is a dual triode, medium mu vacuum tube particularly useful in circuits that exploit each section's remote cutoff characteristics. Famously, it can be found in various variable-mu audio compressor units. These units and the unique sound of the 6386 have colored popular music since the 1960s. Historically, many have found use for the 6386 in cascode circuits, intermediate-frequency amplifiers, and as a mixer where it can be used for automatic gain control. When employed in a cascode, it performs well with high gain and both low noise and higher-order harmonic distortion.

The 6386 displays a great deal of mechanical stability and can be expected to perform well under the most strenuous of conditions. Its emission characteristics will remain unchanged after extended periods of operation under cutoff conditions. All Tung Sol 6386 tubes are being manufactured to the tightest of tolerances on brand new machinery in our factory in St. Petersburg.

BASIC DIAGRAM

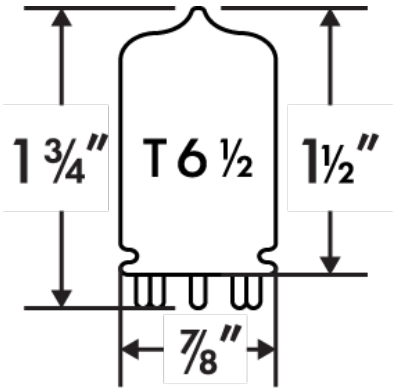


PIN DESCRIPTION

Pin1 - Heater
Pin 2 - Cathode (Section 2)
Pin 3 – Grid (Section 2)
Pin 4 - Plate (Section 2)
Pin 5 – Shield
Pin 6 – Plate (Section 1)
Pin 7 – Grid (Section 1)
Pin 8 – Cathode (Section 1)
Pin 9 – Heater

Pin 5 should be grounded

PHYSICAL DIMENSIONS



Small Button 9-Pin Base

**Noted Values represent design averages*

GENERAL

Cathode – Coated Unipotential

Heater Voltage, AC or DC	6.3 +/- 10%	V
Heater Current	0.35	A
Direct Interelectrode Capacitances*		
Gride to Plate, Each Section	1.2	µµF
Input, Each Section	2.0	µµF
Output, Each Section	1.1	µµF
Heater to Cathode, Each Section	2.6	µµF
Grid to Grid	0.003	µµF
Plate to Plate	0.1	µµF

*Without External Shield

MECHANICAL

Mounting Position	Any
Envelope	T - 6 ½, Glass
Base	E9 - 1, Small Button 9 - Pin

MAXIMUM RATINGS

DESIGN-CENTER VALUES, EACH SECTION

Plate Voltage	300	V
Plate Dissipation	1.5	W
DC Cathode Current	18	mA

Heater – Cathode Voltage ‡

Heater Positive with Respect to Cathode	90	V
Heater Negative with Respect to Cathode	90	V

‡When used as a cascode amplifier with the two sections connected in series, the heater – cathode voltage of the grounded – grid stage may be as high as 250 Volts maximum with the heater negative with respect to the cathode.

CHARACTERISTICS AND TYPICAL OPERATION

CLASS A1 AMPLIFIER, EACH SECTION

Plate Voltage	100	V
Cathode – Bias Resistor	200	Ω
Amplification Factor	17	
Plate Resistance, approximate	4250	Ω
Transconductance	4000	µS
Plate Current	9.6	mA
Grid Voltage, approximate		
Gm = 100 Micromhos	-16	V

Cascode Amplifier – See Circuit Diagram

Plate – Supply Voltage	300	200	Volts
Plate Load Resistor	10000	0	Ω
Voltage – Divider Supply Voltage	250	200	Ω
Grid – Supply Voltage	-5	-2	Volts
Cascode Transconductance		4000	µS
Cascode Plate Current		10.5	mA
Third Harmonic Distortion			
E_{sig} = 1.0 Volts, Peak		0.5	%

SPECIAL TESTS AND RATINGS

Inoperatives Control

Continuous operating time under life – test conditions or equivalent for all tubes prior to characteristics testing ..... 46 Hours

Heater – Cycling Rating

Cycles of Intermittent Operation, Minimum 2000

E_f = 7.5 Volts cycles for one minute on and one minute off. $E_b = E_c = 0$ Volts. E_{hk} = 135 Volts with heater positive with respect to the cathode.

Shock Rating

Impact Acceleration in Any Direction ..... 600 G

Forces as applies by the Navy – type, High Impact (flyweight) Shock Machine for Electronic Devices or its equivalent.

Fatigue Rating

Vibrational Acceleration in Any Direction ..... 2.5 G

Vibrational forces for a period of at least 100 hours at a frequency of 25 cycles per second.