

**INDUSTRIAL X-RAY TUBE
E7599**

Toshiba X-ray Tube for Industrial Use

- ◆ The Toshiba X-ray tube E7599 is designed to provide the load of 5mA at 300kV in pulse voltage, self-rectified circuit under gas insulation (SF₆).
- ◆ It is suitable for portable X-ray units up to 300kV for non-destructive inspection of metal casting or metal welding.
- ◆ This tube has metal-ceramic sealed envelope which results in mechanically strong and compact sized structure.

General Data

Electrical:

Circuit:

High Voltage Generator	Self-rectified, Pulse Voltage (Pulse Width 1ms, Duty Factor 0.16)
Grounding	Anode-grounded
Operating Tube Voltage	160 ~ 300 kV
Focal Spot	2.5 ± 0.75 mm
Filament Current	Maximum 4.0 A

Mechanical:

Dimensions	See dimensional outline
Overall Length	196 mm
Maximum Diameter	φ 132 mm
Target:	
Anode Angle	22 degrees
Construction	Tungsten
Inherent Filtration	1.0 mm Beryllium
X-ray Coverage (Angle)	¹⁾ φ 350 mm at SID 600 mm
Weight (Approx.)	4.1 kg

Note 1) More than 50% blackening of the film at center spot.

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Insulating Medium	Insulation Gas (SF ₆)
Pressure	39.4 × 10 ⁴ ~ 58.8 × 10 ⁴ Pa (4 ~ 6 kg / cm ² Gauge)
Gas Temperature	Maximum 70°C
Cooling Method	Forced air (External radiator is required) Maximum 150°C at anode top
Tube Holding	Hold anode flange (φ 132) uniformly
Mechanical Strength (Shock)	Maximum 200 G (at upper holding condition)
Tube direction	Free
Appearance, Finish	No Painting

Absolute Maximum and Minimum Ratings (At any time, these values must not be exceeded.)

Maximum Tube Voltage	¹⁾ 300 kV (1ms-pulse)
Maximum Inverse Voltage	150 kV
Minimum Tube Voltage	160 kV (1ms-pulse)
Maximum Tube Current	5 mA (Average)
Maximum Input Energy	300 kV, 5 mA 10 min ON - 10min OFF
Filament Frequency Limits	DC or AC (Sine Wave) 0 ~ 20 kHz
Maximum Filament Current	See filament characteristics chart 4.0 A
Maximum Filament Voltage (At 4.0 A)	5 ~ 7 V
Maximum Anode Temperature	²⁾ Maximum 150°C at anode top

Note 1) 300kV is absolute maximum rating, tube voltage should not be exceeded 300 kV when line voltage to the generator fluctuates.

2) Anode temperature is judged by the thermo paint around the X-ray port.
(See dimensional outline)

Environmental Limits

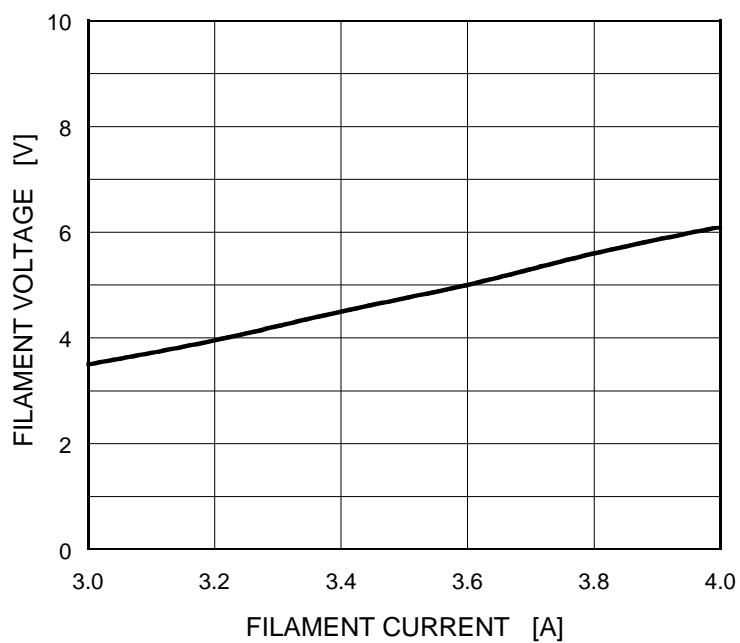
Shipping and Storage Limits:

Temperature	-40 ~ 70 °C
Humidity	10 ~ 90 % (No condensation)
Atmospheric Pressure	50 ~ 106 kPa

Filament Characteristics

1 ms pulse

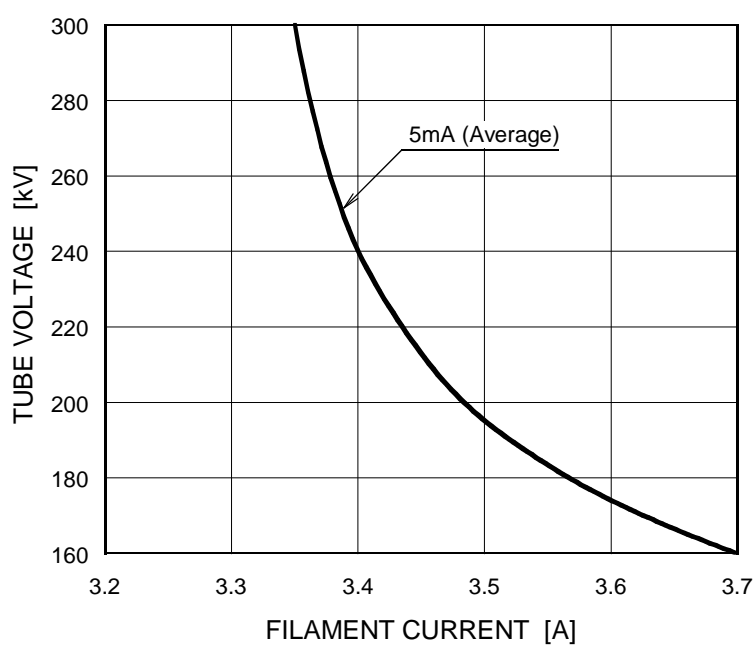
Focal Spot: 2.5 mm



Emission Characteristics

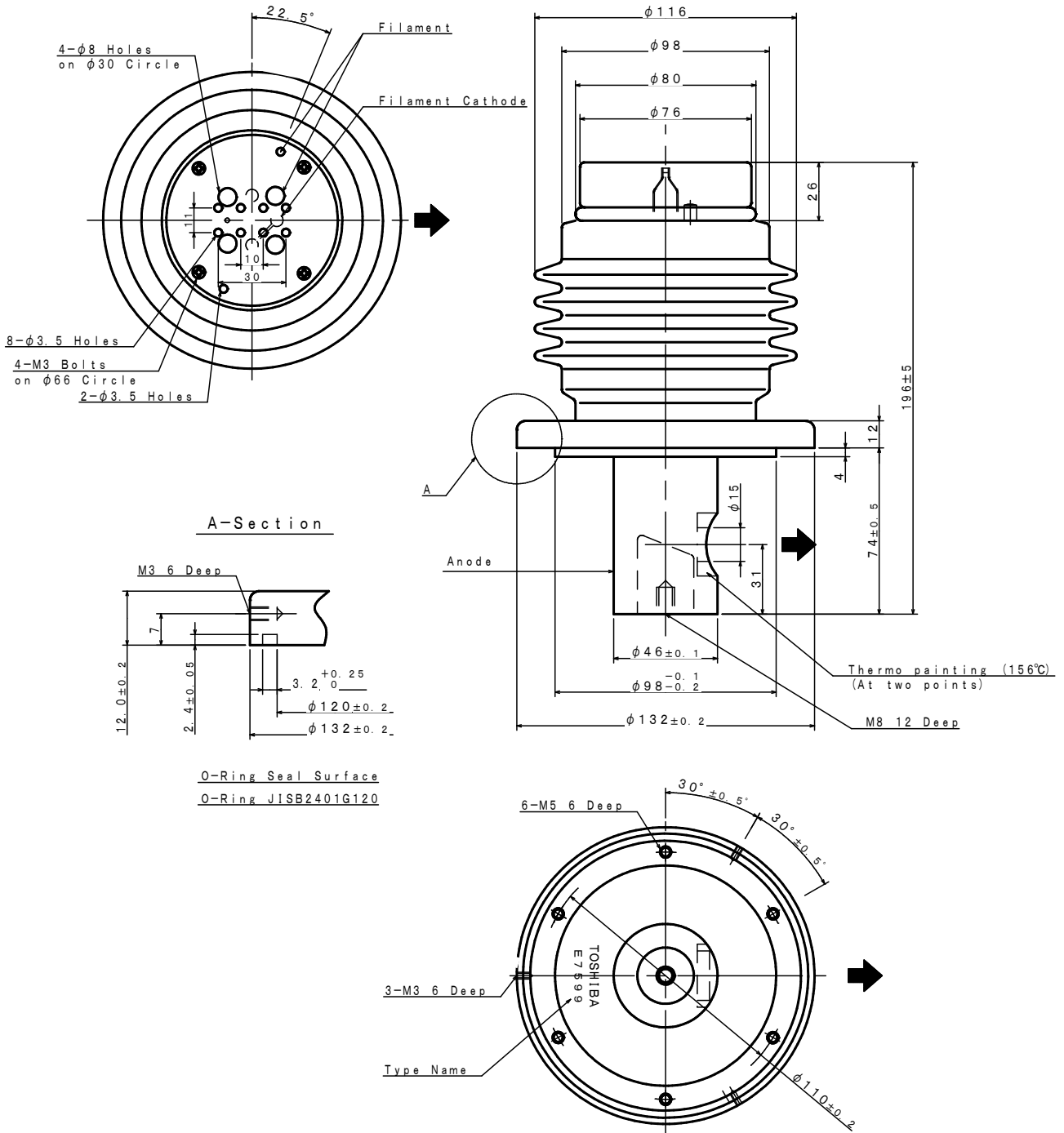
1 ms pulse

Focal Spot: 2.5 mm



Dimensional Outline

Unit mm



↑ : Direction of Main X-ray

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Toshiba Electron Tubes & Devices Co., Ltd. meets the Environmental Management System Standard, ISO14001.

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