

Toshiba **TOSHIBA** **CATHODE RAY TUBES**

- Fiber Optics CRT's • High Resolution Tubes • Display Tubes
- Monitor Tubes • Radar Tubes • Oscilloscope Tubes



Fiber Optics CRT's

Toshiba has developed various size Fiber Optics CRT's ranging from 6 to 14 inches, for high speed facsimile and other high speed printing machines.

These tubes have fine grained phosphor screen and high precision electron gun to obtain high resolution, and the newly developed "Sandwich type faceplate" (clear

glass surrounds fiber optics glass part.) succeeded to reduce the CRT's price to the reasonable level.

Particularly, E2611PYP(E) enables to make a high speed facsimile tranceiver with one tube, using special sandwich type faceplate and PYP phosphor screen.

| Type | Face Plate | | Focus/ Deflection Method | Over- all Length (mm) | Def. Angle (deg.) | Neck O-D (mm) | Heater (V/mA) | Typical Operation | | | | |
|--------------------|----------------|-------------------------------|--------------------------------|--------------------------------|-------------------------|---------------------|------------------|-------------------|--------------|------------------|------------------------------|-------------------|
| | Size (inch) | Useful Screen Area (mm) | | | | | | Anode (KV) | Focus (V) | Grid No.2 (V) | Grid No. 1 Cut Off (V) | Spot Size (mm) |
| E2636B11, PYP | 6 | 128x3 | ES/EM | 330 | 60 | 36.5 | 6.3/150 | 10 | 2600 ~ 3100 | 400 | -33 ~ -77 | 0.09 at 5 μ A |
| E2022B11(A),PYP(A) | 10 | 210x7 | EM/EM | 550 | 55 | 36.5 | 6.3/150 | 15 | - | 400 | -33 ~ -77 | 0.09 at 5 μ A |
| E2600B11(A),PYP(A) | 10 | 210x3 | EM/EM | 550 | 55 | 36.5 | 6.3/150 | 15 | - | 400 | -33 ~ -77 | 0.09 at 5 μ A |
| E2611PYP(E) | 10 | 210x3 210x3 | EM/EM | 550 | 55 | 36.5 | 6.3/150 | 17.5 | - | 1500 | -33 ~ -77 | 0.08 at 5 μ A |
| E2658B11, PYP | 14 | 297x5 | EM/EM | 635 | 55 | 36.5 | 6.3/150 | 15 | - | 400 | -33 ~ -77 | 0.10 at 5 μ A |

High Resolution Tubes

The 3 to 10 inches diameter High Resolution CRT's having extremely small spot size are available from Toshiba.

These tubes have many features of blemish free fine grain phosphor screens and high precision electron gun to obtain high resolution and low noise, and can be supplied with the phosphor types of B11(P11), PFA, PYP and

PFC.

Toshiba newly developed PFA, PYP and PFC phosphor screens have very short persistence, high light output and better resistance to screen burning characteristic, therefore these phosphor screens are especially useful for the flying spot scanner applications.

| Type | Face Plate | | Focus/ Deflection Method | Over- all Length (mm) | Def. Angle (deg.) | Neck O-D (mm) | Heater (V/mA) | Typical Operation | | | | |
|--------------------|----------------|-------------------------------|--------------------------------|--------------------------------|-------------------------|---------------------|------------------|-------------------|--------------|-------------------|------------------------------|--------------------|
| | Size (inch) | Useful Screen Area (mm) | | | | | | Anode (KV) | Focus (V) | Grid No. 2 (V) | Grid No. 1 Cut off (V) | Spot Size (mm) |
| E2627PFA, PYP | 3 | 70 | EM/EM | 245 | 58 | 28.6 | 6.3/450 | 20 | - | 1000 | -20~-50 | 0.034 at 1 μ A |
| E2638PFA, PFC | 3 | 70 | ES/EM | 200 | 58 | 28.6 | 6.3/450 | 20 | 0~400 | 500 | -20~-60 | 0.07 at 1 μ A |
| E2649B11, PFA, PFC | 5 | 108 | ES/EM | 325 | 50 | 36.5 | 6.3/150 | 20 | 5400~6200 | 400 | -40~-80 | 0.08 at 20 μ A |
| E2616B11, PFA, PYP | 5 | 108 | EM/EM | 444 | 50 | 36.5 | 6.3/150 | 20 | - | 450 | -40~-80 | 0.04 at 1 μ A |
| M6507B11, PFA, PYP | 5 | 108 | EM/EM | 460 | 40 | 36.5 | 6.3/150 | 20 | - | 1500 | -40~-80 | 0.028 at 1 μ A |
| E2628B11, PFA, PYP | 5 | 108 | EM/EM | 460 | 40 | 36.5 | 6.3/150 | 20 | - | 1500 | -40~-80 | 0.023 at 1 μ A |
| E2036PYP | 10 | 210x7 | EM/EM | 550 | 55 | 36.5 | 6.3/150 | 20 | - | 1500 | -40~-80 | 0.08 at 5 μ A |

Display, Monitor and Radar Tubes

The magnetic deflection type CRT's with rectangular and round faceplate and the phosphor types of B4(P4), B7(P7), B31(P31) and B39(P39), are available in a variety

of size from 5.5 to 16 inches, for terminal display, monitor and radar equipments.

| Type | Face Plate | | | Focus/ Deflection Method | Over- all Length (mm) | Def. Angle (deg.) | Neck O-D (mm) | Heater (V/mA) | Typical Operation | | | | |
|-------------------|------------|----------------|-------------------------------|--------------------------------|--------------------------------|-------------------------|---------------------|------------------|-------------------|--------------|-------------------|------------------------------|--------------------|
| | Shape | Size (inch) | Useful Screen Area (mm) | | | | | | Anode (KV) | Focus (V) | Grid No. 2 (V) | Grid No. 1 Cut Off (V) | Line Width (mm) |
| 140YB7, B31, B39 | □ | 5.5 | 109x83 | ES/EM | 168 | 70 | 20 | 12/75 | 8 | 0 ~ 300 | 300 | -20 ~ -45 | - |
| 7ABP7A | ○ | 7 | 152 | ES/EM | 337 | 50 | 36.5 | 6.3/600 | 7 | 0 ~ 300 | 300 | -33 ~ -77 | - |
| 170AB4, B7, B31 | □ | 7 | 124x93 | ES/EM | 275 | 70 | 36.5 | 6.3/150 | 10 | 0 ~ 300 | 300 | -40 ~ -70 | 0.20 at 50μA |
| 230SB7, B31, B39 | □ | 9 | 183x140 | ES/EM | 210 | 90 | 20 | 12/75 | 9 | 0 ~ 400 | 100 | +35 ~ +55 | - |
| 10WP7A | ○ | 10 | 228 | ES/EM | 430 | 50 | 36.5 | 6.3/600 | 10 | 0 ~ 400 | 300 | -33 ~ -77 | - |
| 270FB4, B7, B31 | □ | 11 | 184x138 | ES/EM | 355 | 70 | 36.5 | 6.3/150 | 10 | 0 ~ 300 | 200 | -22 ~ -52 | 0.28 at 50μA |
| 12ABP7A | ○ | 12 | 279 | ES/EM | 457 | 55 | 36.5 | 6.3/600 | 10 | 0 ~ 300 | 300 | -33 ~ -77 | - |
| 310FSB7, B31, B39 | □ | 12 | 254x202 | ES/EM | 280 | 90 | 20 | 12/75 | 10 | 0 ~ 400 | 300 | -33 ~ -77 | - |
| 370WB4, B7, B31 | □ | 14 | 280x210 | ES/EM | 461 | 70 | 36.5 | 6.3/600 | 15 | 0 ~ 300 | 300 | -40 ~ -80 | 0.32 at 50μA |
| 16AKP7 | ○ | 16 | 368 | ES/EM | 560 | 53 | 36.5 | 6.3/600 | 12 | 0 ~ 400 | 300 | -35 ~ -75 | - |

* Cathode drive service

Oscilloscope Tubes

These CRT's with electrostatic deflection type, are available in a variety of size (3 to 7 inches), of faceplate shape (round and rectangular), of frequency bandwidth

(up to 200 MHz) and in the other characteristics. A few of the available types are as listed below.

| Type | Face Plate | | | Overall (mm) | Focus/ Deflection Method | Heater (V/mA) | Typical Operation | | | | | |
|--------------|------------|----------------|-------------------------------|-----------------|--------------------------------|------------------|-------------------|--------------|-------------------|------------------------------|-----------------------------|-------------|
| | Shape | Size (inch) | Useful Screen Area (mm) | | | | Anode (V) | Focus (V) | Grid No. 2 (V) | Grid No. 1 Cut Off (V) | Deflection Factors (Vdc/cm) | |
| | | | | | | | | | | | Y-axis | X-axis |
| 75ARB1 | ○ | 3 | 67 | 250 | ES/ES | 6.3/300 | 1500 | 75 ~ 300 | 1500 | -28.5 ~ -67.5 | 23.1 ~ 29.1 | 13.7 ~ 18.2 |
| 85DB1 | □ | 3.5 | 58x43 | 250 | ES/ES | 6.3/150 | 1500 | 75 ~ 300 | 1500 | -28.5 ~ -67.5 | 23.1 ~ 29.1 | 13.7 ~ 18.2 |
| 130BHB1, B31 | ○ | 5 | 114 | 375 | ES/ES | 6.3/300 | 1500 | 260 ~ 480 | (1500) | -28.5 ~ -67.5 | 14.2 ~ 18.9 | 8.3 ~ 11.0 |
| 130BEB1, B31 | ○ | 5 | 114 | 365 | ES/ES | 6.3/300 | 1500 | 260 ~ 480 | (1500) | -28.5 ~ -67.5 | 14.2 ~ 18.9 | 8.3 ~ 11.0 |
| 130BFB31 | ○ | 5 | 114 | 335 | ES/ES | 6.3/300 | 2000 | 280 ~ 440 | 2000 | -25 ~ -66 | 24.9 ~ 32.3 | 11.1 ~ 16.0 |
| E2669B1, B3 | □ | 6 | 100x80 | 380 | ES/ES | 6.3/300 | 1500 | 260 ~ 480 | (1500) | -28.5 ~ 67.5 | 14.2 ~ 18.9 | 8.3 ~ 11.0 |
| 150VB7, B31 | □ | 6 | 100x80 | 418 | ES/ES | 6.3/600 | 2000 | 260 ~ 500 | 2000 | -40 ~ -70 | 12.0 ~ 14.7 | 9.5 ~ 12.5 |

Toshiba Cathode-Ray Tubes

The first oscilloscope tube was completed by Toshiba in 1925. Since then, various CRT's have been developed and, nowadays, the Industrial CRT's, Information display CRT's, B/W picture tubes and Color picture tubes are in our current production.

In this catalogue, we have listed up the representative types of CRT's in the each industrial application field.

Among them, many types with new technology and Toshiba unique design are included.

For example, regarding Fiber Optics CRT's, Toshiba has succeeded the development of sand-

wich type Fiber Optics CRT's at the very reasonable price without sacrifice of the performance.

In the High Resolution Tubes, the fine grain phosphor screen CRT's have been completed by the adoption of the new coating techniques of the phosphor screen.

Furthermore, the Flying Spot Scanner Tubes with very short persistence, high light output and long life performance are now available as the result of development of the PFA, PYP and PFC phosphor.

Phosphor Screen types

Toshiba has EIA (U.S.A.) standard registered phosphor screens and in addition, Toshiba original phosphor screens are available for flying spot scanner applications.

The characteristics and the application of the typical phosphor screens are described in the following table.

| Phosphor-type EIA (EIAJ) | Color | | Spectral peak (Å) | Persistence | Decay time to 10% | Typical application |
|-----------------------------|---------------------|---------------------|----------------------|-----------------|--------------------------|---------------------------------------|
| | Fluorescence | Phosphorescence | | | | |
| P1 (B1) | Yellowish -Green | Yellowish -Green | 5250 | Medium | 25 msec. | Oscilloscope |
| P2 (B2) | Yellowish -Green | Yellowish -Green | 5430 | Medium | 30~100 μsec. | Oscilloscope |
| P4 (B4) | White | White | 4400 5650 | Medium short | 22 μsec. 60 μsec. | Display, Monitor B&W Television |
| P7 (B7) | White | Yellowish -Green | 4400 5580 | Long | 40~60 μsec. 400 msec. | Radar, Display Monitor |
| P11 (B11) | Blue | Blue | 4600 | Medium short | 30~100 μsec. | Photographic recording |
| P24 (B24) | Green | Green | 5200 | Short | 1.5 μsec. | Color flying spot scanner |
| P31 (B31) | Green | Green | 5300 | Medium short | 40 μsec. | Oscilloscope Bright visual display |
| P39 (B39) | Yellowish -Green | Yellowish -Green | 5250 | Long | 150 msec. | Medium frame rate visual display |
| PFA | Purplish -Blue | Purplish -Blue | 3950 | Very short | 0.10 μsec. | Flying spot scanner |
| PYP | Yellowish -Green | Yellowish -Green | 5200 | Very short | 0.20 μsec. | Flying spot scanner |
| PFC | White | White | 3950 5200 | Very short | 0.25 μsec. | Color flying spot scanner |

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Printed in Japan