AMPEREX TUBE TYPE 12AX7/ECC83

The 12AX7/ECC83[1] is a miniature, high-mu twin triode, each section of which has an individual cathode connection. The construction of the 12AX7/ECC83 is such that noise and microphony are reduced to a minimum. Hum is reduced by the use of a coiled tungsten heater. A center-tapped heater permits operation of the tube from either a 6.3 volt or a 12.6 volt heater supply.

The 12AX7/ECC83 is particularly suited for use in resistance - coupled voltage amplifiers such as those used in the preamplifier and input stages of Hi-Fi amplifiers, phase inverters, multivibrators and numerous industrial control circuits where high voltage gain is desired.

GENERAL CHARACTERISTICS

ELECTRICAL

Cathode	Coated, unipotential		
	Series	Parallel	
Heater Voltage, AC or DC	12.6	6.3	volts
Heater Current[2]	0.15	0.3	amps
Direct Interelectrode Capacitances	With Shield[3]	Without Shield	
Grid to Plate (each section)	1.7	1.7	uuf
Input (each section)	1.8	1.6	uuf
Output (section 1)	1.9	0.46	uuf
Output (section 2)	1.9	0.34	uuf

MECHANICAL

Maximum Overall Dimensions	
Length	2 3/16 inches
Seated Height	1 15/16 inches
Diameter	7/8 inch
Mounting Position	any
Base	Small button, 9 pin RETMA #9A

[1] The 12AX7/ECC83 is a direct, high-quality replacement for other brands of the 12AX7.

[2] When used in equipment which employs series - connected heaters, a current-limiting device must be inserted to limit the current when switching on.

[3] With external shield (RETMA #315) connected to cathode of section under test.

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12AX7/ECC83

MAXIMUM RATINGS (Each Section)

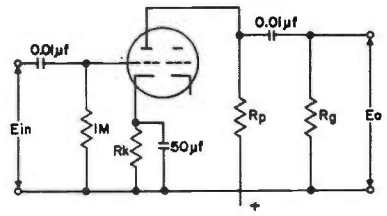
Design Center Values

Zero Signal Plate Voltage	550	volts
Plate Voltage	300	volts
Plate Dissipation	1.0	watt
Cathode Current	8	mA
Grid Voltage	−50	volts
Grid Voltage (Grid current = + 0.3 uA)	−1.3	volts
Grid Resistance[4]	2	megohms
Heater to Cathode Voltage	180	volts
Heater to Cathode Resistance	20,000	ohms
Heater to Cathode Resistance[5]	150,000	ohms

Typical Operating Conditions

Class A Amplifier (Each Section)

Plate Voltage	100	250	volts
Grid Voltage	−1.0	−2.0	volts
Amplification Factor	100	100	
Plate Resistance (approx.)	80,000	62,500	ohms
Transconductance	1250	1600	micromhos
Plate Current	0.5	1.2	mA



Rp = 0.047 MΩ
Rg = 0.15 MΩ

CLASS A RESISTANCE-COUPLED AMPLIFIER, EACH SECTION

[4] With self bias.

[5] In phase inverting circuits.

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1965 Amperex 12AX7 Data Sheets

5751, so it is not a plug-in replacement for those types. Again, consult a technician if you are uncertain. The 6072A, a super-premium version, has recently found new life in condenser microphones and microphone preamps, even though it has not been manufactured since 1988. Rumor has it that an unknown Chinese factory recently made a run of 6072As for tube microphone use.

7729

This super-tube is believed to have been made only by GE and CBS/Hytron in the 1960s. Often it is found bearing the names of instrument manufacturers, such as Beckman. A true 7729 has gold pins. This tube was intended for very critical applications, probably for use as a differential amplifier in instrumentation. 7729s are said to be excellent in sound quality, yet extremely scarce and very unlikely to be manufactured again.

Other Types

There are a few obscure types that are very similar to the 12AX7. These include the 12BZ7, 12DF7, 12DM7, 12DT7, 6681, 7729, and the European/Japanese 6L13, B339, B759, CV492, CV4004, CV8156, CV8222, E83CC, E2164, ECC863, and M8137. Industrial tubes were usually meant for long life and/or for operation in a cutoff condition for long periods (in digital computers); such a tube may also suffer from very high distortion or other sonic artifacts. The user is ultimately responsible for trying and determining the suitability of these tubes for the audio application. This also applies to tubes which will work in a 12AX7 socket but are definitely not intended for high-quality audio, including industrial and computer tubes like the 12AV7, 12AZ7 and a few others. A 12AU7 or equivalent can also be plugged into a 12AX7 socket, with very low gain and/or high distortion being the result. Still, the choice is ultimately up to the equipment owner.

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