

**For Visible to Near IR Low Light Detection  
Extended Red Multialkali Photocathode  
28mm(1-1/8 Inch) Diameter, 11-stage, Head-On Type**

## GENERAL

| Parameter                          |                               | Description/Value        | Unit    |
|------------------------------------|-------------------------------|--------------------------|---------|
| Spectral Response                  |                               | 300 to 900               | nm      |
| Wavelength of Maximum Response     |                               | 600                      | nm      |
| Photocathode                       | Material                      | Extended red multialkali | –       |
|                                    | Minimum Effective Area        | 25                       | mm dia. |
| Window Material                    |                               | Borosilicate glass       | –       |
| Dynode                             | Structure                     | Box-and-grid             | –       |
|                                    | Number of Stages              | 11                       | –       |
| Direct Interelectrode Capacitances | Anode to Last Dynode          | 3.0                      | pF      |
|                                    | Anode to All Other Electrodes | 3.5                      | pF      |
| Base                               |                               | 14-pin glass base        | –       |
| Suitable Socket                    |                               | E678-14C(supplied)       | –       |

## MAXIMUM RATINGS (Absolute Maximum Values)

| Parameter             |                               | Value      | Unit |
|-----------------------|-------------------------------|------------|------|
| Supply Voltage        | Between Anode and Cathode     | 1500       | Vdc  |
|                       | Between Anode and Last Dynode | 250        | Vdc  |
| Average Anode Current |                               | 0.1        | mA   |
| Ambient Temperature   |                               | -80 to +50 | °C   |

## CHARACTERISTICS (at 25°C)

| Parameter   |                        | Min. | Typ.              | Max. | Unit  |
|---|------------------------|------|-------------------|------|-------|
| Cathode Sensitivity                                   | Luminous (2856K)       | 100  | 200               | –    | μA/lm |
|   | Radiant at 600nm       | –    | 40                | –    | mA/W  |
|   | Red/White Ratio (R-68) | –    | 0.3               | –    | –     |
| Anode Sensitivity                                     | Luminous (2856K)       | 20   | 150               | –    | A/lm  |
|   | Radiant at 600nm       | –    | $3.0 \times 10^4$ | –    | A/W   |
| Gain  |                        | –    | $7.5 \times 10^5$ | –    | –     |
| Anode Dark Current (after 30min. storage in darkness) |                        | –    | 8                 | 30   | nA    |
| Time Response   | Anode Pulse Rise Time  | –    | 15                | –    | ns    |
|   | Electron Transit Time  | –    | 60                | –    | ns    |

**NOTE:** Anode characteristics are measured with the voltage distribution ratio shown below.

## VOLTAGE DISTRIBUTION RATIO AND SUPPLY VOLTAGE

| Electrodes | K | G | Dy1 | Dy2 | Dy3 | Dy4 | Dy5 | Dy6 | Dy7 | Dy8 | Dy9 | Dy10 | Dy11 | P |
|------------|---|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|---|
| Ratio      | 1 | – | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1    | 1    | 1 |

Supply Voltage : 1000Vdc, K : Cathode, Dy : Dynode, P : Anode, G:Grid

# PHOTOMULTIPLIER TUBE R2228

Figure 1: Typical Spectral Response

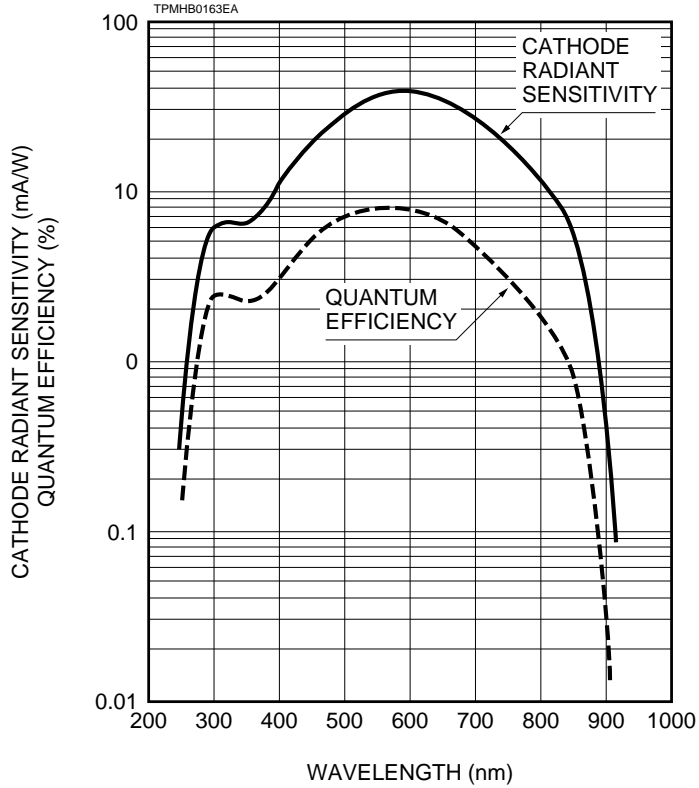
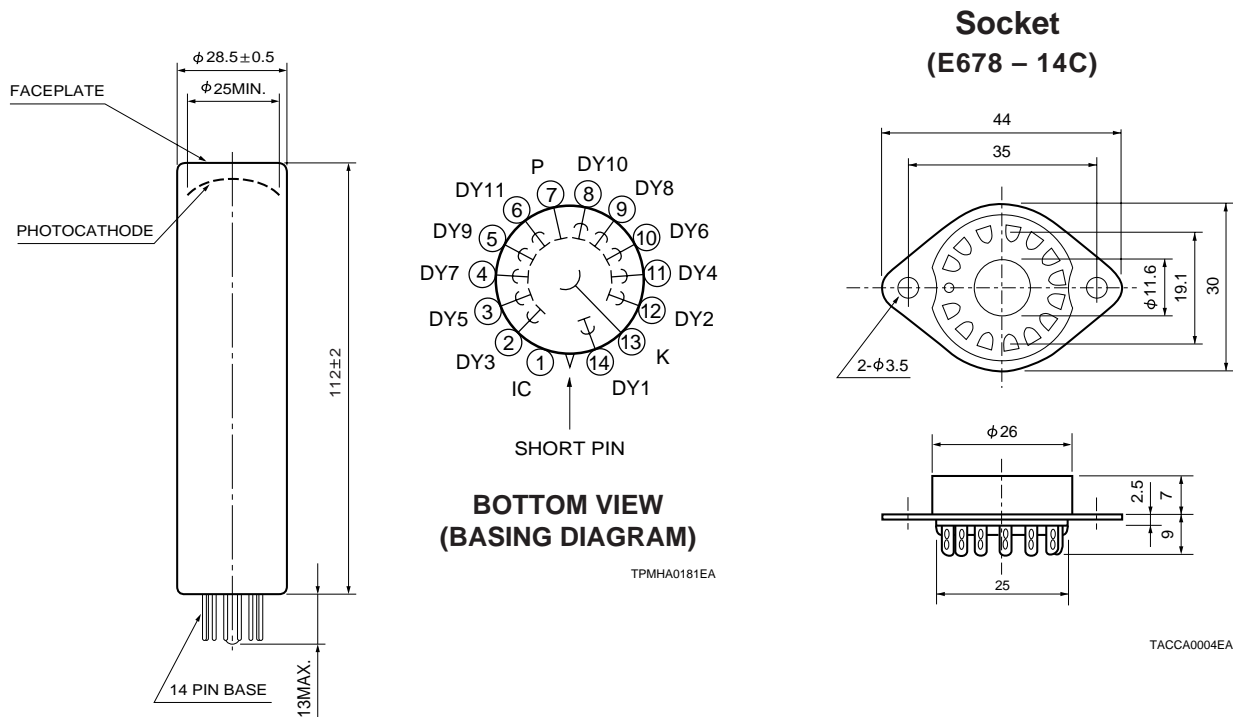


Figure 2: Dimensional Outline and Basing Diagram (Unit : mm)



# HAMAMATSU

HAMAMATSU PHOTONICS K.K., Electron Tube Center

314-5, Shimokanzo, Toyooka-village, Iwata-gun, Shizuoka-ken, 438-0193, Japan, Telephone: (81)539/62-5248, Fax: (81)539/62-2205

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-2658

France: Hamamatsu Photonics France S.A.R.L.: 8, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10

United Kingdom: Hamamatsu Photonics UK Limited: Lough Point, 2 Gladbeck Way, Windmill Hill, Enfield, Middlesex EN2 7JA, United Kingdom, Telephone: (44)181-367-3560, Fax: (44)181-367-6384

North Europe: Hamamatsu Photonics Norden AB: Färögatan 7, S-164-40 Kista Sweden, Telephone: (46)8-703-29-50, Fax: (46)8-750-58-95

Italy: Hamamatsu Photonics Italia: S.R.L.: Via Della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39)2-935 81 733, Fax: (39)2-935 81 741

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