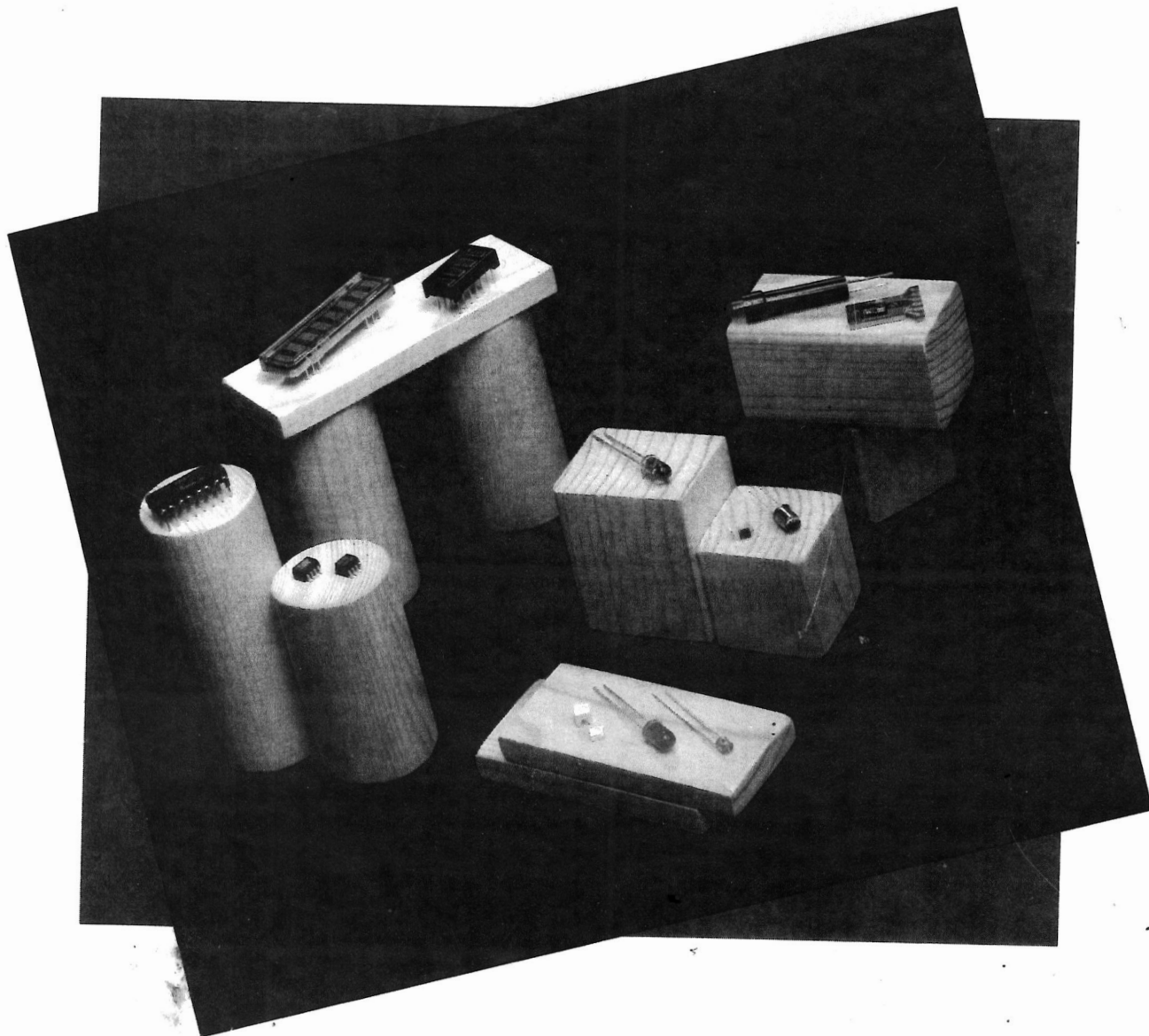


SIEMENS



Optoelectronics Data Book 1995 • 1996

SIEMENS

Intelligent Display Devices, Slimline Intelligent Display Devices, Programmable Display Devices, Small Alphanumeric Displays, Intelligent Display Assemblies, Numeric Displays, T1 ³/₄ LED Lamps, Miniature LED Lamps, GaAIAs T1 LED Lamps, SMT-TOP-LED Surface Mount LED Lamps, Cylindrical LED Lamps, SIDE-LED Lamps, Two-color ARGUS LED Lamps, Phototransistor Optocouplers: Single and Multi-channel, Photodarlington Optocouplers: Single and Multi-channel, Bidirectional Input Optocouplers, Small Outline Surface Mount Optocouplers, Hermetic Phototransistor Optocouplers, High Voltage Solid State Relay Optocouplers, Triac Driver Optocouplers, Components for Plastic Optical Fiber Applications, Components for Glass Optical Fiber Applications, High Powered Laser Diodes, GaAs Infrared Emitters, GaAIAs Infrared Emitters, GaAs SMT-TOP-LED Infrared Emitters, GaAIAs SMT-TOP-LED Infrared Emitters, Silicon PIN Photodiodes, Silicon PIN Photodiodes with Daylight Filter, Silicon Photodiodes, Silicon Differential Photodiodes, Silicon Planar Photodiodes, Photodiode Arrays, Germanium PIN Photodiodes, Silicon NPN Phototransistors, SMT-TOP-LED Silicon NPN Phototransistors, Silicon Photovoltaic Cells, Custom Optoelectronic Products.

Optoelectronics Data Book 1995 • 1996

Siemens

Innovative Optoelectronic Products and Systems

Company Overview

Siemens Components is a major producer in the semiconductor industry, with facilities virtually worldwide. The U.S. Optoelectronics Division, headquartered in Cupertino, California—the heart of Silicon Valley, teamed with the Opto-Semiconductor Group in Munich and Regensburg, Germany, are world leaders in light emitting diode (LED) technology, sophisticated CMOS IC design, optics, fiber optics, and packaging.

Our combined product line is one of the most complete in the world:

- Small Alphanumeric Displays
- Programmable Display™ Devices
- Intelligent Display™ Devices
- Hi Rel/Industrial Displays
- Application-Specific Intelligent Displays
- Numeric Displays
- LED Lamps
- Optocouplers
- Infrared Emitting Diodes & Photodetectors
- Components for Plastic and Glass Fiber Applications & High Power Laser Diodes
- Interrupters
- Custom Optoelectronic Products

Our materials technology includes visible and IR LEDs (GaAsP, GaP or combinations of these; GaAlAs; and Silicon Carbide) and photodetectors. Our Malaysia plant, where final product assembly is done, is a showcase of automation and efficiency, featuring the latest automated assembly and test equipment—resulting in high yields and high quality products.

Siemens USA and Worldwide

Siemens Optoelectronics is a division of Siemens Components, Inc., which is part of Siemens USA, with sales of \$7.3 billion and more than 46,000 employees. Siemens USA includes Siemens Corporation and operating companies, Siemens affiliates, and joint ventures. Among the operating companies are Siemens Automotive, Siemens Components, Siemens Energy and Automation, Siemens Industrial Automation, Siemens Medical Systems, Siemens Power Corporation, Siemens Stromberg-Carlson, Siemens Transportation Systems, OSRAM SYLVANIA, Potter & Brumfield, and Siemens Rolm Communications.

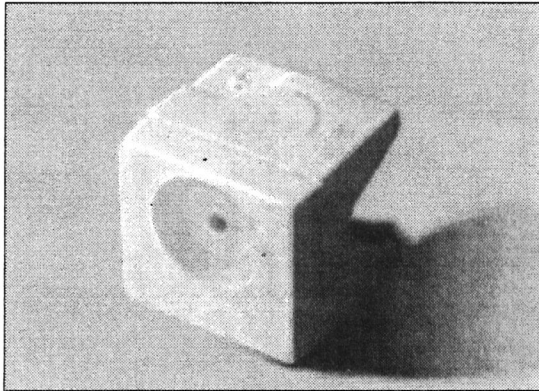
Siemens USA is part of Siemens' worldwide organization, with sales of \$51.6 billion, 382,000 employees, and operations in 150 countries.

Conclusion

Siemens is strategically positioned to concentrate efforts on innovative products and systems, offering value-added, cost-effective features to our customers. All our resources and capabilities in producing LED materials (visible and infrared), R&D engineering, IC design, optics/packaging, automated assembly, and a strong focus on reliability keep Siemens at the leading edge of opto technology.

SIEMENS

SUPER-RED LSA670
ORANGE LOA670
YELLOW LYA670
GREEN LGA670
PURE GREEN LPA670
SMT-SIDELED®
Preliminary Data

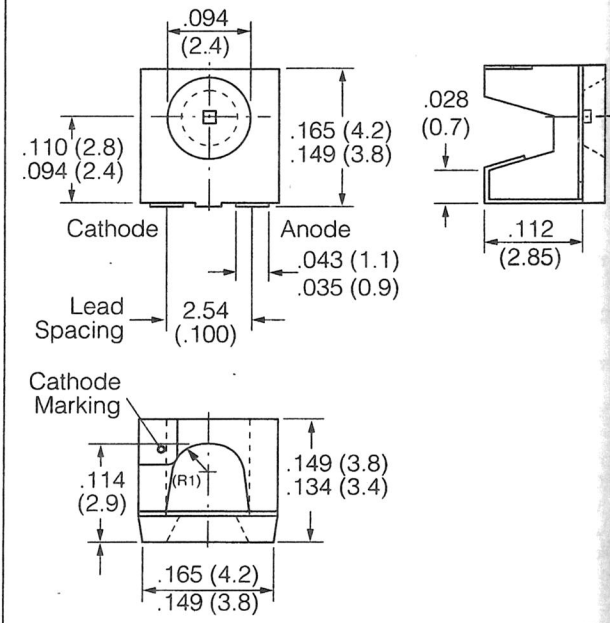


FEATURES

- White Package
- Internal Reflector
- Wide Viewing Angle
- Ideal for Backlighting, Optical Coupling into Light Pipes and Lenses
- Colorless Clear Window
- Available on Tape and Reel (12 mm Tape)
- Load Dump Resistant acc. to DIN 40839
- Low Power Dissipation
- Compatible with Automatic Placement Equipment
- Suitable for Vapor-Phase Reflow and Infrared Reflow Processes

See graph numbers 1, 2V, 3D, 4I, 5G, 6G, 7A, 8A, 9A, 10A in the back of this section.

Package Dimensions in Inches (mm)



DESCRIPTION

The LX A670 (SMT-SIDELED for surface mount applications) is available in super-red, orange, yellow, green, and pure green. The right angle package incorporates an internal reflector to optimize light coupling. This feature makes the SMT-SIDELED ideal for light pipe applications.

Maximum Ratings

Operating Temperature Range (T_{OP})	-55 to +100°C
Storage Temperature Range (T_{STG})	-55 to +100°C
Junction Temperature (T_J)	+100°C
Forward Current (I_F)	30 mA
Surge Current (I_{FM}) $t_p \leq 10 \mu s$ $D=0.005$	0.5 A
Reverse Voltage (V_R)	5 V
Power Dissipation (P_{TOT})	100 mW
Thermal Resistance, Junction Air, Mounted on PC Board (pad size 16 mm ² (1))	
(R_{THJA})	400 K/W
Junction Solderpoint (R_{THJS})	300 K/W

Note: PC board G30/FR4

Chara

Param

Peak V

Domin

Spectr

Viewin

Forwar

Revers

Capaci

Switchi

($t_p = 10 \mu s$)

Lumino

Type

LSA670

LSA670

LSA670

LSA670

LOA670

LOA670

LOA670

LOA670

LYA670-

LYA670-

LYA670-

LYA670-

LGA670-

LGA670-

LGA670-

LGA670-

LPA670-F

LPA670-C

LPA670-F

LPA670-C

Characteristics (T_A=25°C) All values typical unless otherwise noted

Parameter	Symbol	Values					Unit
		Super Red	Orange	Yellow	Green	Pure Green	
Peak Wavelength (I _F =10 mA)	λ _{PEAK}	635	610	586	565	557	nm
Dominant Wavelength (I _F =10 mA)	λ _{DOM}	628	605	590	570	560	nm
Spectral Bandwidth (50% I _{RELMAX}) (I _F =10 mA)	Δλ	45	40	45	25	22	nm
Viewing Angle, 50%, I _V	2φ	120	120	120	120	120	Deg.
Forward Voltage (I _F =10 mA)	Typ.	V _F	2.0	2.0	2.0	2.0	V
	Max		2.6	2.6	2.6	2.6	
Reverse Current (V _R =5 V)	Typ.	I _R	0.01	0.01	0.01	0.01	μA
	Max		10	10	10	10	
Capacitance (V _R =0 V, f=1 MHz)	C ₀	12	8	10	15	15	pF
Switching times (I _F =100 mA) (t _p =10 μs, R _L =50 Ω)	I _V 10%–90%	t _R	300	300	300	450	ns
	I _V 90%–10%	t _F	150	150	150	200	

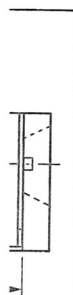
Luminous Intensity Ratio in One Packaging Unit I_{VMAX}/I_{VMIN}≥2.0

Type	Light Emitting Color	Luminous Intensity I _F =50 mA, I _V (mcd)	
		Min.	Max.
LSA670-HK LSA670-J LSA670-K LSA670-JL	Super-red, Yellow	2.5 4 6.3 4	12.5 8 12.5 20
LOA670-GJ LOA670-H LOA670-J LOA670-JL	Orange	1.6 2.5 4 4	12.5 5 8 20
LYA670-HK LYA670-J LYA670-K LYA670-JL	Yellow	2.5 4 6.3 4	12.5 8 12.5 20
LGA670-HK LGA670-J LGA670-K LGA670-JL	Green	2.5 4 6.3 4	12.5 8 12.5 20
LPA670-FJ LPA670-G LPA670-H LPA670-GK	Pure Green	1 1.6 2.5 1.6	8 3.2 5 12.5

LED Lamps

4

670
670
670
670
670
LED®
Data



s) is
en.
o opti-
deal

100°C
100°C
100°C
30 mA
0.5 A
5 V
10 mW

0 K/W
0 K/W

LSA/LOA/LYA/LGA/LPA670