MATSUSHITA

NEWVICON
1 INCH TYPE S4076

Newvicon, employing new photoconductive materials, provides 20times higher sensitivity tham vidicon, and 2times than Silicon-vidicon.

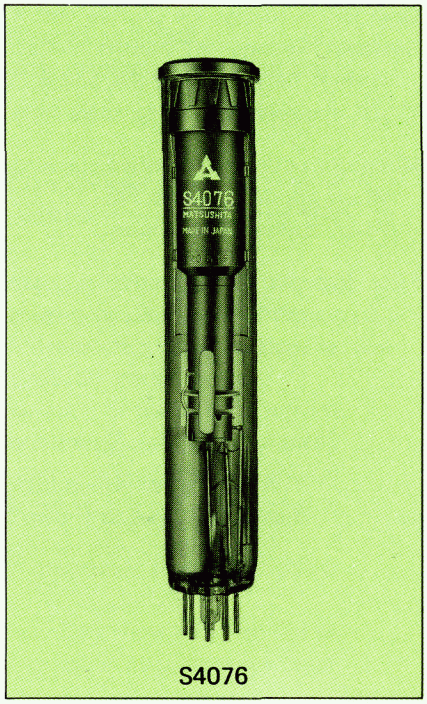
The S4076 is a 1 inch diameter Newvicon camera tube with magnetic focusing, magnetic deflection and separate mesh connection.

Applications:

Low light level cameras for security and surveillance.

TVphone, door camera, warehouse, car parking area, night security, etc.

X-ray TV system.



S4076

General Data:

Heater for unipotential cathode:
- Voltage (AC or DC) . . . . . 6.3 ± 10% V
- Current at 6.3 volts:
  - Typical value . . . . . 95 mA
  - Maximum value . . . . . 105 mA
  - Minimum value . . . . . 85 mA

Direct interelectrode capacitance:
- Target to all other electrodes . . . . . 4.6 pF (1)

Spectral response. . . . . See Fig. 3

Photoconductive layer:
- Maximum useful diagonal of rectangular image (aspect ratio 3 : 4) . . . . . 16 mm
- Orientation of quality rectangle : Proper orientation is obtained when the horizontal scan is essentially parallel to the plane passing through the tube axis and short index pin.

Focusing method . . . . . Magnetic

Deflection method . . . . . Magnetic

Overall length . . . . . 159 ± 3 mm

Greatest diameter . . . . . 28.6±0.3 mm

Bulb T-8

Base . . . . . Small-Button Ditetrar 8-Pin(JEDEC No. E8-11)

Yoke assembly . . . CHUOMUSEN No.KV-8 or equivalent

Operating position . . . . . Any

Weight . . . . . Approx. 60 g

Maximum Ratings (Absolute-maximum values) (2)

For scanned area of 9.5x12.7 mm²

Grid No. 4 voltage . . . . . Max. 1.000 V

Grid No. 3 voltage . . . . . Max. 1.000 V

Grid No. 2 voltage . . . . . Max. 750 V

Grid No. 1 voltage:
- Negative bias value . . . . . Max. 300 V
- Positive bias value . . . . . Max. 0V

Peak heater-cathode voltage:
- Heater negative with respect to cathode . . . . Max. 125 V
- Heater positive with respect to cathode . . . . . Max. 10 V

Target voltage . . . . . Max. 50 V (3)

Peak output current . . . . . Max. 0.8μA (4)

Faceplate:
- Illumination . . . . . Max. 10.000 lx (5)
- Temperature . . . . . Max. 70°C

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Typical Operation and Performance:

For scanned area of 9.5x12.7mm², faceplate temperature of 25 ~ 35°C and standard TV scanning rate.

Grid No. 4 (Decelerator) voltage . . . . . 500 V (6)
Grid No. 3 (Beam focus electrode) voltage. . . . . 300 V (7)
Grid No. 2 (Accelerator) voltage . . . . . 300 V
Grid No. 1 voltage for picture cutoff . . . . –45 ~ –100 V (8)
Average "Gamma" of transfer characteristic for signal current between 0.02 μA and 0.2 μA . . . . . Approx. 1.0
Visual equivalent signal-to-noise ratio . . . . . Approx. 300 : 1

Minimum peak-to-peak blanking voltage:
When applied to grid No. 1 . . . . . 75 V
When applied to cathode . . . . . 20 V

Field strength at center of focusing coil . . . . . 38 ~ 44 G
Field strength of adjustable alignment coil or magnet . . . . . 0 ~ 4 G

Faceplate illumination . . . . . 0.5 lx
Target voltage . . . . . 10 ~ 25 V (9)

Dark current:
Typical value at 25°C . . . . . 10 nA

Signal current:
Typical value . . . . . 240 nA
Minimum value . . . . . 200 nA

Lag: Percent of initial value of signal current 1/20 second after illumination is removed:
Typical value . . . . . 20 % (10)

Limiting resolution:
At center of picture:
Typical value . . . . . 800 TV lines (11)
Minimum value 650 TV lines (11)
At corner of picture:
Typical value . . . . . 500 TV lines (11)
Minimum value . . . . . 400 TV lines (11)

Spurious Signal Specification (12)

This test is performed using an uniformly diffused white test chart that is separated into three zones as shown below.

Fig. 1
Spurious Signal Test Chart

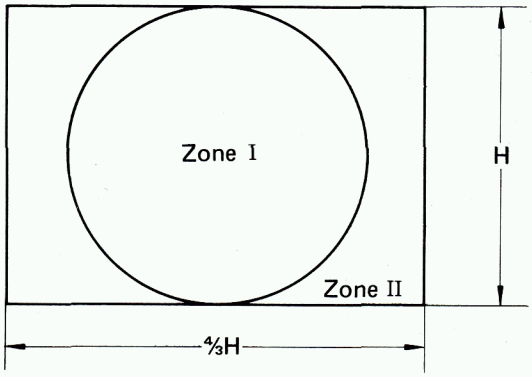


Table 1
Allowable Spot Size for each zone (based on 525 TV line system)

Spot Size (Equivalent TV Lines)	Zone I Allowed Spots	Zone II Allowed Spots
1 and under	*	*
2 to but not including 1	5	5
4 to but not including 2	4	5
7 to but not including 4	0	1
Total	6	8

* Spots of this size are allowed unless concentration causes a smudged appearance.

a) In each zone, a spot having a contrast ratio greater than 2 : 1 shall be considered as a fault. In case number of the above mentioned fault exceeds the allowed number of spots shown in Table 1; the tube is rejected.

b) In each zone, a spot having contrast ratio falling in between 1.5 : 1 and 2 : 1 shall be counted as ½ of the spot having contrast greater than 2 : 1. In case number of the spots counted in accordance with the above calculation exceeds the number in Table 1, the tube is rejected.

c) In each zone, any spot having contrast ratio below 1.5 : 1 shall not be considered as a fault.

d) Tubes are rejected for smudge, lines, streaks, mottled background, grainy background, or uneven background having contrast ratio greater than 1.5 : 1.

Notes

(1) This capacitance, which effectively is the output impedance of the S4076 is increased when the tube is mounted in the yoke assembly. The resistive component of the output impedance is in the order of 100 megohms.

(2) The maximum ratings in the tabulated data are established in accordance with the following definition of the Absolute-Maximum Rating System for rating electron devices. Absolute-Maximum Rating are limiting values of operating and environmental conditions applicable to any electron device of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

(3) Newvicon tubes do not permit automatic sensitivity control by means of regulation of the signal electrode voltage. Adequate control is therefore to be achieved by other means (iris control and neutral density filters). If the tube is applied in cameras originally designed for vidicon tubes, the automatic sensitivity control circuitry should be made inoperative and the signal electrode voltage set to the value indicated in note (9).

(4) Video amplifiers must be designed properly to handle output current of this magnitude to avoid amplifier overloaded or picture distortion.

(5) For conditions where "white light" is uniformly diffused over entire tube face. Care must be taken not to focus the solar image on the target through a lens opening wider than F/11 to avoid instantaneous break down.

(6) Grid No. 4 voltage must always be greater than grid No. 3 voltage. The recommended ratio of grid No. 4 to grid No. 3 voltage both for best geometry and most uniform signal output depends upon the type of yoke assembly used and will be 5 : 3 for the yoke assemblies mentioned under "General Data".

(7) Resolution decreases with descreasing grid No. 3 voltage. In general grid No. 3 should be operated above 250 volts.

(8) With no blanking voltage on grid No. 1.

(9) The target voltage adjusted to the value indicated by the tube manufacturer on the test sheet as delivered with each tube.

(10) For initial output current of 0.2 μA.

(11) On RETMA resolution test chart, faceplate illumination adjusted for peak output current of 0.2 μA.

(12) Adjust faceplate illumination to give 0.2 μ A output current. Adjust beam current to discharge highlights.

Fig. 2

Light Transfer Characteristic

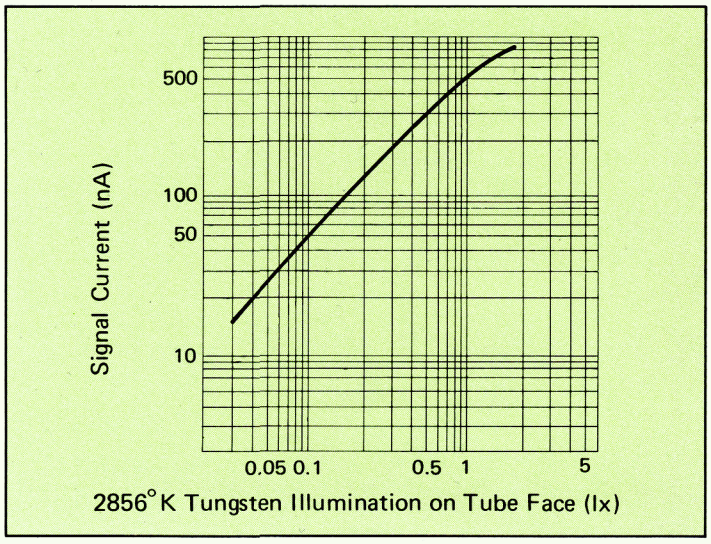


Fig. 3

Relative Spectral Response Characteristics

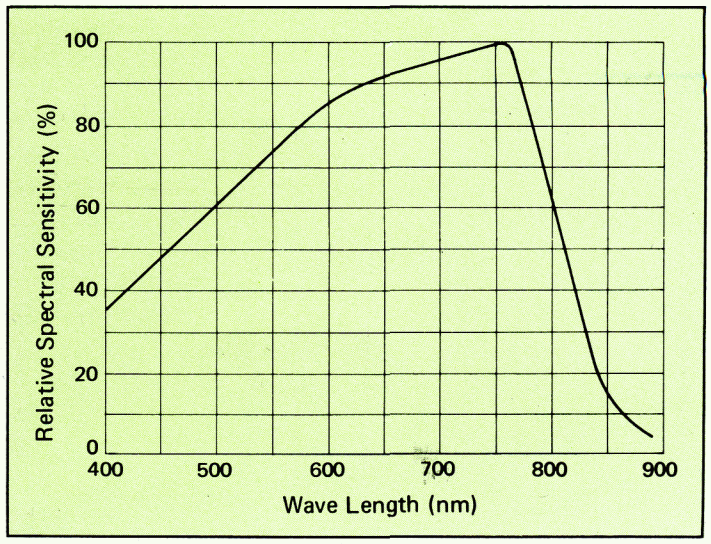


Fig. 4

Horizontal Square Wave Response

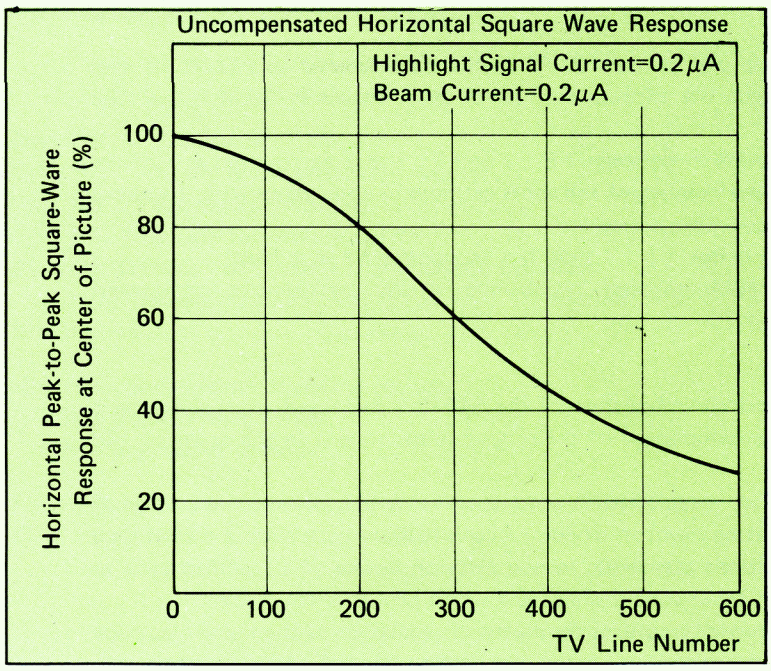
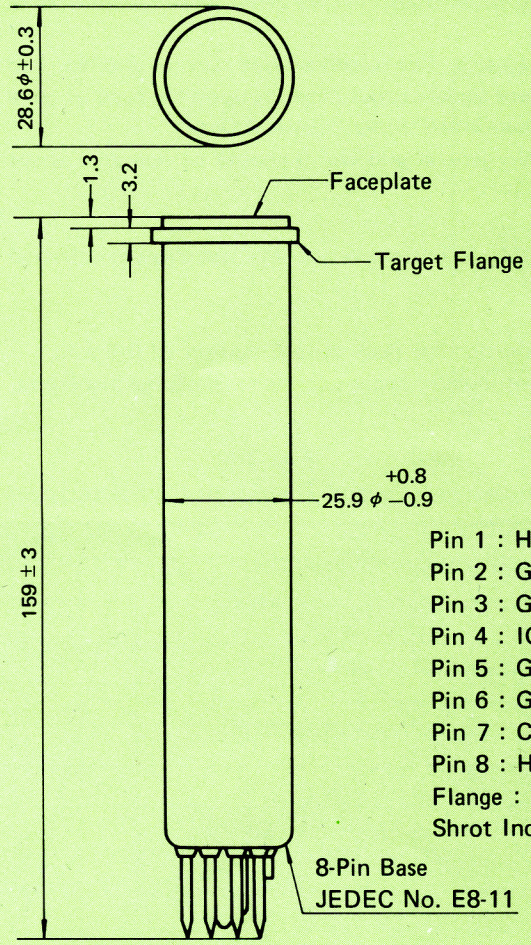


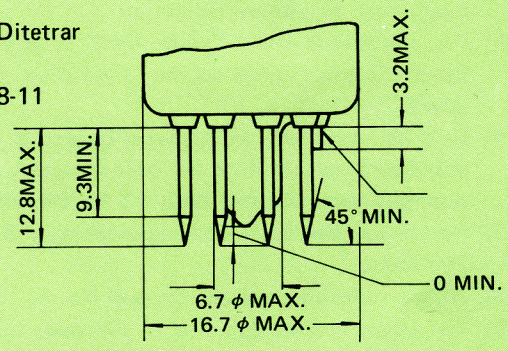
Fig. 5

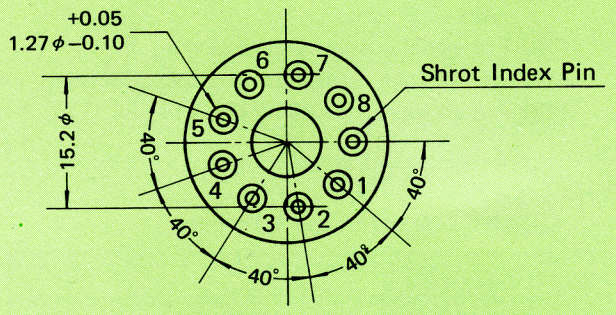
Outline Drawings and Base Connections

Dimension in mm



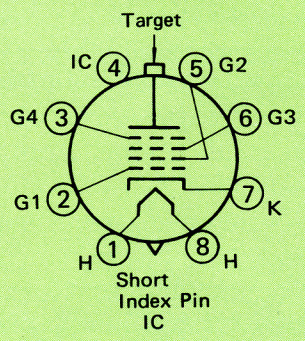
Small-Button Ditetrar
8-Pin Base
JEDEC No. E8-11





Pin 1 : Heater
Pin 2 : Grid No. 1
Pin 3 : Grid No. 4
Pin 4 : IC
Pin 5 : Grid No. 2
Pin 6 : Grid No. 3
Pin 7 : Cathode
Pin 8 : Heater
Flange : Target
Shrot Index Pin : IC

Bottom View



Direction of Light : Into Face End of Tube