
THOMAS ELECTRONICS

ENGINEERING DATA SHEET
CATHODE RAY TUBE
TE P/N 02M234P43
August 30, 2001
SHEET 1 OF 4

BRIEF OUTLINE DESCRIPTION

The Thomas Electronics 02M234P43 is a 2" diagonal, ruggedized, flat-face, high-brightness, high-resolution CRT designed for Armored Land Vehicles and other rugged environments

ELECTRICAL DATA

Focusing Method	Electrostatic
Deflection Method	Magnetic
Deflection Angle	40 Degrees, Nominal
Direct Interelectrode Capacitance	
Cathode to All	5 uuf max.
Grid No. 1 to All	5 uuf max.

OPTICAL DATA

Phosphor Number (Note 1)	P43
Fluorescence	Green
Phosphorescence	Green
Persistence	Medium
Faceplate (Aluminized)	Flat, 82% transmission nominal
Faceplate Thickness	3.5mm
Refractive Index	1.52 to 1.53

MECHANICAL DATA

Overall Length	127 mm max.
Greatest Diameter of Bulb	47mm
Minimum Useful Screen Diameter	38 mm
Bulb Contact	J1-32
Base	Potted Lead Package
Mounting Position	Any
Mounting Hardware	None

RATINGS (Absolute Maximum Values)

Heater Voltage	12.0 Volts
Heater Current @ 11.0 Volts	0.086 A
Accelerator Voltage	9,000 max. Volts DC
Focusing Electrode Voltage	1600 max. Volts DC
Grid No. 2 Voltage	1600 max. Volts DC
Grid No. 1 Voltage	
Negative Bias Value	-150 max. Volts DC
Positive Bias Value	0 max. Volts DC
Positive Peak Value	0 max. Volts
Peak Heater-Cathode Voltage	
Heater negative with respect to cathode	150 max. Volts
Heater positive with respect to cathode	150 max. Volts

Specification and price change privileges reserved. For further information, contact:

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TYPICAL OPERATING CONDITIONS

Accelerator Voltage	7,000 VDC
Focusing Electrode Voltage	1100 to 1500 Volts
Dynamic Focus Voltage	0 Volts
Grid No. 2 Voltage	400 to 1000 VDC
Grid No. 1 Voltage (Note 3)	-75 VDC
Cathode Voltage	0 VDC
Modulation for brightness = 170 cd/m ² . Raster Size = 30.4 x 22.8 mm	45 VDC, max.
Light Output (Note 5)	170 cd/m ²
Anode Current	50 uAmps, max.
Focus Current	25 uAmps, max.
Brightness Uniformity	15%
Horizontal Line Width @ 100 cd/m ² Center	.0013 inch
Spot Position (Note 4)	1.5mm

MAXIMUM CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 max. Megohms
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NOTES:

1. Other phosphor screen types can be supplied upon request.
2. Cutoff defined as visual extinction of an un-deflected spot, adjust G2 voltage.
3. Measured in accordance with MIL-E-1 specifications
4. With the tube shielded against external influences, the undeflected and focused spot will fall within a 1.5-mm radius circle concentric with the tube face center.
5. Raster conditions for brightness and uniformity measurements shall be a 30.4 x 22.8 mm raster, 625 lines interlaced, 50 Hz refresh rate, with the above noted dimensions.

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BLEMISHES

Blemishes

The CRT shall meet the following requirements, unless otherwise specified:

The blemish specification is applicable to the whole of the useful screen area. The mean size of the blemish is defined as the sum of its length and width divided by two:

$$d = (L + D) / 2$$

Blemishes separated by a distance no greater than the size of the larger blemish shall be treated as one blemish.

Zone A = center 6mm x 4.5mm

Zone B = 30.4mm x 22.8mm

Equivalent Diameter (mm)	ZONE A		ZONE B	
	Allowed Defects	Minimum Separation (mm)	Allowed Defects	Minimum Separation (mm)
<0.05	Disregard	NA	Disregard	NA
0.05 to 0.1	4	0.05	6	0.05
0.1 to 0.2	2	0.05	4	0.05
> 0.2	None	NA	None	NA

Less than 0.05 mm equivalent diameter defects are not considered if their number or density permits good legibility.

Scratches

Scratches of more than 0.05mm width are not allowed. Scratches of under 0.05mm width are acceptable if the density permits good legibility.

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DEFLECTION COIL

Inductance	Horizontal	200 uH +/- 10%
	Vertical	2 mH +/- 10%
Resistance	Horizontal	1.9 ohms +/- 10%
	Vertical	20.0 ohms +/- 10%
Sensitivity	Horizontal	0.760 A nominal for .55 inch deflection at 7KV
	Vertical	0.190 A nominal for .43 inch deflection at 7 KV
Orthogonality		+/- 1 degree
Alignment		+/- 1 degree, aligned to horizontal Reference point TBD.
Pincushion		Pincushion / barrel presentation shall be 5% max

CRT LEAD INFORMATION

<u>Element</u>	<u>Color</u>
Anode	Red
Focus	Grey
Grid 2	Orange
Grid 1	Green
Cathode	Yellow
Heaters	Brown

ENVIRONMENTAL DATA

Humidity and Salt Spray	To Mil-Std-810, method 507.1 and 509.1
Shock	50 g's, 6 ms duration, half sine.
Vibration	Sine Vibration of 5 to 2000 HZ, at 5g input
	Random of 5 to 2000 HZ, with 08g ² /HZ max between 28 and 250 HZ
Temperature	Operation: -31 deg C to 70 deg C
	Storage: -40 deg C to 85 deg C
Altitude	50,000 ft