


**PHOTO CHEMICAL PRODUCTS
OF CALIFORNIA, INC.**

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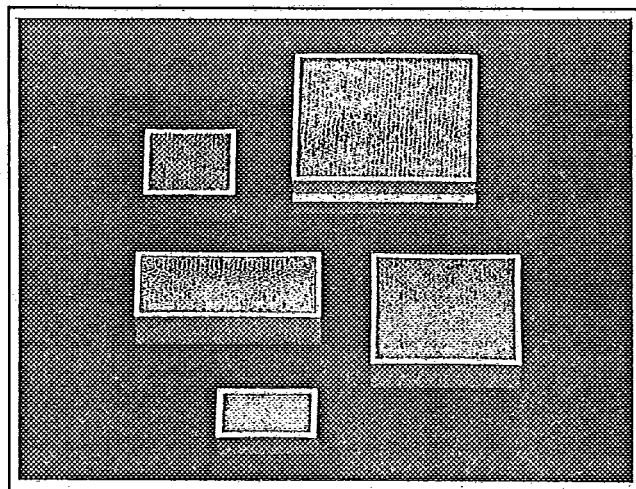
LED LIGHT BARS PC9000 SERIES

Date: January, 1982

No: PDS111
Supercedes PDS102

FEATURES

- BRIGHT, UNIFORM LIGHT EMITTING SURFACE
- EXCELLENT LUMINOUS EFFICACY
- CHOICE OF FOUR COLORS
Red, Green, Yellow, Orange
- FLUSH MOUNTABLE
No "eggcrates" necessary
- IC COMPATIBLE
Solid state reliability
- FULLY ENCAPSULATED CONSTRUCTION
- 0.100 INCH (2.54MM) PITCH LEADS
0.100 inch (2.54mm) centers
- LOW COST



APPLICATIONS

- Annunciators
- Lighted switches
- Bar graphs
- Large area indicators
- Backlighted front panels

ORDERING INFORMATION

PART NUMBER	COLOR	EMITTING AREA SIZE	CHIP NUMBER
PC9001R PC9001G PC9001Y PC9001E	Red Green Yellow Orange	.175 X .375 inches (4.5 X 9.5 millimeters)	2
PC9002R PC9002G PC9002Y PC9002RG	Red Green Yellow Red/Green/Yellow	.275 X .355 inches (7.0 X 9.0 millimeters)	2
PC9010R PC9010G PC9010Y	Red Green Yellow	.275 X .750 inches (7.0 X 19.0 millimeters)	3
PC9013R PC9013G PC9013Y	Red Green Yellow	.470 X .590 inches (12.0 X 15.0 millimeters)	4
PC9014R PC9014G	Red Green	.590 X .750 inches (15.0 X 19.0 millimeters)	6

ABSOLUTE MAXIMUM RATINGS – Ta = 25°C

PARAMETER	SYMBOL	CONDITIONS	UNITS	VALUE	PC9001 Series			
					R	G	Y	E
Power Dissipation	P	All chips illuminated	mW	Max	120	150	120	120
Operating Temperature	T _{OPR}	All chips illuminated	°C	Max	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$
Storage Temperature	T _{STG}	—	°C	Max	$\frac{-30}{+80}$	$\frac{-30}{+80}$	$\frac{-30}{+80}$	$\frac{-30}{+80}$
DC Forward Current	I _F	Per chip	mA	Max	20	25	20	20
Reverse Voltage	V _R	Per chip	V	Max	4.0	5.0	4.0	4.0
Derating Factor	—	Per chip	mA/°C	—	0.36	0.45	0.36	0.36
Soldering Temperature	—	3 seconds	°C	Max	260	260	260	260

ELECTRO-OPTICAL CHARACTERISTICS – Ta = 25°C

PARAMETER	SYMBOL	TEST CONDITIONS	UNITS	VALUE	PC9001 Series			
					R	G	Y	E
Luminous Intensity	I _v	I _F = 20mA DC	mcd	Typ Min	5.0 2.0	6.0 2.5	5.0 2.0	5.0 2.0
Luminous Sterance	L _v	I _F = 20mA DC	cd/m ² fL	Typ Typ	117 34	140 40	117 34	117 34
Forward Voltage	V _F	I _F = 20mA DC	V	Typ Max	2.0 3.0	2.1 3.0	2.0 3.0	2.0 3.0
Peak Wave Length	λ _p	I _F = 20mA DC	nm	—	635	565	585	635
Reverse Current	I _R	V _R = 3V	nA μA	Typ Max	10 50	10 50	10 50	10 50
Terminal Capacitance	C _T	V = 0V	pf	Typ	35	35	35	35

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PC9002 Series					PC9010 Series			PC9013 Series			PC9014 Series	
R	G	Y	R	RG* G	R	G	Y	R	G	Y	R	G
140	170	100	70	85	210	250	150	280	280	225	450	450
$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$	$\frac{-20}{+80}$
$\frac{-30}{+80}$	$\frac{-30}{+80}$	$\frac{-30}{+80}$	$\frac{-30}{+80}$	$\frac{-30}{+80}$	$\frac{-30}{+80}$	$\frac{-30}{+80}$	$\frac{-30}{+80}$	$\frac{-30}{+85}$	$\frac{-30}{+85}$	$\frac{-30}{+85}$	$\frac{-30}{+85}$	$\frac{-30}{+85}$
30	30	20	30	30	30	30	20	25	25	20	30	30
4.0	5.0	4.0	4.0	5.0	4.0	5.0	4.0	4.0	4.0	4.0	3.0	3.0
0.55	0.55	0.36	0.55	0.55	0.55	0.55	0.36	0.45	0.45	0.36	0.55	0.55
260	260	260	260	260	260	260	260	260	260	260	260	260

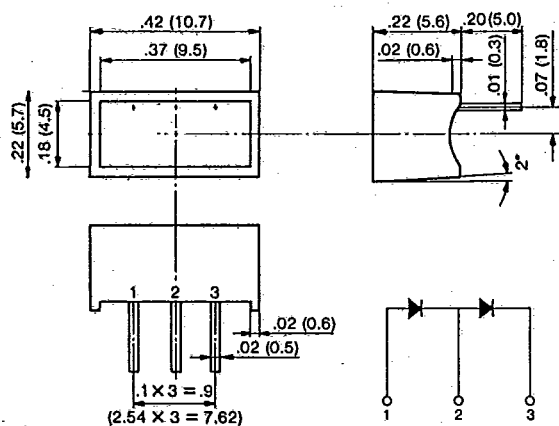
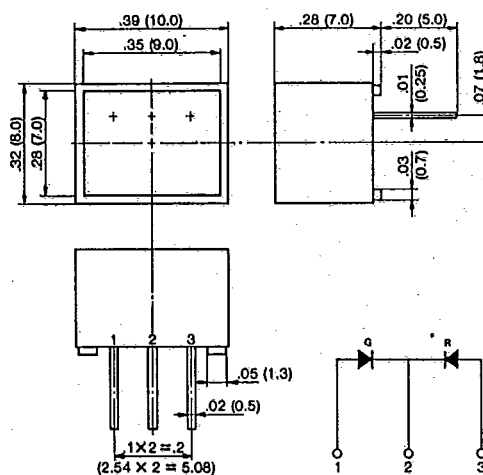
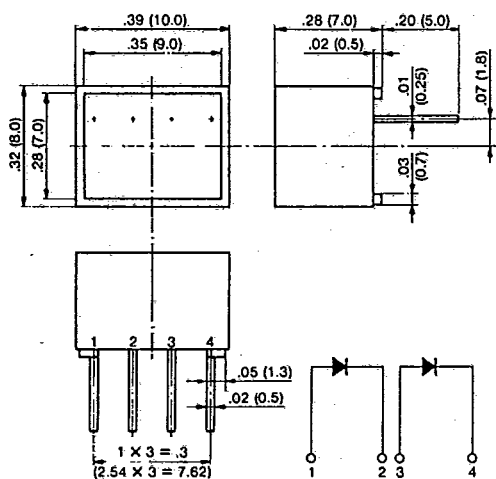
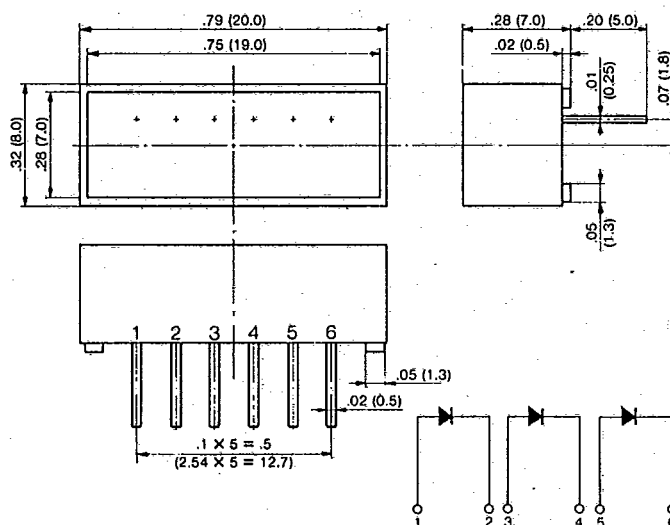
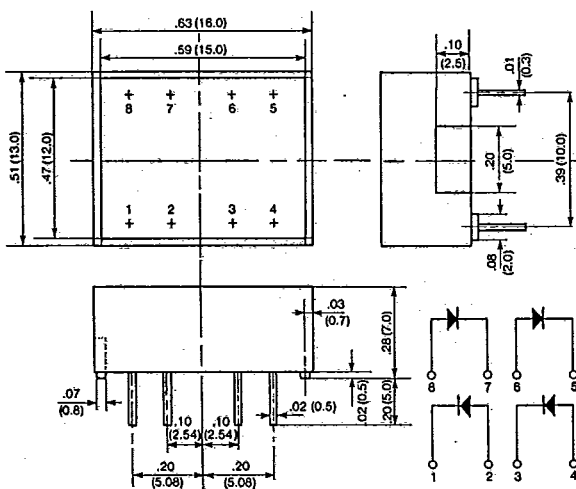
PC9002 Series					PC9010 Series			PC9013 Series			PC9014 Series	
R	G	Y	R	RG* G	R	G	Y	R	G	Y	R	G
10.0 5.0	7.0 3.5	9.0 4.0	5.0 2.5	3.0 1.5	15.0 7.0	10.0 5.0	13.0 6.0	8.0 2.4	16.0 5.0	12.0 4.0	17.0 5.0	17.0 8.0
159 46	111 32	143 41	79 23	48 14	113 33	75 22	98 28	44 13	88 26	66 20	60 17	60 17
1.9 2.4	2.0 2.8	1.9 2.5	1.9 2.4	2.0 2.8	1.9 2.4	2.0 2.8	1.9 2.5	2.1 2.8	2.2 2.8	2.1 2.8	2.0 2.5	2.2 2.8
635	565	585	635	565	635	565	585	700	565	590	700	565
20 100	20 100	20 100	20 100	20 100	20 100	20 100	20 100	10 50	10 50	10 50	10 50	10 50
40	35	35	40	35	40	35	35	35	35	35	100	50

*A yellow emitted color can be produced with this device by the simultaneous application of current though both the red and green die. The values of I_F must be determined empirically by the user to yield the desired color and intensity while not exceeding the maximum ratings.

DIMENSIONS/PIN CONNECTIONS

All dimensions are in inches and (millimeters).

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PC9001 Series**PC9002 Series
Model 9002RG****PC9002 Series
Model 9002R, G or Y****PC9010 Series****PC9013 Series****PC9014 Series**