


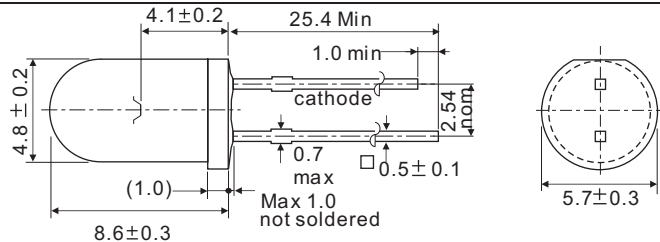


Extra Bright LEDs

Lamps For Traffic Signal Use.

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	

φ 5									
	HB5d-433BG-C	super yellow green	Water clear	575	572	2.20	800	1800	24
	HB5d-433EBA-C	cyan		502	505	3.20	3500	6000	26
	HB5d-433EAGD-C	pure green		523	525	3.20	4500	7000	
	HB5d-434FY-C	super yellow		592	590	2.00	1800	3800	24
	*HB5d-434SY-C	super yellow		592	590	2.25	2400	4800	
	HB5d-434UY-C	super yellow		592	590	2.10	2500	5000	
	HB5d-434WY-C	super yellow		592	590	2.10	2600	5200	
	HB5d-434HY-C	super yellow		592	590	2.10	2700	5500	
	HB5d-435FO-C	super orange		620	615	2.00	2000	3800	
	HB5d-435AOR-C	super fresh red		635	625	2.00	1300	3300	
	*HB5d-435SOR-C	super fresh red		638	629	2.25	2200	4500	
	HB5d-436UOR-C	super fresh red		635	625	2.10	2500	5000	
	HB5d-436WOR-C	super fresh red		635	625	2.10	3000	5500	
	HB5d-436HOR-C	super fresh red		635	625	2.10	3200	6300	
	HB5d-437FA-C	super amber		607	605	2.00	2400	3800	26
	HB5d-437HA-C	super amber		607	605	2.10	4600	9200	
	HB5d-438ABD-C	blue		462	465	3.30	2600	3200	

*:TS type LED lamps. IV1:Labsphere LED-1100 IV2:EXELTRON 2001.


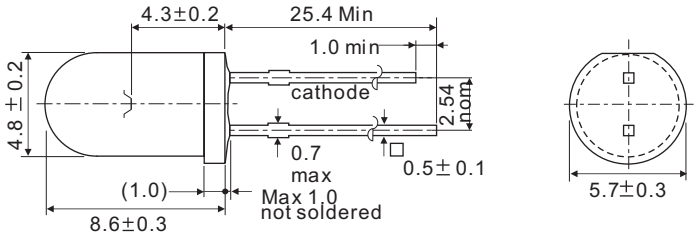
Extra Bright LEDs



Lamps For Traffic Signal Use.

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λ _p	λ _d		IV1	IV2	

φ 5									UNIT:mm	
	HB5d-433BG-D		super yellow green	Water clear	575	572	2.20	600	1500	30
	HB5d-433EBA-D		cyan		502	505	3.20	2800	5000	33
	HB5d-433EAGD-D		pure green		523	525	3.20	3500	6000	
	HB5d-434FY-D		super yellow		592	590	2.00	1200	3000	30
	*HB5d-434SY-D		super yellow		592	590	2.25	2000	4000	
	HB5d-434UY-D		super yellow		592	590	2.10	2100	4300	
	HB5d-434WY-D		super yellow		592	590	2.10	2300	4500	
	HB5d-434HY-D		super yellow		592	590	2.10	2400	4800	
	HB5d-435FO-D		super orange		620	615	2.00	1400	3000	
	HB5d-435AOR-D		super fresh red		635	625	2.00	1100	2800	
	*HB5d-435SOR-D		super fresh red		638	629	2.25	3000	4000	
	HB5d-436UOR-D		super fresh red		635	625	2.10	2400	4800	
	HB5d-436WOR-D		super fresh red		635	625	2.10	2600	5200	
	HB5d-436HOR-D		super fresh red		635	625	2.10	2800	5500	
	HB5d-437FA-D		super amber		607	605	2.00	1600	3000	
	HB5d-437HA-D		super amber		607	605	2.10	4200	8500	
	HB5d-438ABD-D		blue		462	465	3.30	2000	2700	33


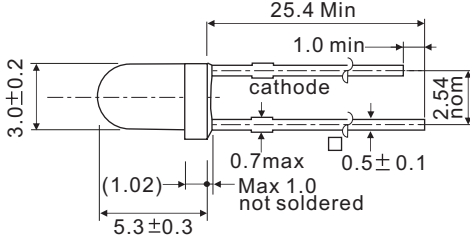
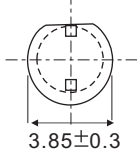
*:TS type LED lamps. IV1:Labsphere LED-1100 IV2:EXELTRON 2001.



Extra Bright LEDs

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	

						UNIT:mm		
						Color	Wavelength (nm)	VF (V)
φ 3	HB3b-443DG	yellow green	570	567	2.15	180	400	18
	HB3b-443CG	yellow green	570	567	2.15	220	700	
	HB3b-443BG	super yellow green	575	572	2.20	850	1600	14
	HB3b-443BA	cyan	502	505	3.20	3500	4000	
	HB3b-443AGD	pure green	523	525	3.20	4500	7200	
	HB3b-444AY	yellow	592	590	2.00	900	1800	10
	HB3b-444FY	super yellow	592	590	2.00	2000	2500	
	HB3b-444SY	super yellow	592	590	2.25	1600	3200	14
	HB3b-444UY	super yellow	592	590	2.10	1900	3800	
	HB3b-444WY	super yellow	592	590	2.10	2100	4200	10
	HB3b-444HY	super yellow	592	590	2.10	3000	6000	
	HB3b-445AO	super orange	620	615	2.00	900	1800	
	HB3b-445FO	super orange	620	615	2.00	2000	2500	18
	HB3b-445AOR	super fresh red	635	625	2.00	1800	2000	
	HB3b-445SOR	super fresh red	638	629	2.25	2200	3200	
	HB3b-446DR	deep red	660	643	1.80	230	500	14
	HB3b-446CR	deep red	660	643	1.80	300	900	
	HB3b-446AR	super deep red	660	645	1.86	350	1800	19
	HB3b-446ARA	super deep red	660	645	1.86	450	2000	
	HB3b-446UOR	super fresh red	635	625	2.10	2200	4500	10
	HB3b-446WOR	super fresh red	635	625	2.10	2500	5000	
	HB3b-446HOR	super fresh red	635	625	2.10	4000	8000	
	HB3b-447FA	super amber	607	605	2.00	2000	2500	
	HB3b-447HA	super amber	607	605	2.10	6000	12000	15
	HB3b-448ABD	blue	462	465	3.30	1600	3300	
	HB3b-448ABD-B	blue	462	465	3.30	900	1800	


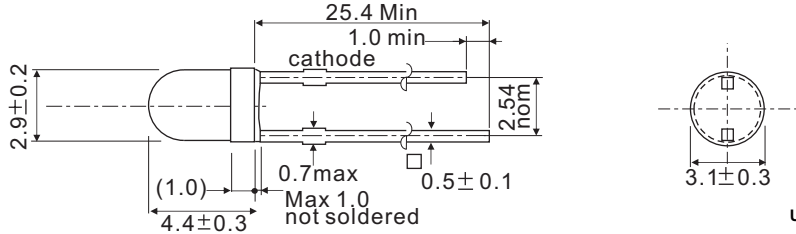





















IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

Extra Bright LEDs



IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	

								UNIT:mm		
φ 3	HB3J-443DG		yellow green	Water clear	570	567	2.15	80	160	40
	HB3J-443CG		yellow green		570	567	2.15	250	500	
	HB3J-443BG		super yellow green		575	572	2.20	450	800	35
	HB3J-443BA		cyan		502	505	3.20	1500	1800	30
	HB3J-443AGD		pure green		523	525	3.20	2200	4200	
	HB3J-444AY		super yellow		592	590	2.00	700	1200	40
	HB3J-444FY		super yellow		592	590	2.00	1000	2000	
	HB3J-444WY		super yellow		592	590	2.10	1100	2200	
	HB3J-444HY		super yellow		592	590	2.10	1200	2400	30
	HB3J-445AO		super orange		620	615	2.00	700	1200	
	HB3J-445FO		super orange		620	615	2.00	1300	1600	
	HB3J-445AOR		super fresh red		635	625	2.00	750	1500	40
	HB3J-446DR		deep red		660	643	1.80	120	250	50
	HB3J-446CR		deep red		660	643	1.80	200	400	
	HB3J-446AR		super deep red		660	645	1.86	400	1000	30
	HB3J-446ARA		super deep red		660	645	1.86	450	1300	
	HB3J-446WOR		super fresh red		635	625	2.10	1100	2200	40
	HB3J-446HOR		super fresh red		635	625	2.15	1200	2400	
	HB3J-447FA		super amber		607	605	2.00	800	1600	
	HB3J-447HA		super amber		607	605	2.10	1500	3000	30
HB3J-448ABD		blue	462	465	3.30	1300	2500			

IV1:Labsphere LED-1100 IV2:EXELTRON 2001.



Extra Bright LEDs

Oval Type

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	

						UNIT:mm				
						oval φ	Water clear	75/40	HB3RH-443BA	
HB3RH-443AGD		pure green	523	525	3.20				2500	5000
HB3RH-444FY		super yellow	592	590	2.00				400	800
HB3RH-444WY		super yellow	592	590	2.10				1000	1800
HB3RH-444HY		super yellow	592	590	2.10				1500	3000
HB3RH-445FO		super orange	620	615	2.00				360	720
HB3RH-445AOR		super fresh red	635	625	2.00				250	500
HB3RH-445SOR		deep red	638	629	2.25				400	800
HB3RH-446ARA		super deep red	660	645	1.86				400	800
HB3RH-446UOR		super fresh red	635	625	2.10				500	1000
HB3RH-446WOR		super fresh red	635	625	2.10				600	1200
HB3RH-447FA		super amber	607	605	2.00				360	720
HB3RH-447HA		super amber	607	605	2.10				1400	2800
HB3RH-448ABD		blue	462	465	3.30				1100	2100

IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

Extra Bright LEDs



Oval Type

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	

										UNIT:mm	
oval φ	HB3RV-443BA		cyan	Water clear	502	505	3.20	1000	2000	40/75	
	HB3RV-443AGD		pure green		523	525	3.20	2500	5000		
	HB3RV-444FY		super yellow		592	590	2.00	400	800		
	HB3RV-444WY		super yellow		592	590	2.10	1000	1800		
	HB3RV-444HY		super yellow		592	590	2.10	1500	3000		
	HB3RV-445FO		super orange		620	615	2.00	360	720		
	HB3RV-445AOR		super fresh red		635	625	2.00	250	500		
	HB3RV-445SOR		deep red		638	629	2.25	400	800		
	HB3RV-446ARA		super deep red		660	645	1.86	300	600		
	HB3RV-446UOR		super fresh red		635	625	2.10	500	1000		
	HB3RV-446WOR		super fresh red		635	625	2.10	600	1200		
	HB3RV-447FA		super amber		607	605	2.00	360	720		
	HB3RV-447HA		super amber		607	605	2.10	1400	2800		
	HB3RV-448ABD		blue		462	465	3.30	700	1300		


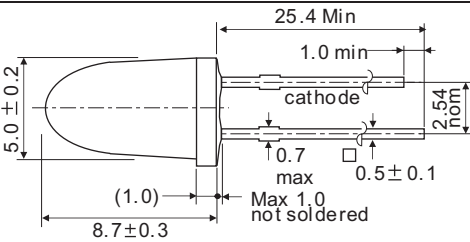
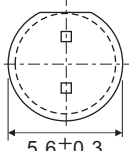
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.



Extra Bright LEDs

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	

						UNIT:mm			
φ 5	HB5b-433DG	yellow green	Water clear	570	567	2.15	320	850	12
	HB5b-433CG	super yellow green		570	567	2.15	540	1350	
	HB5b-433BG	super yellow green		575	572	2.20	1500	2800	10
	HB5b-433EBA	cyan		502	505	3.20	7500	9000	
	HB5b-433EAGD	pure green		523	525	3.20	9000	11500	9
	HB5b-434AY	super yellow		592	590	2.00	2500	3500	
	HB5b-434FY	super yellow		592	590	2.00	3300	6000	7
	HB5b-434SY	super yellow		592	590	2.25	3500	7500	
	HB5b-434UY	super yellow		592	590	2.10	3500	8000	
	HB5b-434WY	super yellow		592	590	2.10	3600	8500	
	HB5b-434HY	super yellow		592	590	2.10	3800	13500	9
	HB5b-435AO	super orange		620	615	2.00	3500	3500	
	HB5b-435FO	super orange		620	615	2.00	4000	6000	7
	HB5b-435AOR	super fresh red		635	625	2.00	3500	5500	
	HB5b-435SOR	super fresh red		638	629	2.25	3500	7500	6
	HB5b-436DR	deep red		660	643	1.80	400	850	
	HB5b-436CR	deep red		660	643	1.80	750	1400	7
	HB5b-436AR	super deep red		660	643	1.86	1300	3000	
	HB5b-436ARA	super deep red		660	645	1.86	1500	4000	
	HB5b-436UOR	super fresh red		635	625	2.10	4000	8000	
HB5b-436WOR	super fresh red	635	625	2.10	4500	9000	10		
HB5b-436HOR	super fresh red	635	625	2.10	9000	18500			
HB5b-437FA	super amber	607	605	2.00	3500	6000	10		
HB5b-437HA	super amber	607	605	2.10	15000	27500			
HB5b-438ABD	blue	462	465	3.30	2600	5200	10		


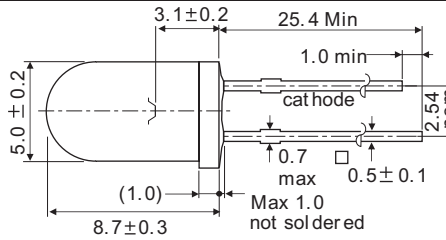
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

Extra Bright LEDs



IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	

									
								UNIT:mm	
φ 5			Water clear						
	HB5-433DG	yellow green		570	567	2.15	320	800	14
	HB5-433CG	super yellow green		570	567	2.15	400	1200	
	HB5-433BG	super yellow green		575	572	2.20	1500	2500	
	HB5-433EBA	cyan		502	505	3.20	6500	8000	15
	HB5-433EAGD	pure green		523	525	3.20	8000	10500	
	HB5-434AY	super yellow		592	590	2.00	2000	3000	12
	HB5-434FY	super yellow		592	590	2.00	2800	5500	
	HB5-434SY	super yellow		592	590	2.25	3500	7000	
	HB5-434UY	super yellow		592	590	2.10	3600	7200	
	HB5-434WY	super yellow		592	590	2.10	4000	8000	
	HB5-434HY	super yellow		592	590	2.10	6000	12000	
	HB5-435AO	super orange		620	615	2.00	2400	3000	
	HB5-435FO	super orange		620	615	2.00	3200	5500	
	HB5-435AOR	super fresh red		635	625	2.00	3000	4500	
	HB5-435SOR	super fresh red		638	629	2.25	3500	7000	
	HB5-436DR	deep red		660	643	1.80	350	800	
	HB5-436CR	deep red		660	643	1.80	700	1200	
	HB5-436AR	super deep red		660	645	1.86	1250	2400	
	HB5-436ARA	super deep red		660	645	1.86	1400	3500	
	HB5-436UOR	super fresh red		635	625	2.10	3600	7200	
	HB5-436WOR	super fresh red		635	625	2.10	4000	8000	
	HB5-436HOR	super fresh red		635	625	2.10	8000	17000	
	HB5-437FA	super amber		607	605	2.00	3000	5500	
	HB5-437HA	super amber		607	605	2.10	13000	25000	
	HB5-438ABD	blue		462	465	3.30	3000	4800	


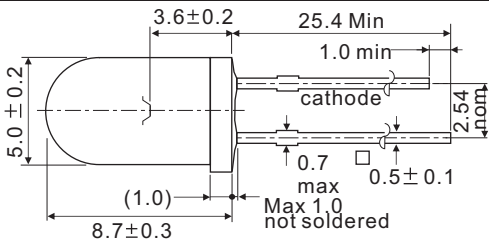
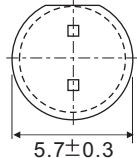
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.



Extra Bright LEDs

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	

  										
									UNIT:mm	
HB5-433DG-B		yellow green	Water clear	570	567	2.15	200	600	16	
HB5-433CG-B		yellow green		570	567	2.15	250	900		
HB5-433BG-B		super yellow green		575	572	2.20	800	2000	15	
HB5-433EBA-B		cyan		502	505	3.20	5000	7000	18	
HB5-433EAGD-B		pure green		523	525	3.20	6000	8500		
HB5-434AY-B		super yellow		592	590	2.00	1200	2800	15	
HB5-434FY-B		super yellow		592	590	2.00	2000	5000		
HB5-434SY-B		super yellow		592	590	2.25	4000	6500		
HB5-434UY-B		super yellow		592	590	2.10	3400	6800	18	
HB5-434WY-B		super yellow		592	590	2.10	3800	7500		
HB5-434HY-B		super yellow		592	590	2.10	4100	8200	15	
HB5-435AO-B		super orange		620	615	2.00	1200	2800		
HB5-435FO-B		super orange		620	615	2.00	2200	5000		
HB5-435AOR-B		super fresh red		635	625	2.00	2000	4000		
HB5-435SOR-B		super fresh red		638	629	2.25	3000	6000		
HB5-436DR-B		deep red		660	643	1.80	250	450		
HB5-436CR-B		deep red		660	643	1.80	400	900		
HB5-436AR-B		super deep red		660	645	1.86	800	2200		
HB5-436ARA-B		super deep red		660	645	1.86	1080	3300	18	
HB5-436UOR-B		super fresh red		635	625	2.10	3100	6300		
HB5-436WOR-B		super fresh red	635	625	2.10	3500	7000			
HB5-436HOR-B		super fresh red	635	625	2.10	4500	9000	15		
HB5-437FA-B		super amber	607	605	2.00	2400	5000			
HB5-437HA-B		super amber	607	605	2.10	6000	12500			
HB5-438ABD-B		blue	462	465	3.30	2400	3900			


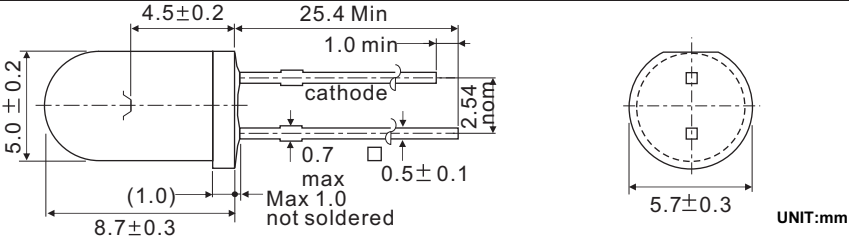
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

Extra Bright LEDs



IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	

									
φ 5			Water clear						
	HB5-433DG-C	yellow green		570	567	2.15	100	300	30
	HB5-433CG-C	yellow green		570	567	2.15	150	500	
	HB5-433BG-C	super yellow green		575	572	2.20	500	900	40
	HB5-433EBA-C	cyan		502	505	3.20	3000	4500	45
	HB5-433EAGD-C	pure green		523	525	3.20	3800	4700	
	HB5-434AY-C	super yellow		592	590	2.00	800	1000	40
	HB5-434FY-C	super yellow		592	590	2.00	1200	2400	
	HB5-434SY-C	super yellow		592	590	2.25	1500	3000	45
	HB5-434UY-C	super yellow		592	590	2.10	1600	3200	
	HB5-434WY-C	super yellow		592	590	2.10	1700	3400	
	HB5-434HY-C	super yellow		592	590	2.10	1800	3600	
	HB5-435AO-C	super orange		620	615	2.00	800	1000	40
	HB5-435FO-C	super orange		620	615	2.00	1400	2400	
	HB5-435AOR-C	super fresh red		635	625	2.00	1000	1500	
	HB5-435SOR-C	super fresh red		638	629	2.25	1500	3000	
	HB5-436DR-C	deep red		660	643	1.80	120	250	30
	HB5-436CR-C	deep red		660	643	1.80	175	600	
	HB5-436AR-C	super deep red		660	645	1.86	600	1800	
	HB5-436ARA-C	super deep red		660	645	1.86	750	2800	
	HB5-436UOR-C	super fresh red		635	625	2.10	1600	3200	40
	HB5-436WOR-C	super fresh red		635	625	2.10	1800	3500	
	HB5-436HOR-C	super fresh red		635	625	2.10	2100	4200	
	HB5-437FA-C	super amber		607	605	2.00	1200	2400	
	HB5-437HA-C	super amber		607	605	2.10	3000	6000	45
	HB5-438ABD-C	blue		462	465	3.30	1200	2200	

IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

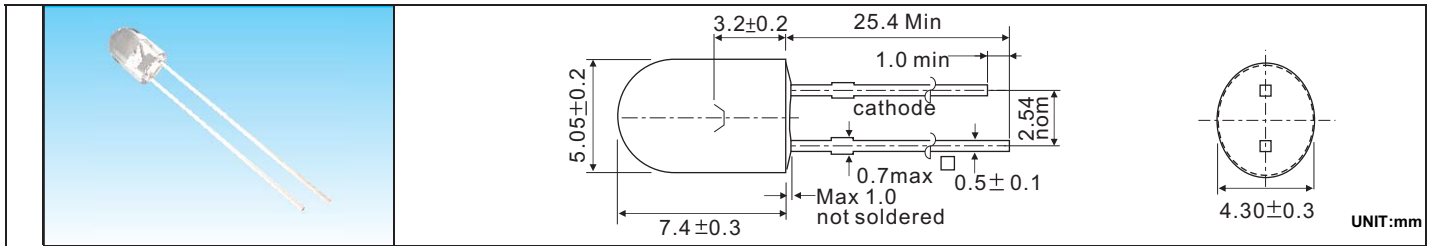


Extra Bright LEDs

Oval Type

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	



oval φ	HB4Q-433CG	super yellow green	Water clear	570	567	2.15	175	600	40/20
	HB4Q-433EBA	cyan		502	505	3.20	4500	5000	
	HB4Q-433EAGD	pure green		523	525	3.20	4800	5500	
	HB4Q-434FY	super yellow		592	590	2.00	1500	4000	
	HB4Q-434SY	super yellow		592	590	2.25	2700	5700	
	HB4Q-434UY	super yellow		592	590	2.10	3000	6000	
	HB4Q-434WY	super yellow		592	590	2.10	3200	6500	
	HB4Q-434HY	super yellow		592	590	2.10	3400	6800	
	HB4Q-435FO	super orange		620	615	2.00	1800	4000	
	HB4Q-435AOR	super fresh red		635	625	2.00	1300	3400	
	HB4Q-435SOR	super fresh red		638	629	2.25	3000	6000	
	HB4Q-436ARA	super deep red		660	645	1.86	1400	2800	
	HB4Q-436UOR	super fresh red		635	625	2.10	3100	6200	
	HB4Q-436WOR	super fresh red		635	625	2.10	3600	6800	
	HB4Q-436HOR	super fresh red		635	625	2.10	3800	7500	
	HB4Q-437HA	super amber		607	605	2.10	5500	11000	
	HB4Q-438ABD	blue		462	465	3.30	1800	2500	

IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

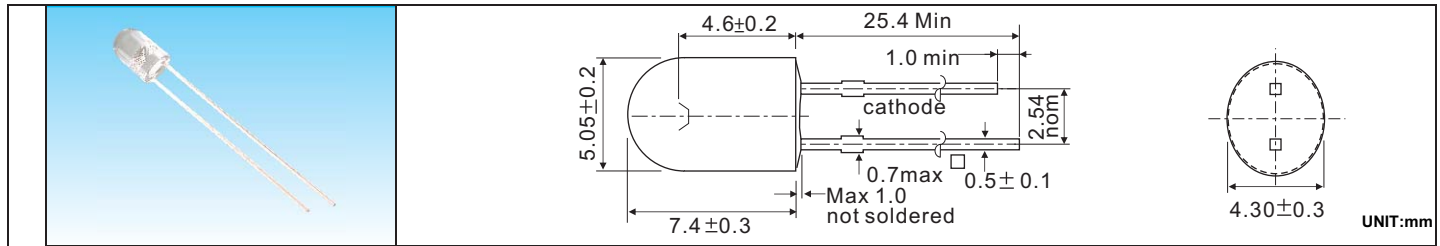
Extra Bright LEDs



Oval Type

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	



oval φ	HB4Q-433CG-C	super yellow green	Water clear	570	567	2.15	75	200	100/40
	HB4Q-433EBA-C	cyan		502	505	3.20	1500	1850	
	HB4Q-433EAGD-C	pure green		523	525	3.20	1800	2500	
	HB4Q-434FY-C	super yellow		592	590	2.00	500	1200	110/40
	HB4Q-434UY-C	super yellow		592	590	2.10	800	1500	
	HB4Q-434WY-C	super yellow		592	590	2.10	900	1800	
	HB4Q-434HY-C	super yellow		592	590	2.10	1000	2000	100/40
	HB4Q-434SY-C	super yellow		592	590	2.25	900	1800	
	HB4Q-435FO-C	super orange		620	615	2.00	600	1200	
	HB4Q-435AOR-C	super fresh red		635	625	2.00	450	1000	100/40
	HB4Q-435SOR-C	super fresh red		638	629	2.25	800	1500	
	HB4Q-436ARA-C	super deep red		660	645	1.86	200	900	
	HB4Q-436UOR-C	super fresh red		635	625	2.10	800	1500	110/40
	HB4Q-436WOR-C	super fresh red		635	625	2.10	900	1800	
	HB4Q-436HOR-C	super fresh red		635	625	2.10	1000	2000	
	HB4Q-437HA-C	super amber		607	605	2.10	1400	2800	100/40
	HB4Q-438ABD-C	blue		462	465	3.30	600	1200	

IV1:Labsphere LED-1100 IV2:EXELTRON 2001.


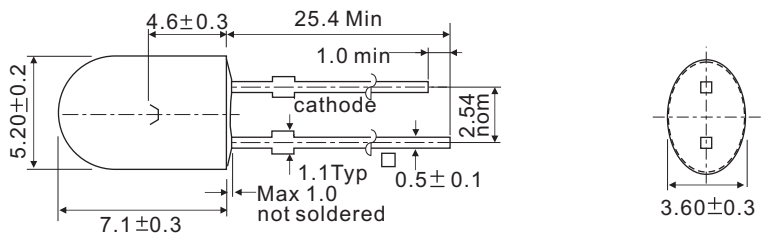


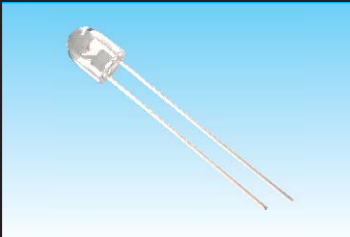
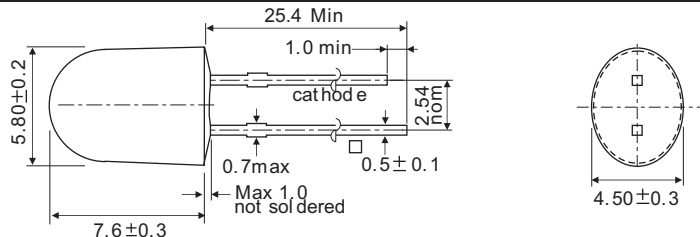
Extra Bright LEDs

Oval Type

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd	Typical (V)	IV1	IV2	

oval φ									
	HB4RH-633EBA-C/P	cyan	Colored diffused	502	505	3.20	550	1100	110/50
	HB4RH-633EAGD-C/P	pure green		523	525	3.20	1000	2000	
	HB4RH-635AOR-C/P	super fresh red		635	625	2.00	300	600	
	HB4RH-636UOR-C/P	super fresh red		635	625	2.10	450	900	
	HB4RH-636WOR-C/P	super fresh red		635	625	2.10	500	1000	
	HB4RH-638ABD-C/P	blue		462	465	3.30	450	900	

oval φ									
	HB5RH-433CG	super yellow green	Water clear	570	567	2.15	175	600	70/25
	HB5RH-433EBA	cyan		502	505	3.20	4500	5000	
	HB5RH-433EAGD	pure green		523	525	3.20	5000	6000	
	HB5RH-434FY	super yellow		592	590	2.00	1500	3800	65/25
	HB5RH-434SY	super yellow		592	590	2.25	2500	5000	
	HB5RH-434UY	super yellow		592	590	2.10	2600	5100	
	HB5RH-434WY	super yellow		592	590	2.10	2800	5500	70/25
	HB5RH-434HY	super yellow		592	590	2.10	3000	6000	
	HB5RH-435FO	super orange		620	615	2.00	1800	3800	
	HB5RH-435AOR	super fresh red		635	625	2.00	1300	3300	65/25
	HB5RH-435SOR	super fresh red		638	629	2.25	3500	4300	
	HB5RH-436ARA	super deep red		660	645	1.86	1400	2700	
	HB5RH-436UOR	super fresh red		635	625	2.10	2500	5000	70/25
	HB5RH-436WOR	super fresh red		635	625	2.10	3000	5500	
	HB5RH-436HOR	super fresh red		635	625	2.10	3200	6400	
	HB5RH-437HA	super amber		607	605	2.10	4600	9200	70/25
	HB5RH-438ABD	blue		462	465	3.30	1400	2700	

IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

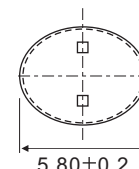
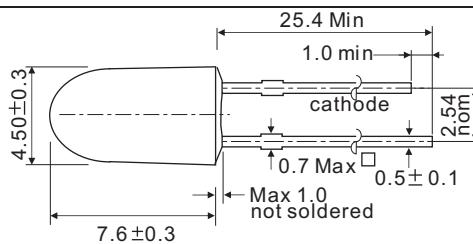
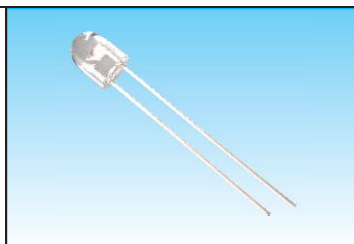
Extra Bright LEDs



Oval Type

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	



UNIT:mm

oval φ	HB5RV-433CG	super yellow green	Water clear	570	567	2.15	175	600	25/70
	HB5RV-433EBA	cyan		502	505	3.20	4500	5000	
	HB5RV-433EAGD	pure green		523	525	3.20	5000	6000	
	HB5RV-434FY	super yellow		592	590	2.00	1500	3800	25/65
	HB5RV-434SY	super Yellow		592	590	2.25	2500	5000	
	HB5RV-434UY	super yellow		592	590	2.10	2600	5100	
	HB5RV-434WY	super yellow		592	590	2.10	2800	5600	25/70
	HB5RV-434HY	super yellow		592	590	2.10	3000	6000	
	HB5RV-435FO	super orange		620	615	2.00	1800	3800	
	HB5RV-435AOR	super fresh red		635	625	2.00	1300	3300	25/65
	HB5RV-435SOR	super fresh red		638	629	2.20	3500	4300	
	HB5RV-436ARA	super deep red		660	645	1.86	1400	2700	
	HB5RV-436UOR	super fresh red		635	625	2.10	2500	5000	25/70
	HB5RV-436WOR	super fresh red		635	625	2.10	3000	5500	
	HB5RV-436HOR	super fresh red		635	625	2.10	3200	6300	
	HB5RV-437HA	super amber		607	605	2.10	4500	9000	25/70
	HB5RV-438ABD	blue		462	465	3.30	1400	2700	

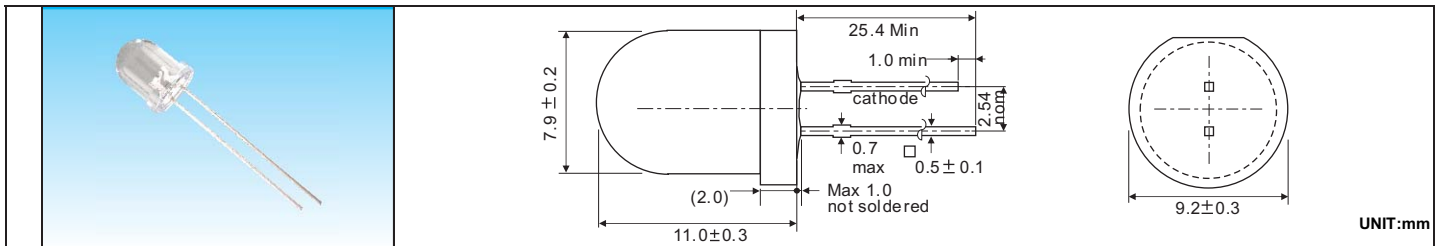
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.



Extra Bright LEDs

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λ _p	λ _d		IV1	IV2	



φ 8	HB8a-433CG	yellow green	Water clear	570	567	2.15	160	600	30	
	HB8a-433BG	super yellow green		575	572	2.20	600	1600	25	
	HB8a-433EBA	cyan		502	505	3.20	3500	4000	30	
	HB8a-433EAGD	pure green		523	525	3.20	4000	5000		
	HB8a-434FY	super yellow		592	590	2.00	1800	3600	25	
	HB8a-434UY	super yellow		592	590	2.10	1900	3800		
	HB8a-434WY	super yellow		592	590	2.10	2000	4000		
	HB8a-434SY	super yellow		592	590	2.25	2200	4500		
	HB8a-434HY	super yellow		592	590	2.10	2500	5000		
	HB8a-435FO	super orange		620	615	2.00	1800	3600		
	HB8a-435AOR	super fresh red		635	625	2.00	1000	3000	25	
	HB8a-435SOR	super fresh red		638	629	2.25	2400	4500		
	HB8a-436ARA	super deep red		660	645	1.86	850	2200		30
	HB8a-436UOR	super fresh red		635	625	2.10	2000	3800		25
	HB8a-436WOR	super fresh red		635	625	2.10	2100	4200		
	HB8a-436HOR	super fresh red		635	625	2.10	2400	4800		
	HB8a-437HA	super amber		607	605	2.10	3500	7000	35	
	HB8a-438ABD	blue		462	465	3.30	1200	2250		

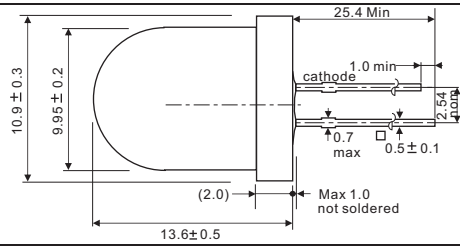
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

Extra Bright LEDs



IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	



UNIT:mm

φ 1 0	HB10-433CG	yellow green	Water clear	570	567	2.15	150	500	40
	HB10-433BG	super yellow green		575	572	2.20	500	1300	
	HB10-433EBA	cyan		502	505	3.20	1500	3000	
	HB10-433EAGD	pure green		523	525	3.20	1900	3800	
	HB10-434FY	super yellow		592	590	2.00	1000	2000	
	HB10-434SY	super yellow		592	590	2.25	1200	2400	
	HB10-434UY	super yellow		592	590	2.10	1250	2500	
	HB10-434WY	super yellow		592	590	2.10	1400	2800	
	HB10-434HY	super yellow		592	590	2.10	1500	3000	
	HB10-435FO	super orange		620	615	2.00	1400	2000	
	HB10-435AOR	super fresh red		635	625	2.00	1000	1800	
	HB10-435SOR	super fresh red		638	629	2.25	1200	2400	
	HB10-436ARA	super deep red		660	645	1.86	800	1500	
	HB10-436UOR	super fresh red		635	625	2.10	1200	2500	
	HB10-436WOR	super fresh red		635	625	2.10	1400	2800	
	HB10-436HOR	super fresh red		635	625	2.10	1600	3100	
	HB10-437HA	super amber		607	605	2.10	2200	4500	
	HB10-438ABD	blue		462	465	3.30	1000	1700	


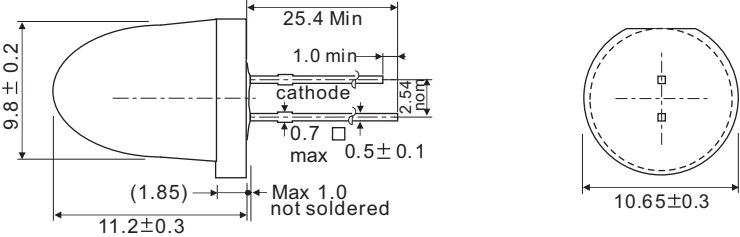
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.



Extra Bright LEDs

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF	Brightness (mcd)		View
	Emitter	Lens	λ_p	λ_d	Typical (V)	IV1	IV2	Angle 2 θ 1/2

									
φ 1 0	HB10b-433CG	yellow green	Water clear	570	567	2.15	1300	1500	10
	HB10b-433BG	super yellow green		575	572	2.20	2700	4000	7
	HB10b-433EBA	cyan		502	505	3.20	7500	13000	
	HB10b-433EAGD	pure green		523	525	3.20	8000	16000	8
	HB10b-434FY	super yellow		592	590	2.00	5600	11200	7
	HB10b-434SY	super yellow		592	590	2.25	6000	11800	
	HB10b-434UY	super yellow		592	590	2.10	6500	12500	
	HB10b-434WY	super yellow		592	590	2.10	6800	13500	
	HB10b-434HY	super yellow		592	590	2.10	7200	14500	
	HB10b-435FO	super orange		620	615	2.00	5600	11200	
	HB10b-435AOR	super fresh red		635	625	2.00	5000	10000	
	HB10b-435SOR	super fresh red		638	629	2.25	9000	18000	
	HB10b-436ARA	super deep red		660	645	1.86	2500	8500	10
	HB10b-436UOR	super fresh red		635	625	2.10	6000	12000	7
	HB10b-436WOR	super fresh red		635	625	2.10	7000	13500	
	HB10b-436HOR	super fresh red		635	625	2.10	8000	16000	
	HB10b-437HA	super amber		607	605	2.10	13000	25000	
	HB10b-438ABD	blue			462	465	3.30	4000	8000

IV1:Labsphere LED-1100 IV2:EXELTRON 2001.