

High Resolution Cathode-Ray Tubes

RCA



RCA High Resolution CRTs

This Product Guide provides technical data for RCA's line of High Resolution Photorecording and Projection CRTs for industrial, medical, and military markets. The line includes 127-mm (5-inch) and 76-mm (3-inch) high resolution cathode-ray tubes for photographic recording of information generated or processed by computers or other electronic instrumentation and 127-mm (5-inch) and 180-mm (7-inch) high resolution projection CRTs for large screen monochrome and color TV and data display applications.

RCA offers quality and reliable products with dependable production capabilities backed by strong Design and Applications Engineering support.

For additional information on RCA CRTs including practical recommendations on the best product for your needs, please contact your nearest RCA Sales Representative (see back cover for location) or RCA, New Products Division, Tube Operations Marketing-Applications, New Holland Avenue, Lancaster, PA 17604-3140, telephone 800-233-0155 or 717-295-6888.

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Type numbers with prefix letter "C" identify developmental types suitable for engineering evaluation. The number and identifying data are subject to change. Before specifying any of these types in production equipment, please contact RCA. No obligation is assumed by RCA as to future manufacture of developmental types unless otherwise arranged.

Introduction

High resolution cathode-ray tubes are CRTs in which the size of the smallest pictorial element or pixel displayed on the face of the tube is considerably smaller than can be resolved by an observer directly viewing the face of the CRT. There are many applications for CRTs where resolution capability in excess of that needed for direct viewing is necessary.

In photorecording systems, the display on the face of the CRT is imaged onto a photosensitive medium (e.g., photographic film or paper). Applications include electronic phototypesetting used in the printing industry, recording the output from computers on microfilm, and film recording in the medical imaging field.

In large screen projection systems, the display on the face of the CRT is projected onto a viewing screen by an optical system. Applications include large screen presentations of computer generated alphanumeric-graphic information, display of visual communications in teleconferencing, and high definition television.

Warning - Personal Safety Hazards

Electrical Shock - Operating voltages applied to these devices present a shock hazard.

X-Ray Warning - These devices in operation produce x-rays which can constitute a health hazard unless the devices are adequately shielded for radiation.

Implosion - Breaking these high vacuum devices can cause injury due to flying glass or toxic fragments.

Static Charge - Touching terminals, even when devices are not operating, can cause an electrical shock.

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Photorecording Cathode-Ray Tubes

For the photographic recording of alphanumeric and graphic information generated by computers and other electronic instruments. Primarily used in Computer Output Microfilm (COM), phototypesetting, and medical electronics data recording.

- High Resolution Capability
- Fine Grain Phosphors
- Magnetic Deflection
- Optically Flat Faceplates
- Actinic Radiant Output

Tube Type	Phosphor Screen Designation (See page 5)	Defl. Angle	Maximum Rated Anode Voltage	Typical Operation					
				Anode Voltage	Focus Electrode Voltage (Grid 3)	Grid No.2 Voltage	Grid No.1 Voltage ¹	Heater Voltage/ Current	Line Width ²
		Degrees	kV	kV	V	V	V	V/mA	Inch

127-mm (5-inch) Diameter

4869	G533	42	22	19	4000 to 5000 ³	330	-40 to -90	6.3/600	0.0025
S82200ES1	G533	42	22	19	4000 to 5000 ³	330	-35 to -90	6.3/320	0.0015
S82201ES1	G533	32	14.5	10	(See Note 4)	1000	-30 to -70	6.3/418	0.0025

76-mm (3-inch) Diameter

S82205EE	P11	30	20	15	3000 to 4000 ³	330	-35 to -90	6.3/600	0.0026
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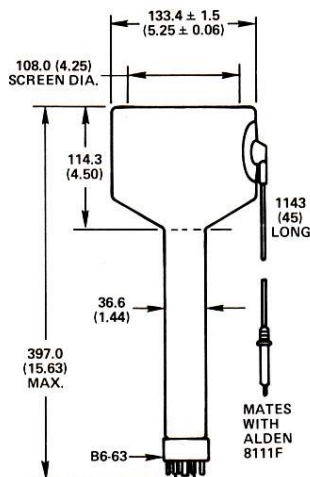
¹ For spot cutoff.

² Line width is determined by the slit scan photometer method.

³ High voltage electrostatic focus.

⁴ Magnetic focus.

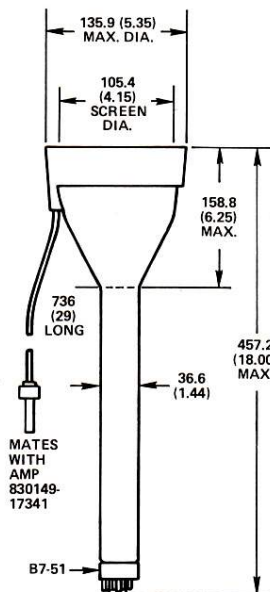
4869, S82200ES1



Faceplate Thickness: 6.4 mm (0.25 in)

Pin	Element
1	Heater
2	Grid 1
6	Grid 3
10	Grid 2
11	Cathode
12	Heater

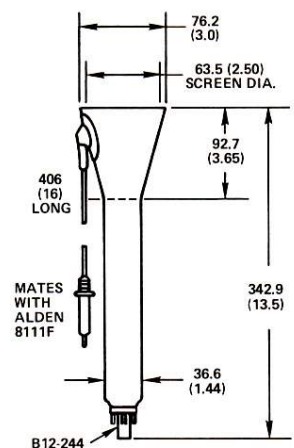
S82201ES1



Faceplate Thickness: 6.4 mm (0.25 in)

Pin	Element
1	Heater
2	Grid 1
10	Grid 2
11	Cathode
12	Heater
Cap	Anode

S82205EE



Faceplate Thickness: 3.05 mm (0.120 in)

Pin	Element
1	Heater
3	Cathode
5	Grid 1
9	Grid 3
12	Grid 1
13	Grid 2
14	Heater
Cap	Anode

IC = Internal Connection, do not use.

Dimensions in millimeters. Dimensions in parentheses are in inches.

Projection Cathode-Ray Tubes

For large screen color and monochrome television picture projection in industrial, military, and special display systems.

- High Resolution
- Precision Optical Quality Spherical and Flat Faceplates
- Reliable Operation to 45 kV
- Magnetic Focus and Deflection
- 6.1 V, 400 mA Heaters

Tube Type	Phosphor Screen Designation (See page 5)	Defl. Angle Degrees	Recommend Raster Size mm (in)	Maximum Ratings			Typical Operation			
				Anode Voltage kV	Average Anode Current μ A	Average Anode Power ¹ W	Anode Voltage kV	Line Width ² inch	Luminance ³ footlamberts (fL)	Luminous Output Flux ³ lumens (lm)

127-mm (5-inch) Diameter

C82006EB2	G530	45	76.2 x 101.5 (3 x 4)	45	500	25	40	0.0045	960	80
C82006EG2	G556	45		45	500	25	40	0.0045	7200	600
C82006ER2	G582	45		45	500	25	40	0.0045	3600	300
C82006EW2	G590	45		45	500	25	40	0.0045	4800	400
C82008EB3	G530	45	76.2 x 101.5 (3 x 4)	45	500	25	40	0.0045	960	80
C82008EG3	G556	45		45	500	25	40	0.0045	7200	600
C82008ER3	G582	45		45	500	25	40	0.0045	3600	300
C82008EW3	G590	45		45	500	25	40	0.0045	4800	400

180-mm (7-inch) Diameter

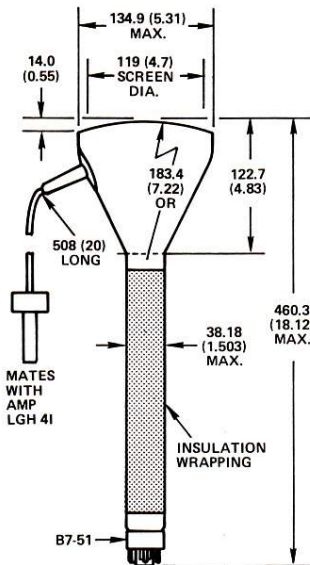
C82016EB	G530	45	114.3 x 114.3 (4.5 x 4.5)	45	1000	40	40	0.0045	800	110
C82016EG	G556	45		45	1000	40	40	0.0045	7200	1000
C82016ER	G582	45		45	1000	40	40	0.0045	3600	500
C82016EW	G590	45		45	1000	40	40	0.0045	4800	675

¹ Air-cooling in excess of 40 cfm in a closed system is required to cool the face of this tube when operated at or near the maximum rated anode power.

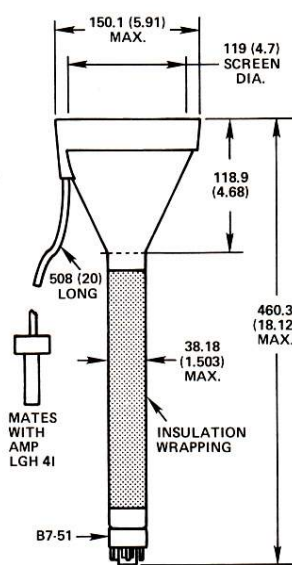
² Line width is determined by the slit scan photometer method.

³ Measured at 40 kV anode voltage and at maximum rated Average Anode Current.

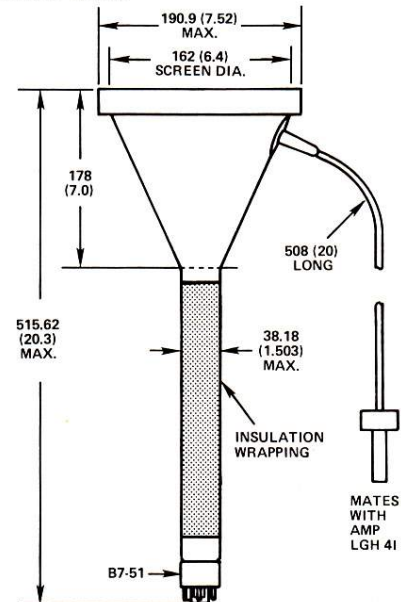
C82006 Series



C82008 Series



C82016 Series



Faceplate Thickness: 3.05 mm (0.120 in)

Pin	Element	Pin	Element
1	Heater	10	IC
2	Grid 1	11	Cathode
6	Spark Trap	12	Heater
7	IC		Cap Anode

Faceplate Thickness: 6.4 mm (0.25 in)

Pin	Element	Pin	Element
1	Heater	10	IC
2	Grid 1	11	Cathode
6	Spark Trap	12	Heater
7	IC		Cap Anode

Faceplate Thickness: 6.1 mm (0.24 in)

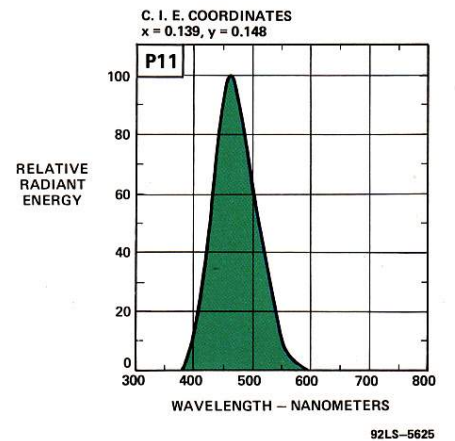
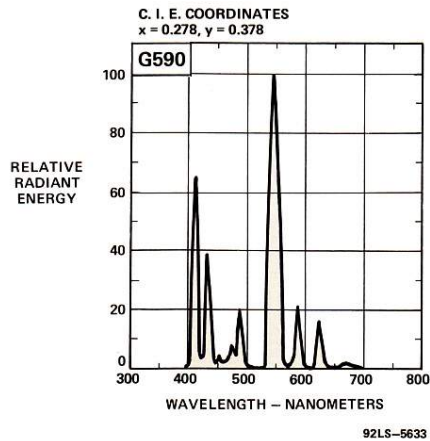
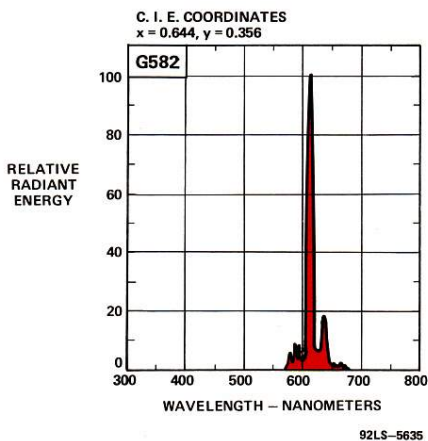
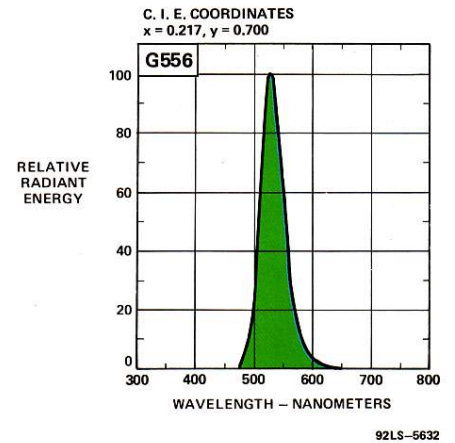
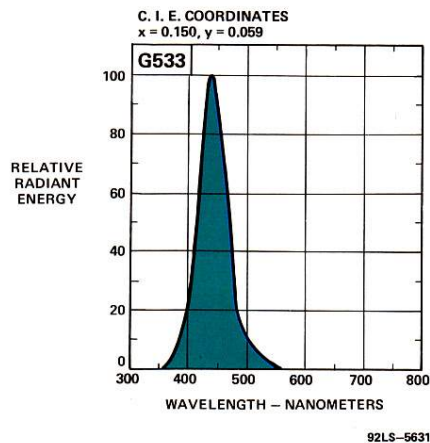
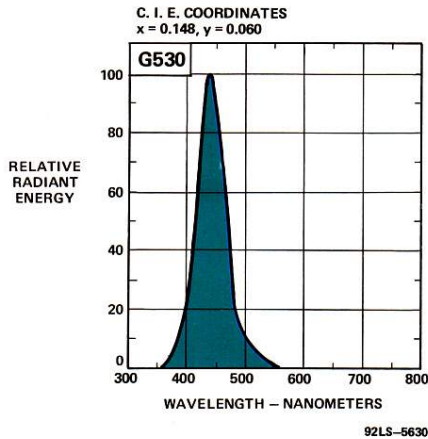
Pin	Element	Pin	Element
1	Heater	10	IC
2	Grid 1	11	Cathode
6	Spark Trap	12	Heater
7	IC		Cap Anode

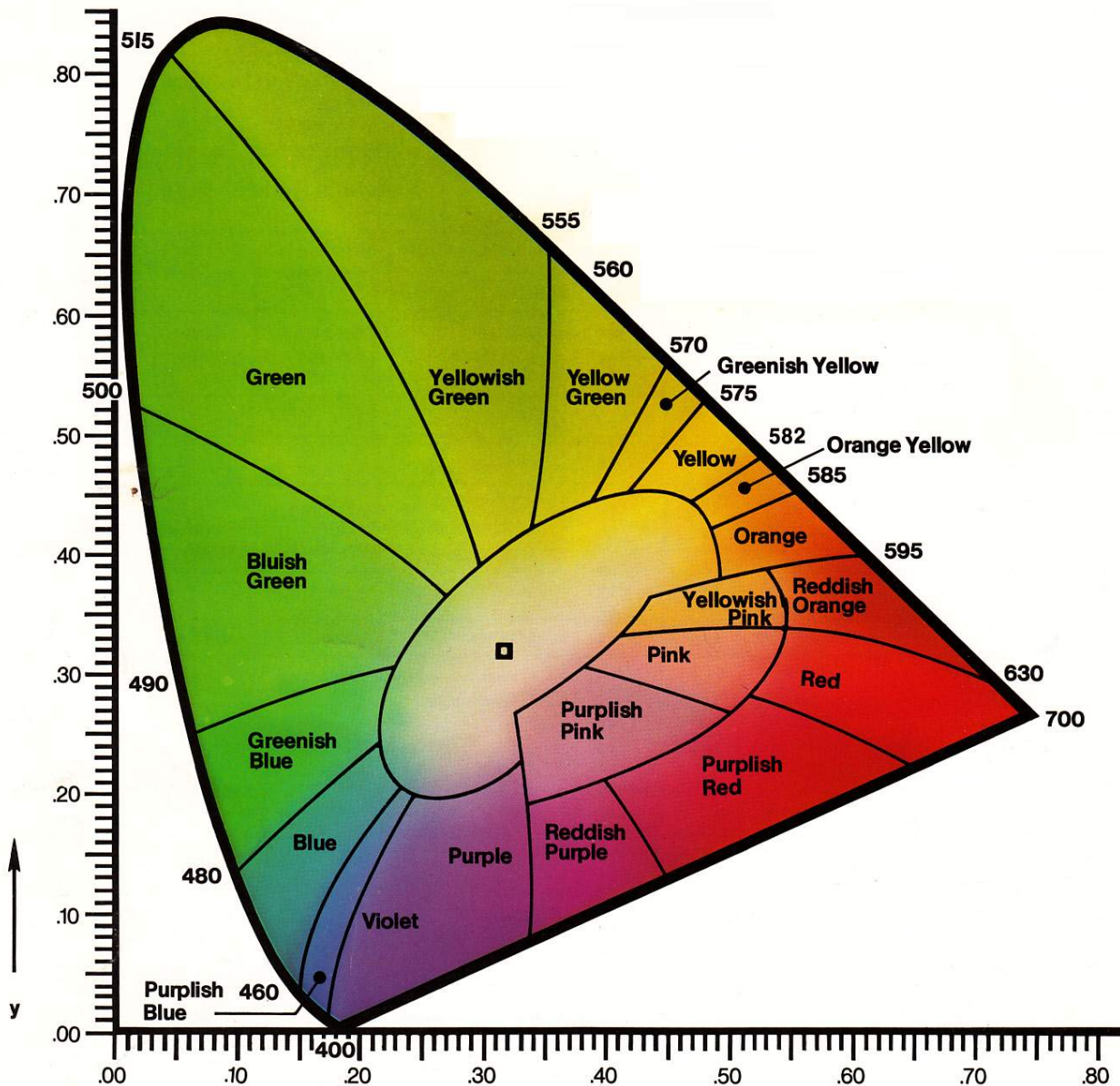
Phosphor Screen Characteristics

Phosphor Screen Designation	C.I.E. Color of Luminance	Peak Wavelength of Emission nm	Approx. Spectral Bandwidth at Half Peak Height nm	Efficiency		Persistence Classification	Typical Usage
				Luminous lm/input W	Radiant W/input W		
P11	Blue	460	80	–	0.092	Medium Short	Photorecording CRTs
G530	Blue	442	55	4.5	–	Medium Short	Projection CRTs
G533	Blue	440	55	–	0.095	Medium Short	Photorecording CRTs
G556	Green	525	45	23	–	Medium	Projection CRTs
G582	Red	612	5	13	–	Medium	Projection CRTs
G590	White	544	10	22	–	Medium	Projection CRTs

This information on cathodoluminescent phosphor screens is provided for reference purposes only. These phosphor screens are used in RCA CRTs. Phosphor powders are not available for sale from RCA New Products Division.

Spectral Energy Distribution (SED) Curves — RCA Phosphor Screens





C.I.E. Color Designation Chart

This chart represents the printer's best efforts to reproduce, in color, the EIA "Kelly Chart of Color Designation for Lights".

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