

ELECTRO-OPTICAL CHARACTERISTICS @ Ta = 25°C

Model No.	Fig.	Color	Tint	Peak Wavelength λpk (nm)	Chip Material	Luminous Intensity Iv (mcd)		Viewing Angle 2θ 1/2 (deg)	Forward Voltage Vf@If=20mA		Reverse Break-down Voltage@ (IR=1000µA)
						Typical	@		Typical	@	
190-LR	7	RED	D	635	GaAsP/GaP	12	20mA	60	2.0/2.6	20mA	5VDC
190-LA	7	AMB	D	585	GaAsP/GaP	12	20mA	60	2.2/2.6	20mA	5VDC
190-LG	7	GRN	D	565	GaP	12	20mA	60	2.2/2.6	20mA	5VDC
190-LCR	7	RED	T	635	GaAsP/GaP	60	20mA	30	2.0/2.6	20mA	5VDC
190-LCA	7	AMB	T	585	GaAsP/GaP	60	20mA	30	2.2/2.6	20mA	5VDC
190-LCG	7	GRN	T	565	GaP	60	20mA	30	2.2/2.6	20mA	5VDC
200-BR	8	RED	D	635	GaAsP/GaP	14	20mA	60	1.9/2.4	10mA	5VDC
200-BA	8	AMB	D	583	GaAsP/GaP	16	20mA	60	1.9/2.4	10mA	5VDC
200-BG	8	GRN	D	565	GaP	10	20mA	60	2.1/2.7	10mA	5VDC
200-BCR	8	RED	T	635	GaAsP/GaP	120	20mA	35	1.9/2.4	10mA	5VDC
200-BCA	8	AMB	T	583	GaAsP/GaP	100	20mA	35	2.0/2.4	10mA	5VDC
200-BCG	8	GRN	T	565	GaP	80	20mA	24	2.1/2.7	10mA	5VDC
200-RLP	8	RED	D	635	GaAsP/GaP	2.3	2mA	50	1.8/2.0	2mA	5VDC
200-ALP	8	AMB	D	583	GaAsP/GaP	2.1	2mA	50	1.9/2.5	2mA	5VDC
200-GLP	8	GRN	D	565	GaP	2.3	2mA	50	1.8/2.2	2mA	5VDC
200-LRG	9	RED/GRN	D	660/565	GaAlAs/GaP	90/40	20mA	60	1.8/2.4 or 2.1/2.8	20mA	5VDC
200-RAG	10	RED/GRN	D	630/565	GaAsP/GaP/GaP	6/6	20mA	60	2.0 or 2.4/3.0	20mA	6VDC
200-GAR	11	RED/GRN	D	635/565	GaAsP/GaP/GaP	5/5	20mA	50	2.0 or 2.1/2.4	20mA	5VDC
200-BR5V	12	RED	D	635	GaAsP/GaP	8.0	5VDC	60	5.0/7.5	10mA	5VDC
200-BA5V	12	AMB	D	583	GaAsP/GaP	8.0	5VDC	60	5.0/7.5	10mA	5VDC
200-BG5V	12	GRN	D	565	GaP	8.0	5VDC	60	5.0/7.5	10mA	5VDC
200-BR12V	12	RED	D	635	GaAsP/GaP	8.0	12VDC	60	12.0/15.0	13mA	5VDC
200-BA12V	12	AMB	D	583	GaAsP/GaP	8.0	12VDC	60	12.0/15.0	13mA	5VDC
200-BG12V	12	GRN	D	565	GaP	8.0	12VDC	60	12.0/15.0	13mA	5VDC
200-NWR	16	RED	WC	639	AllnGaP	3000	20mA	30	2.0/2.5	20mA	5VDC
200-NWO	13	ORNG	WC	605	AllnGaP	2000	20mA	30	1.9/2.4	20mA	5VDC
200-NWA	16	AMB	WC	594	AllnGaP	3000	20mA	30	2.15/2.5	20mA	5VDC
200-NWG	14	GR	WC	520	InGaN	2400	20mA	45	3.5/4.0	20mA	5VDC[2]
200-NWB	14	BLUE	WC	465	InGaN	700	20mA	45	3.6/4.0	20mA	5VDC[2]
200-NWW	14	WHT	WC	*	InGaN	1560	20mA	50	3.6/4.0	20mA	5VDC[2]
200-NKR	16	RED	WC	639	AllnGaP	5000	20mA	15	2.0/2.5	20mA	5VDC
200-NKO	13	ORNG	WC	605	AllnGaP	8000	20mA	15	1.9/2.4	20mA	5VDC
200-NKA	16	AMB	WC	594	AllnGaP	5000	20mA	15	2.15/2.5	20mA	5VDC
200-NKG	14	GRN	WC	520	InGaN	10000	20mA	15	3.5/4.0	20mA	5VDC[2]
200-NKB	14	BLUE	WC	465	InGaN	3000	20mA	15	3.6/4.0	20mA	5VDC[2]
200-NKW	14	WHT	WC	*	InGaN	5600	20mA	20	3.6/4.0	20mA	5VDC[2]
200-NFR	15	RED	WC	634	AllnGaP	465	20mA	75	2.2/2.8	20mA	5VDC
200-NFA	15	AMB	WC	592	AllnGaP	360	20mA	75	2.3/2.8	20mA	5VDC
200-NFG	15	GRN	WC	520	InGaN	360	20mA	75	3.3/4.0	20mA	5VDC
200-NFB	15	BLUE	WC	465	InGaN	100	20mA	75	3.4/4.0	20mA	5VDC
200-NFW	15	WHT	WC	**	InGaN	168	20mA	75	3.4/4.0	20mA	5VDC

[1] @ TA = 50°C  
 [2] @ (IR=50\_A)  
 [3] D=Diffused, T=Tinted, WC=Water Clear.  
 \*\* White is identified by one of four CIE coordinates:  
 x:0.29/y:0.23, x:0.29/y:0.27,  
 x:0.32/y:0.32, x:0.32/y:0.28

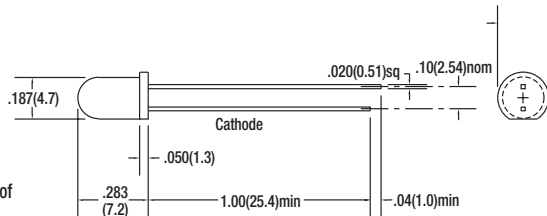


Figure 7

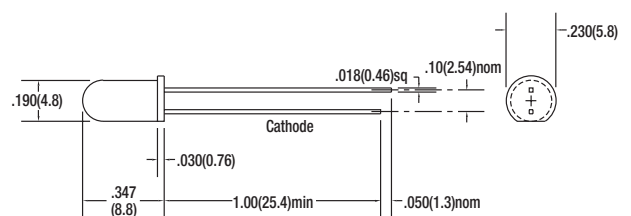
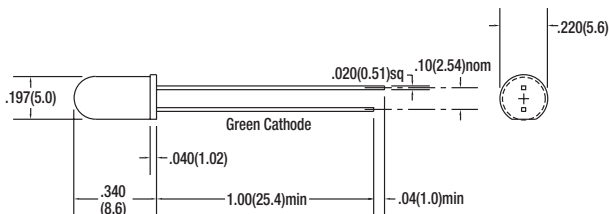


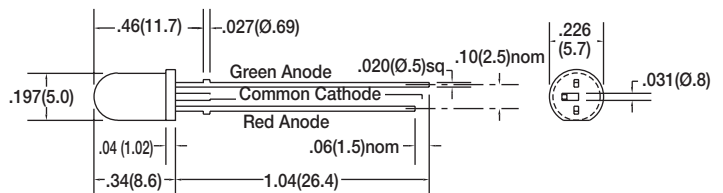
Figure 8

### ABSOLUTE MAXIMUM RATINGS @ Ta = 25°C

Model No.	Power Dissipation (mW)	Derating Factor (mA/°C)	Maximum Continuous Current (mA)	Peak Forward Current@100KHz 5% Duty Cycle (mA)	Operating Temperature (°C)	Storage Temperature (°C)
190-LR	100	1.5	30	120	-55<+100	-55<+100
190-LA	60	1.0	20	80	-55<+100	-55<+100
190-LG	100	1.5	30	120	-55<+100	-55<+100
190-LCR	100	1.5	30	120	-55<+100	-55<+100
190-LCA	60	1.0	20	80	-55<+100	-55<+100
190-LCG	100	1.5	30	120	-55<+100	-55<+100
200-BR	135	1.8	30	90	-55<+100	-55<+100
200-BA	85	1.6	20	60	-55<+100	-55<+100
200-BG	135	1.8	30	90	-20<+100	-55<+100
200-BCR	135	1.8	30	90	-55<+100	-55<+100
200-BCA	85	1.6	20	60	-55<+100	-55<+100
200-BCG	135	1.8	30	90	-55<+100	-55<+100
200-RLP	24	.32	7	7	-55<+100	-55<+100
200-ALP	36	.48	7	7	-55<+100	-55<+100
200-GLP	24	.32	7	7	-20<+100	-55<+100
200-LRG	100	1.6	40/30	200/120	-55<+100	-55<+100
200-RAG	100	1.5	30	90	-40<+100	-55<+100
200-GAR	100	1.5	30	160	-40<+85	-40<+100
200-BR5V	-	.071V/°C [1]	15	-	-40<+85	-55<+100
200-BA5V	-	.071V/°C [1]	15	-	-40<+85	-55<+100
200-BG5V	-	.071V/°C [1]	15	-	-20<+85	-55<+100
200-BR12V	-	.086V/°C [1]	20	-	-40<+85	-55<+100
200-BA12V	-	.086V/°C [1]	20	-	-40<+85	-55<+100
200-BG12V	-	.086V/°C [1]	20	-	-20<+85	-55<+100
200-NWR	120	1.3	50	100	-40<+100	-40<+120
200-NWO	120	1.3	50	100	-40<+100	-40<+120
200-NWA	120	1.3	50	100	-40<+100	-40<+120
200-NWG	120	2.1	30	100	-30<+85	-40<+100
200-NWB	120	2.1	30	100	-30<+85	-40<+100
200-NWW	120	2.1	30	100	-30<+85	-40<+100
200-NKR	120	1.3	50	100	-40<+100	-40<+120
200-NKO	120	1.3	50	100	-40<+100	-40<+120
200-NKA	120	2.1	50	100	-40<+100	-40<+120
200-NKG	120	2.1	30	100	-30<+85	-40<+100
200-NKB	120	2.1	30	100	-30<+85	-40<+100
200-NKW	120	1.3	30	100	-30<+85	-40<+100
200-NFR	80	1.3	30	160	-40<+100	-40<+100
200-NFA	80	1.3	30	160	-40<+100	-40<+100
200-NFG	120	1.3	30	100	-40<+100	-40<+100
200-NFB	120	1.3	30	100	-40<+100	-40<+100
200-NFW	120	1.3	30	100	-40<+100	-40<+100



**Figure 9**



**Figure 10**

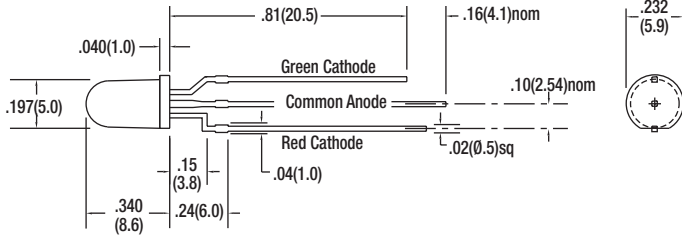


Figure 11

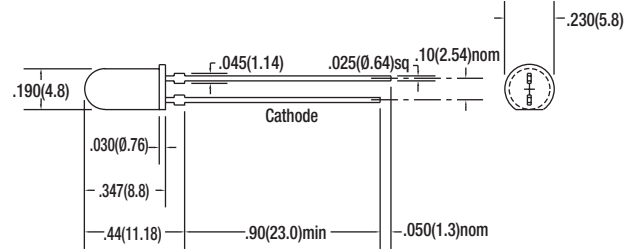


Figure 12

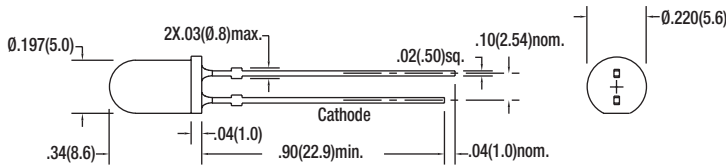


Figure 13

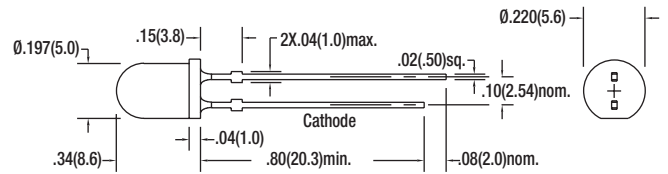


Figure 14

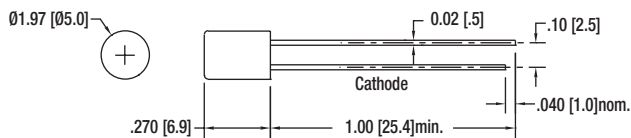


Figure 15

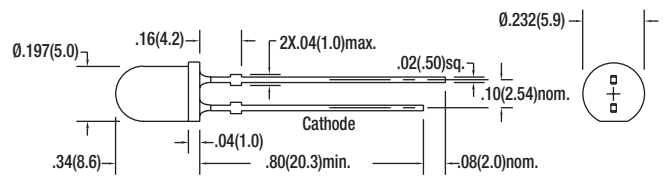


Figure 16