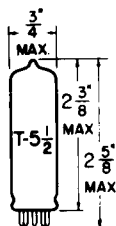


## TUNG-SOL

PENTODE  
MINIATURE TYPE

GLASS BULB  
MINIATURE BUTTON  
7 PIN BASE E7-1  
OUTLINE DRAWING  
JEDEC 5-3

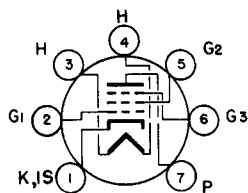
COATED UNIPOTENTIAL CATHODE

GATED-BEAM DISCRIMINATOR

FOR FM AND INTERCARRIER

TELEVISION RECEIVERS

ANY MOUNTING POSITION



BOTTOM VIEW

BASING DIAGRAM

JEDEC 70F

THE 12BN6 IS A GATED BEAM DISCRIMINATOR TUBE USING THE MINIATURE CONSTRUCTION. IT IS DESIGNED TO PERFORM THE COMBINED OPERATION OF DETECTOR AND AUDIO-VOLTAGE AMPLIFIER IN FM RECEIVERS. A UNIQUE DESIGN, MAKING USE OF THE ELECTROSTATIC BEAM DEFLECTION PRINCIPLE, RESULTS IN VERY EFFICIENT LIMITING AS WELL AS PROVIDING FOR FM DETECTOR AND AMPLIFICATION.

## DIRECT INTERELECTRODE CAPACITANCES

WITHOUT EXTERNAL SHIELD

GRID #1 TO ALL	4.2	pf
GRID #3 TO ALL	3.3	pf
GRID #1 TO GRID #3 (MAX.)	0.004	pf

## HEATER CHARACTERISTICS AND RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

AVERAGE CHARACTERISTICS	12.6 VOLTS	150	MA.
HEATER SUPPLY LIMITS:			
CURRENT OPERATION		150±15	MA.
MAXIMUM HEATER-CATHODE VOLTAGE:			
HEATER NEGATIVE WITH RESPECT TO CATHODE		200	VOLTS
TOTAL DC AND PEAK			
HEATER POSITIVE WITH RESPECT TO CATHODE		100	VOLTS
DC		200	VOLTS
TOTAL DC AND PEAK		11	SECONDS
HEATER WARM-UP TIME (APPROX.)*			

\*HEATER WARM-UP TIME IS DEFINED AS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TO REACH 80% OF ITS RATED VOLTAGE AFTER APPLYING 4 TIMES RATED HEATER VOLTAGE TO A CIRCUIT CONSISTING OF THE TUBE HEATER IN SERIES WITH A RESISTANCE OF VALUE 3 TIMES THE NOMINAL HEATER OPERATING RESISTANCE.

CONTINUED ON FOLLOWING PAGE

## TUNG-SOL

CONTINUED FROM PRECEDING PAGE

## MAXIMUM RATINGS ←

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

PLATE SUPPLY VOLTAGE	330	VOLTS
GRID VOLTAGE	110	VOLTS
PEAK POSITIVE LIMITER-GRID VOLTAGE	60	VOLTS
DC CATHODE CURRENT	13	MA.

## TYPICAL OPERATING CHARACTERISTICS ←

LIMITER-DISCRIMINATOR SERVICE

INPUT-SIGNAL CENTER FREQUENCY	10.7	10.7	4.5	MEGACYCLES
FREQUENCY DEVIATION	±75	±75	±25	KCYCLES
PLATE-SUPPLY VOLTAGE	85	285	270	VOLTS
PLATE VOLTAGE	63	122	121	VOLTS
ACCELERATOR VOLTAGE	55	100	100	VOLTS
CATHODE-BIAS RESISTOR (VARIABLE) <sup>A</sup>	200-400	200-400	200-400	OHMS
PLATE LOAD RESISTOR	85000	330000	330000	OHMS
PLATE LINEARITY RESISTOR	470	1500	1000	OHMS
INTEGRATING CAPACITOR	0.002	0.001	0.001	μf
COUPLING CAPACITOR	0.25	0.01	0.25	μf
MINIMUM SIGNAL VOLTAGE FOR LIMITING ACTION, RMS <sup>B</sup>	1.25	1.25	1.25	VOLTS
DC PLATE CURRENT	0.25	0.49	0.44	MA.
ACCELERATOR CURRENT	4.1	9.8	10	MA.
INPUT SIGNAL LEVEL FOR AM REJECTION ADJUSTMENT <sup>A</sup>	1.25	2.0	2.0	VOLTS
AM REJECTION AT $E_{sig}=2.0V$ , RMS	31	20	25	DECIBELS
AM REJECTION AT $E_{sig}=3.0V$ , RMS	30	29	30	DECIBELS
TOTAL HARMONIC DISTORTION	2.0	1.6	1.8	PERCENT
PEAK AUDIO OUTPUT VOLTAGE	6.0	16.6	16.8	VOLTS

<sup>A</sup> THE CATHODE RESISTOR SHOULD BE ADJUSTED FOR MAXIMUM AM REJECTION IN THE OUTPUT OF LIMITER-DISCRIMINATOR STAGE AT THE SPECIFIED SIGNAL LEVEL. AM REJECTION IS MEASURED WITH AM APPLIED SIGNAL CONTAINING 30-PERCENT AMPLITUDE MODULATION AND 30-PERCENT FREQUENCY MODULATION.

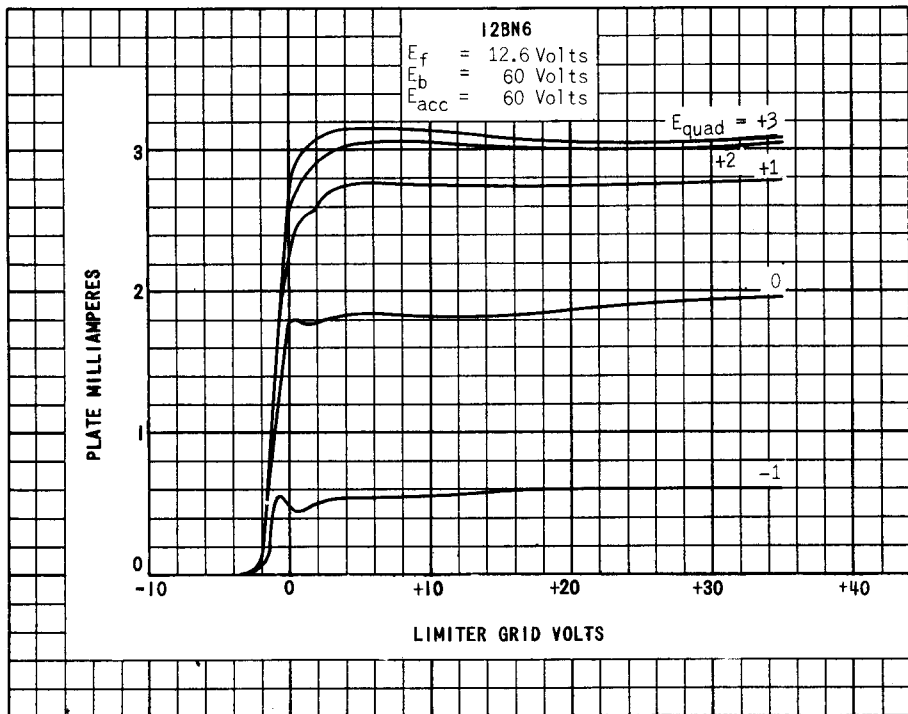
<sup>B</sup> AT SIGNAL LEVELS ABOVE SPECIFIED VALUE, LIMITING IS WITHIN ±2 DECIBELS.

ADEQUATE SHIELDING BETWEEN COMPONENTS OF THE LIMITER GRID AND THE QUADRATURE GRID MUST BE USED TO INSURE PROPER PHASING OF THE VOLTAGE DEVELOPED ON THE QUADRATURE GRID.

STANDARD DE-EMPHASIS REQUIREMENTS FOR FM ARE INCLUDED.

THE Q OF THE QUADRATURE GRID CIRCUIT SHOULD BE HIGH ENOUGH TO DEVELOP A MINIMUM OF 4 VOLTS (RMS) SIGNAL WITH 2 VOLTS (RMS) OF THE CENTER-FREQUENCY SIGNAL APPLIED TO THE LIMITER GRID. IT IS RECOMMENDED THAT THE COIL BE SHUNTED BY A MINIMUM OF 10 μmf. THE CAPACITANCE MAY BE COMPOSED OF TUBE INPUT CAPACITANCE, STRAY CAPACITANCE, AND DISTRIBUTED CAPACITANCE, AS WELL AS PHYSICAL CAPACITANCE.

→ INDICATES A CHANGE.



PRINTED IN U. S. A.