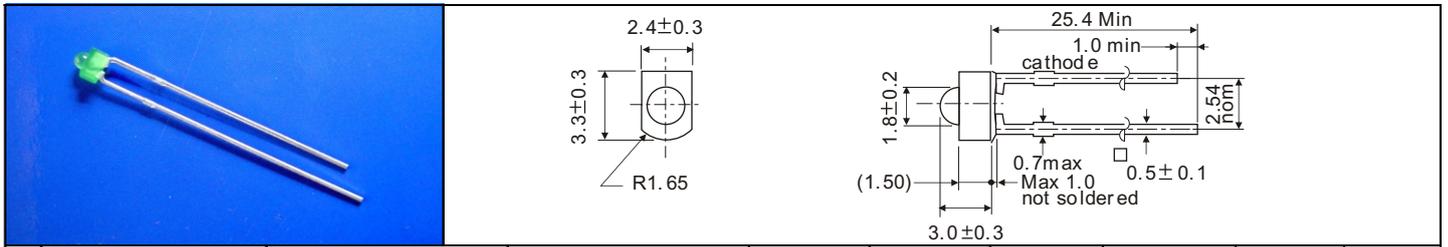


# Normal Indicator LEDs

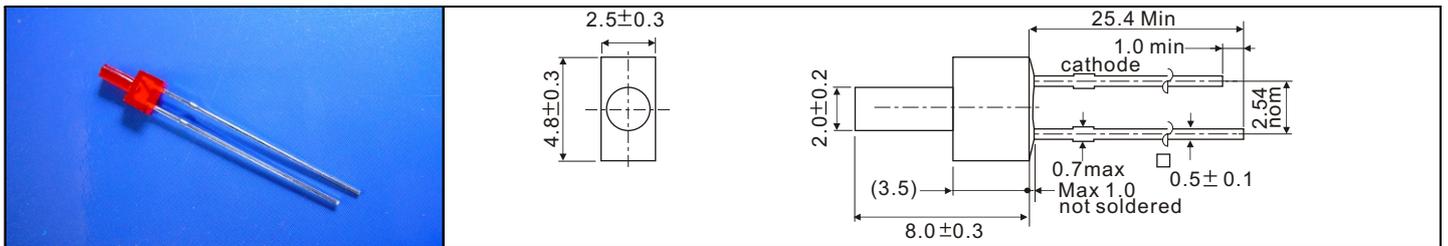
Step Type LEDs

IF=20mA Ta=25°C

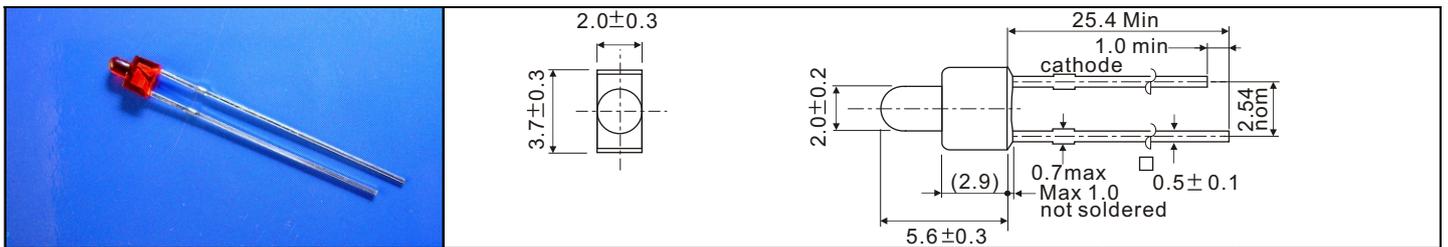
Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	



φ 1. 8	HS2-142	hi-red	colored diffused	700	658	2.20	1.0	1.0	55
	HS2-145R	hi-eff red	colored diffused	625	618	2.05	10.0	10.0	
	HS2-143	yellow green	colored diffused	570	567	2.15	15.0	15.0	
	HS2-144	yellow	colored diffused	589	585	2.10	8.0	8.0	
	HS2-145	orange	colored diffused	625	618	2.05	10.0	10.0	
	HS2-446AR	super red	water clear	660	645	1.90	800.0	800.0	30



φ 2	HS2N-132	hi-red	colored diffused	700	658	2.20	0.8	0.8	125
	HS2N-135R	hi-eff red	colored diffused	625	618	2.05	7.0	7.0	
	HS2N-133	yellow green	colored diffused	570	567	2.15	7.0	7.0	
	HS2N-134	yellow	colored diffused	589	585	2.10	6.0	6.0	
	HS2N-135	orange	colored diffused	625	618	2.05	7.0	7.0	



φ 2	HS3-142	hi-red	colored diffused	700	658	2.20	1.7	1.9	30
	HS3-145R	hi-eff red	colored diffused	625	618	2.05	11.0	11.0	
	HS3-143	yellow green	colored diffused	570	567	2.15	12.0	12.0	
	HS3-144	yellow	colored diffused	589	585	2.10	10.0	10.0	
	HS3-145	orange	colored diffused	625	618	2.05	11.0	11.0	
	HS3-146DR	super red	colored diffused	660	645	1.80	45.0	45.0	

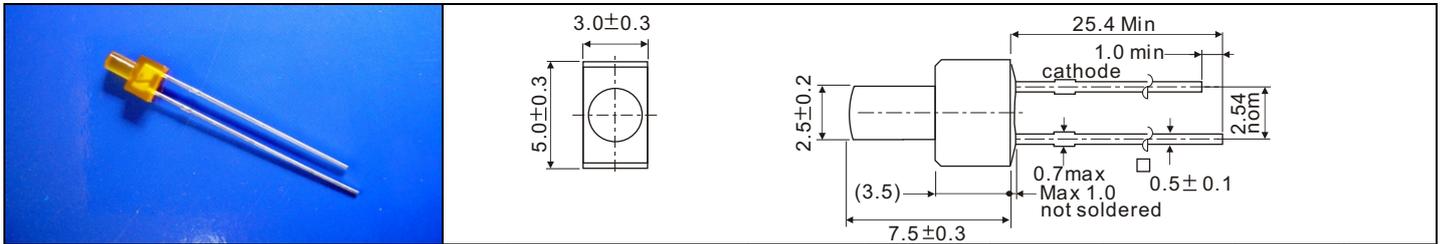
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

# Normal Indicator LEDs

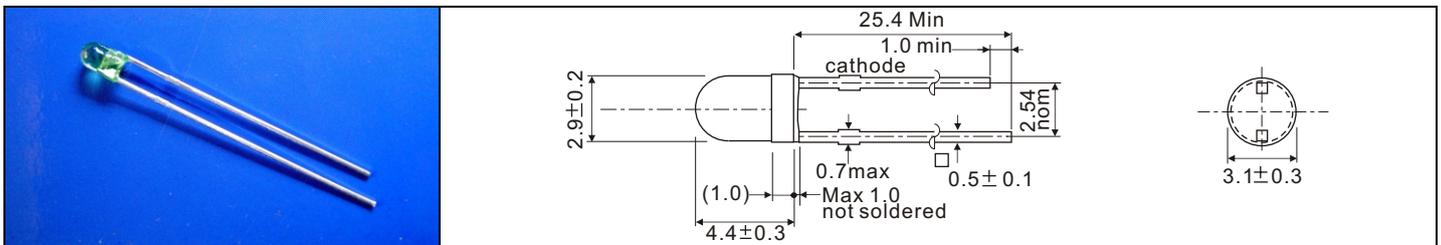
Step & 3mm Round type LEDs

IF=20mA Ta=25°C

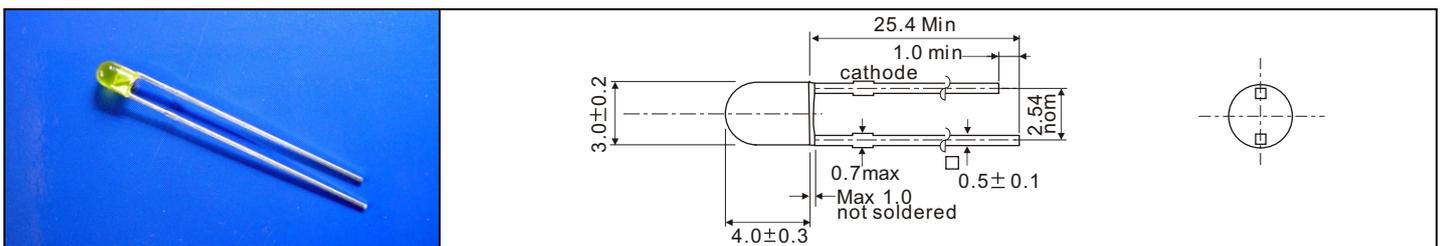
Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	



φ 2.5	HS5-132	hi-red	colored diffused	700	658	2.20	2.9	1.2	60
	HS5-135R	hi-eff red	colored diffused	625	618	2.05	20.0	12.0	
	HS5-133	yellow green	colored diffused	570	567	2.15	30.0	15.0	
	HS5-134	yellow	colored diffused	589	585	2.10	20.0	12.0	
	HS5-135	orange	colored diffused	625	618	2.05	20.0	12.0	
	HS5-136DR	super red	colored diffused	660	643	1.80	40.0	50.0	



φ 3	HB3J-142	hi-red	colored diffused	700	658	2.20	5.0	5.0	60
	HB3J-145R	hi-eff red	colored diffused	625	618	2.05	50.0	35.0	
	HB3J-143	yellow green	colored diffused	570	567	2.15	50.0	40.0	
	HB3J-144	yellow	colored diffused	589	585	2.10	40.0	30.0	
	HB3J-145	orange	colored diffused	625	618	2.05	50.0	35.0	
	HB3J-146ARA/P	super red	colored diffused	660	645	1.86	100.0	200.0	



φ 3	HB3N-142	hi-red	colored diffused	700	658	2.20	5.0	5.0	60
	HB3N-145R	hi-eff red	colored diffused	625	618	2.05	50.0	35.0	
	HB3N-143	yellow green	colored diffused	570	567	2.15	50.0	40.0	
	HB3N-144	yellow	colored diffused	589	585	2.10	40.0	30.0	
	HB3N-145	orange	colored diffused	625	618	2.05	50.0	35.0	
	HB3N-146CR	super red	colored diffused	660	643	1.8	50.0	130.0	
	HB3N-242	hi-red	colored transparent	700	658	2.20	15.0	15.0	50
	HB3N-243	yellow green	colored transparent	570	567	2.15	150.0	125.0	
	HB3N-243CG	yellow green	colored transparent	570	567	2.15	550.0	500.0	
	HB3N-244	yellow	colored transparent	589	585	2.10	125.0	95.0	
	HB3N-246CR	super red	colored transparent	660	643	1.80	500.0	400.0	

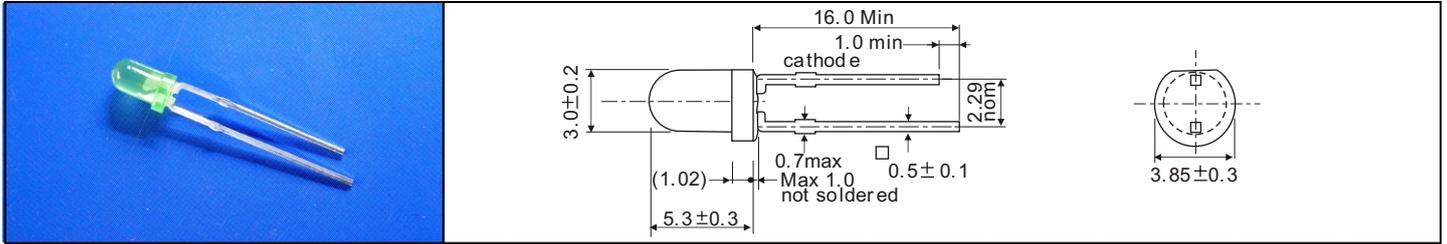
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

# Normal Indicator LEDs

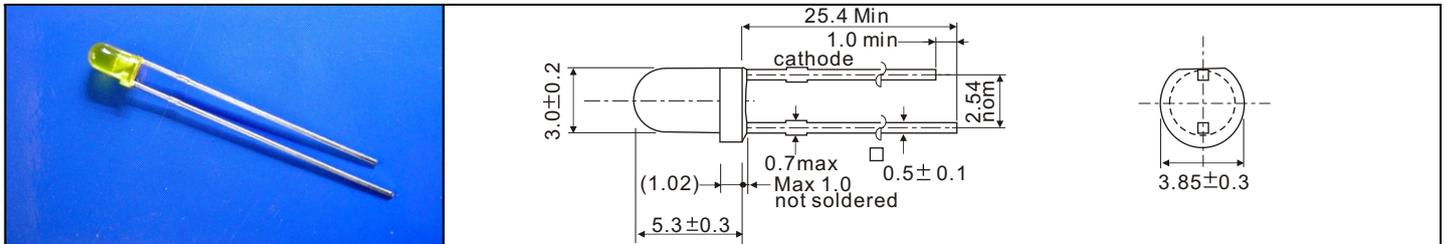
Standard Diameter 3mm type LEDs

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 3	HB3b-122	hi-red	colored diffused	700	658	2.20	3.5	5.0	50
	HB3b-125R	hi-eff red	colored diffused	625	618	2.05	18.0	15.0	
	HB3b-123	yellow green	colored diffused	570	567	2.15	25.0	25.0	
	HB3b-124	yellow	colored diffused	589	585	2.10	15.0	15.0	
	HB3b-125	orange	colored diffused	625	618	2.05	12.0	15.0	



φ 3	HB3b-142	hi-red	colored diffused	700	658	2.20	5.0	5.0	40	
	HB3b-145R	hi-eff red	colored diffused	625	618	2.05	50.0	35.0		
	HB3b-143	yellow green	colored diffused	570	567	2.15	50.0	40.0		
	HB3b-144	yellow	colored diffused	589	585	2.10	40.0	30.0		
	HB3b-945	orange	colored diffused	625	618	2.05	50.0	35.0		
	HB3b-147	Amber	colored diffused	610	607	2.05	50.0	30.0		
	φ 3	HB3b-242	hi-red	color transparent	700	658	2.20	10.0	8.0	24
		HB3b-245R	hi-eff red	color transparent	625	618	2.05	90.0	50.0	
		HB3b-243	yellow green	color transparent	570	567	2.15	120.0	80.0	
		HB3b-244	yellow	color transparent	589	585	2.10	90.0	50.0	
HB3b-245		orange	color transparent	625	618	2.05	90.0	50.0		
HB3b-246CR		super red	color transparent	660	643	1.8	650.0	900.0		
HB3b-442		hi-red	water clear	700	658	2.20	10.0	8.0		
HB3b-443		yellow green	water clear	570	567	2.15	120.0	80.0		
HB3b-444	yellow	water clear	589	585	2.10	90.0	50.0			
HB3b-445	hi-eff red	water clear	625	618	2.05	90.0	50.0			

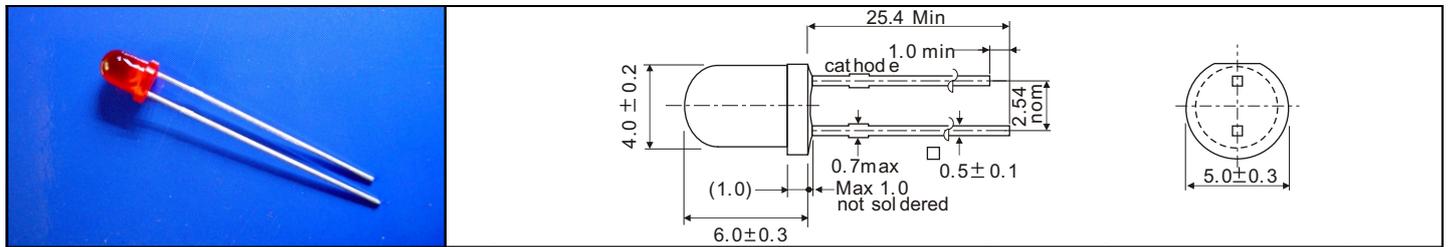
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

# Normal Indicator LEDs

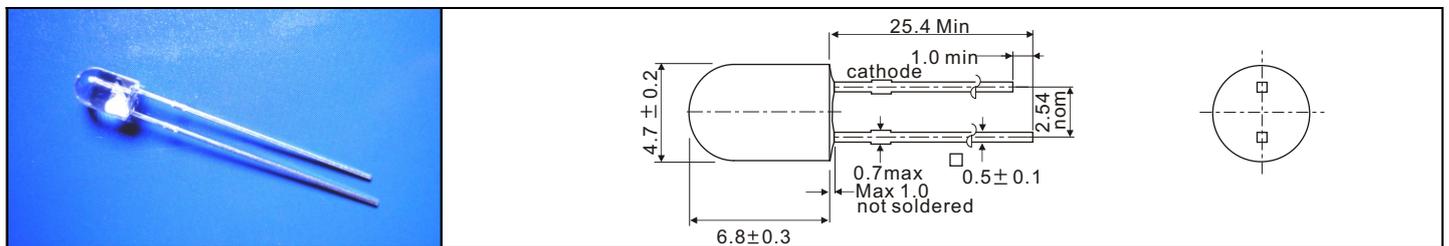
4mm & 4.7mm Round type LEDs

IF=20mA Ta=25°C

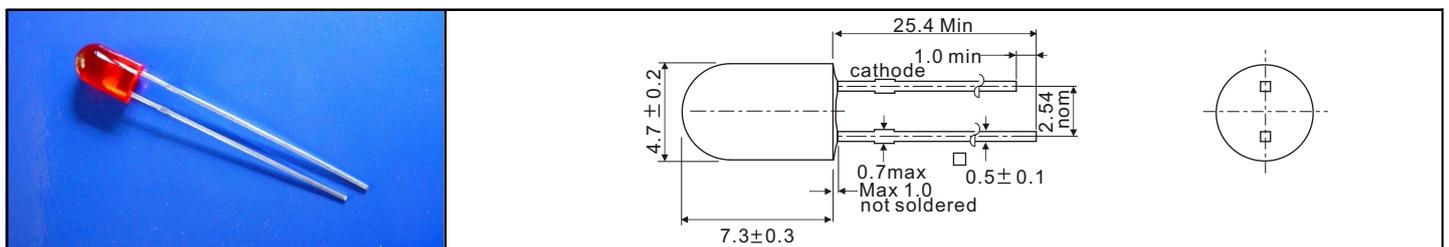
Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	



φ 4	HB4a-132	hi-red	colored diffused	700	658	2.20	5.0	20.0	40
	HB4a-135R	hi-eff red	colored diffused	625	618	2.05	55.0	45.0	
	HB4a-133	yellow green	colored diffused	570	567	2.15	55.0	50.0	
	HB4a-134	yellow	colored diffused	589	585	2.10	45.0	40.0	
	HB4a-135	orange	colored diffused	625	618	2.05	55.0	45.0	
	HB4a-233	yellow green	colored transparent	570	567	2.15	90.0	80.0	30
	HB4a-234	yellow	colored transparent	589	585	2.10	70.0	60.0	25
	HB4a-236DR	super red	colored transparent	660	643	1.80	300.0	250.0	30
	HB4a-636DR	super red	pink transparent	660	643	1.80	300.0	250.0	
	HB4a-436CR	super red	water clear	660	643	1.80	570.0	500.0	



φ 4	HB4b-436DR	super red	water clear	660	643	1.80	300.0	250.0	30
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φ 4.7	HB4-132	hi-red	colored diffused	700	658	2.20	5.0	5.0	50
	HB4-135R	hi-eff red	colored diffused	625	618	2.05	20.0	18.0	
	HB4-133	yellow green	colored diffused	570	567	2.15	25.0	20.0	
	HB4-433DG	yellow green	water clear	570	567	2.15	130.0	130.0	40
	HB4-134	yellow	colored diffused	589	585	2.10	18.0	15.0	50
	HB4-135	orange	colored diffused	625	618	2.05	20.0	18.0	
	HB4-436DR	super red	water clear	660	645	1.80	300.0	300.0	30
	HB4-436CR	super red	water clear	660	645	1.80	600.0	600.0	

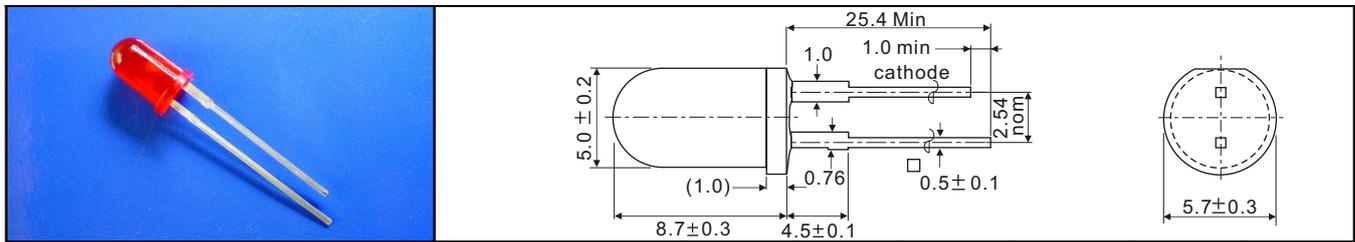
IV1: Labsphere LED-1100 IV2: EXELTRON 2001.

# Normal Indicator LEDs

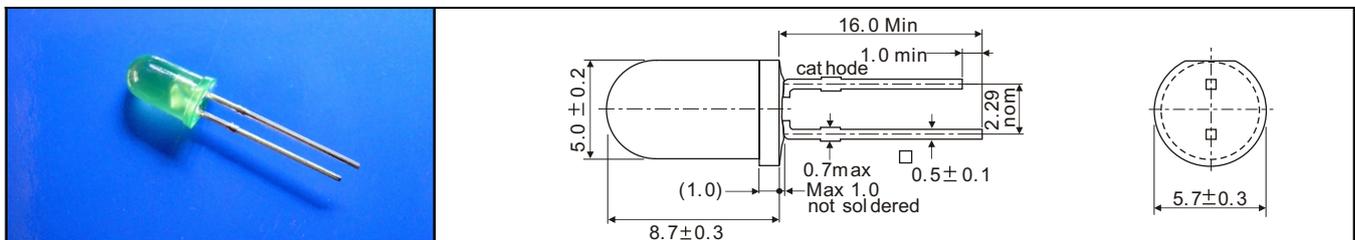
5mm Round type LEDs

IF=20mA Ta=25°C

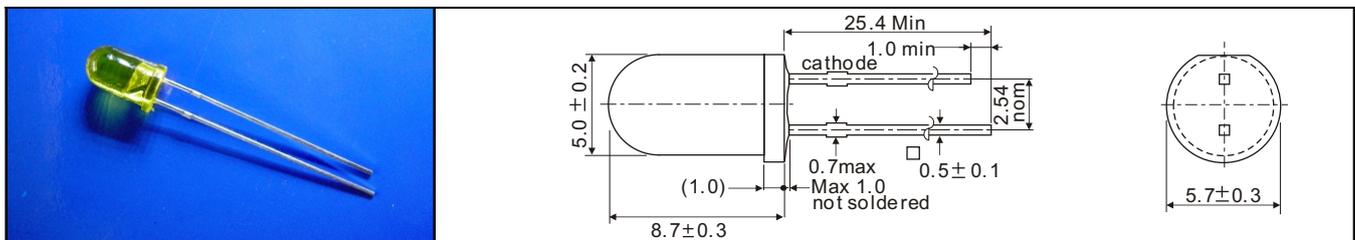
Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ/1/2
	Emitter	Lens	λp	λd		IV1	IV2	



φ 5	HB5-112	hi-red	colored diffused	700	658	2.20	0.9	3.0	50
	HB5-115R	hi-eff red	colored diffused	625	618	2.05	10.0	11.0	
	HB5-113	yellow green	colored diffused	570	567	2.15	20.0	12.0	
	HB5-114	yellow	colored diffused	589	585	2.10	15.0	10.0	
	HB5-115	orange	colored diffused	625	618	2.05	10.0	11.0	



φ 5	HB5-122	hi-red	colored diffused	700	658	2.20	3.5	1.5	40
	HB5-123	yellow green	colored diffused	570	567	2.15	20.0	12.0	
	HB5-124	yellow	colored diffused	589	585	2.10	18.0	10.0	



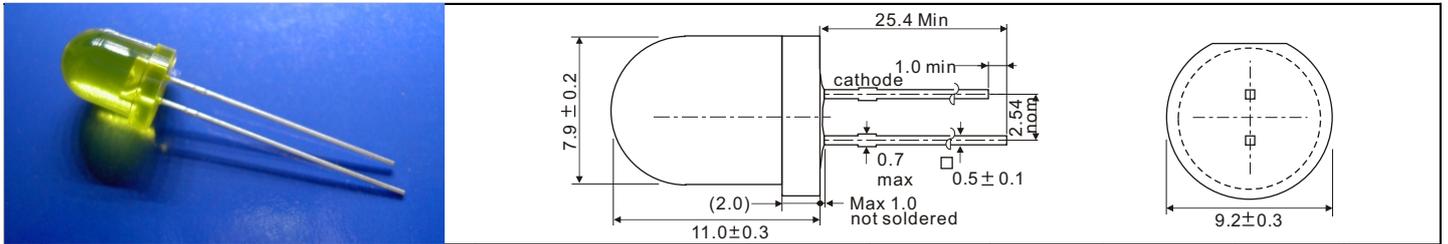
φ 5	HB5-132	hi-red	colored diffused	700	658	2.20	6.5	6.5	30
	HB5-232		colored transparent	700	658	2.20	20.0	8.0	15
	HB5-135R	hi-eff red	colored diffused	625	618	2.05	70.0	60.0	30
	HB5-235R		colored transparent	625	618	2.05	160.0	120.0	15
	HB5-435		water clear	625	618	2.05	160.0	120.0	15
	HB5-133	yellow green	colored diffused	570	567	2.15	80.0	80.0	30
	HB5-233		colored transparent	570	567	2.15	230.0	150.0	15
	HB5-433		water clear	570	567	2.15	230.0	150.0	15
	HB5-134	yellow	colored diffused	589	585	2.10	70.0	50.0	30
	HB5-234		colored transparent	589	585	2.10	140.0	100.0	15
	HB5-434		water clear	589	585	2.10	140.0	100.0	15
	HB5-135	orange	colored diffused	625	618	2.05	70.0	60.0	30
	HB5-235		colored transparent	625	618	2.05	180.0	120.0	15
	HB5-137	amber	colored diffused	610	607	2.05	60.0	50.0	30

# Normal Indicator LEDs

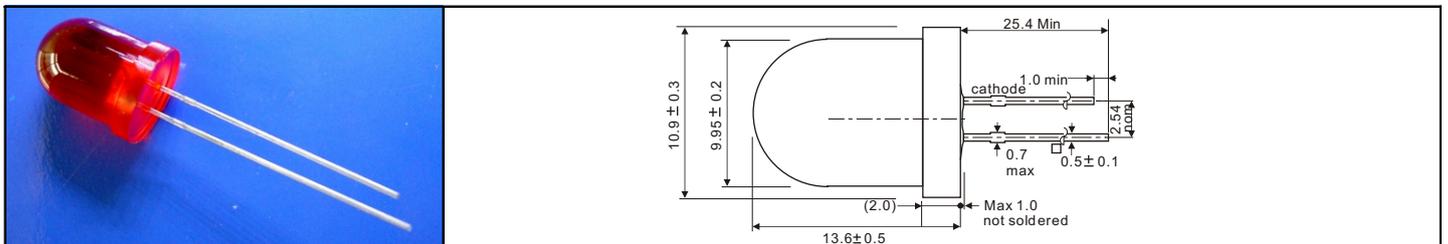
8,10mm Round & Cup type LEDs

IF=20mA Ta=25°C

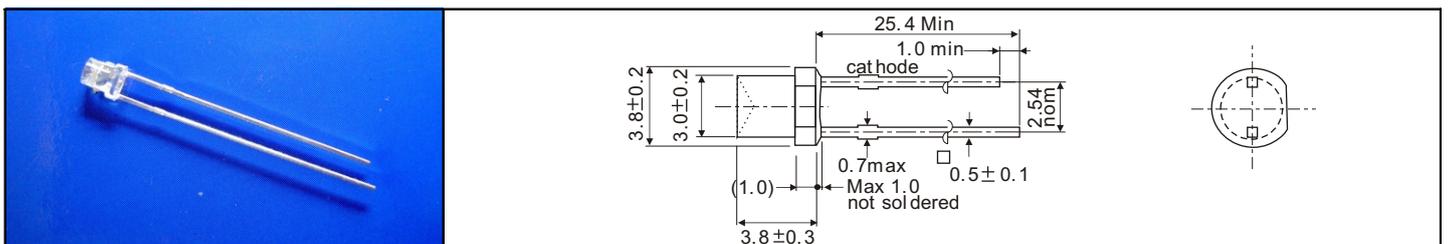
Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	



φ 8	HB8a-132	hi red	colored diffused	700	658	2.20	1.0	2.0	45
	HB8a-133	yellow green	colored diffused	570	567	2.15	15.0	20.0	
	HB8a-134	yellow	colored diffused	589	585	2.10	18.0	20.0	
	HB8a-135 R	orange	colored diffused	625	618	2.05	18.0	16.0	



φ 10	HB10-132	hi red	colored diffused	700	658	2.20	1.0	2.0	50
	HB10-133	yellow green	colored diffused	570	567	2.15	15.0	20.0	
	HB10-134	yellow	colored diffused	590	585	2.10	18.0	20.0	
	HB10-434	yellow	water clear	590	585	2.10	30.0	50.0	40
	HB10-135R	orange	colored diffused	625	618	2.05	18.0	16.0	50



φ 3 back light	HB3C-242	hi-red	colored transparent	700	658	2.20	0.8	1.0	180
	HB3C-245R	hi-eff red	colored transparent	625	618	2.05	6.0	14.0	
	HB3C-443	yellow green	water clear	570	567	2.15	10.0	15.0	
	HB3C-243	yellow green	colored transparent	570	567	2.15	10.0	15.0	
	HB3C-243DG	yellow green	colored transparent	570	567	2.15	10.0	20.0	
	HB3C-244	yellow	colored transparent	590	585	2.10	5.0	13.0	
	HB3C-245	orange	colored transparent	625	618	2.05	6.0	14.0	
	HB3C-246DR	super red	colored transparent	660	643	1.80	8.0	20.0	
	HB3C-445	orange	water clear	625	618	2.05	6.0	14.0	

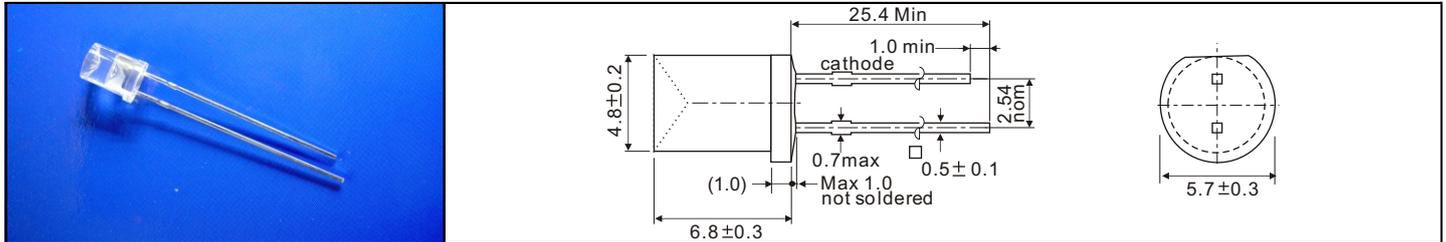
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

# Normal Indicator LEDs

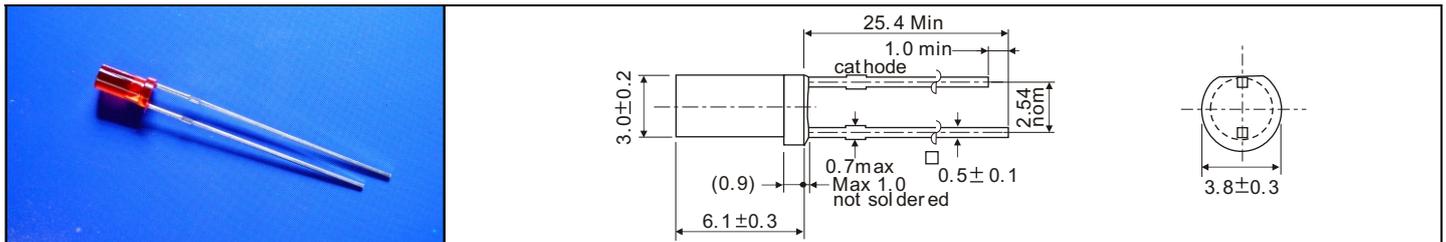
Cup & Cylindrical type LEDs

IF=20mA Ta=25°C

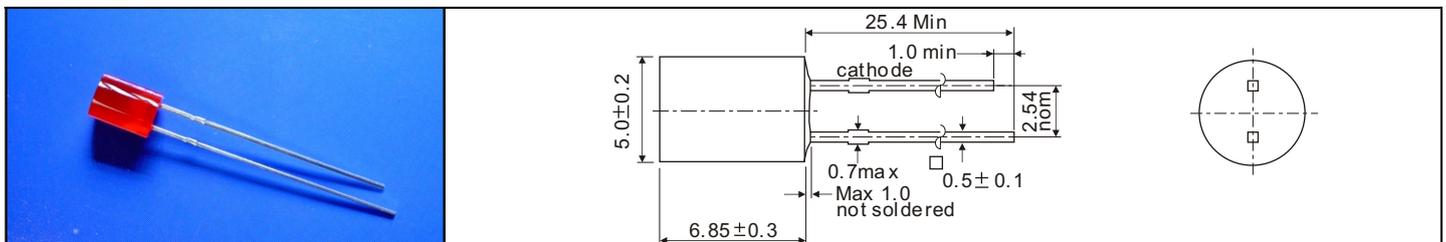
Device No	Color		Wavelength (nm)		VF Typical (V)	Brightness (mcd)		View Angle 2θ1/2
	Emitter	Lens	λp	λd		IV1	IV2	



φ 4.8 back light	HB5C-232	hi-red	colored transparent	700	658	2.20	0.6	1.0	135
	HB5C-235R	hi-eff red	colored transparent	625	618	2.05	6.0	9.0	
	HB5C-233	yellow green	colored transparent	570	567	2.15	5.5	11.0	
	HB5C-443	yellow green	water clear	570	567	2.15	5.5	11.0	
	HB5C-234	yellow	colored transparent	590	585	2.10	5.0	8.0	
	HB5C-235	orange	colored transparent	625	618	2.05	6.0	9.0	
	HB5C-436DR	super red	water clear	660	643	1.80	6.5	12.0	



φ 3	HC3-142	hi-red	colored diffused	700	658	2.20	0.8	2.5	110
	HC3-342	hi-red	white diffused	700	658	2.20	0.8	2.5	
	HC3-145R	hi-eff red	colored diffused	625	618	2.05	9.0	9.0	
	HC3-146DR	super red	colored diffused	660	643	1.80	6.5	12.0	
	HC3-143	yellow green	colored diffused	570	567	2.15	11.0	11.0	
	HC3-144	yellow	colored diffused	589	585	2.10	8.0	8.0	
	HC3-145	orange	colored diffused	625	618	2.05	9.0	9.0	



φ 5	HC5-132	hi-red	colored diffused	700	658	2.20	0.8	0.8	140
	HC5-135R	hi-eff red	colored diffused	625	618	2.05	7.0	7.0	
	HC5-133	yellow green	colored diffused	570	567	2.15	9.0	9.0	
	HC5-134	yellow	colored diffused	589	585	2.10	7.0	7.0	
	HC5-135	orange	colored diffused	625	618	2.05	7.0	7.0	

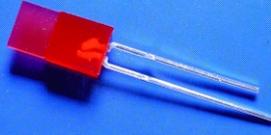
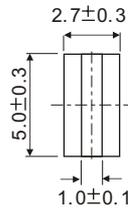
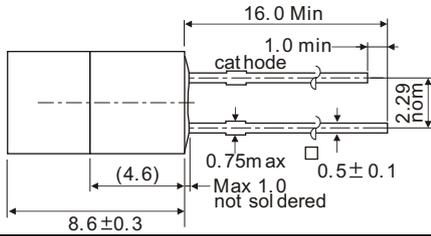
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

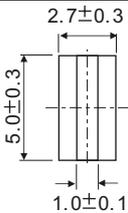
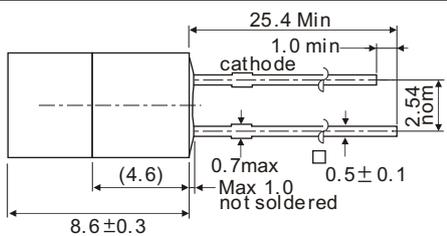
# Normal Indicator LEDs

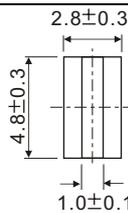
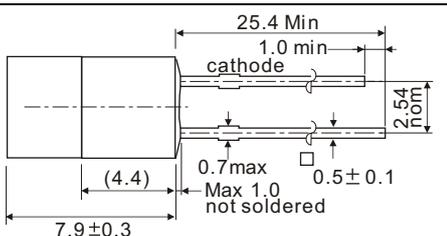
Rectangular type LEDs

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	

1x5.0									
	HR1-122	hi-red	colored diffused	700	658	2.20	0.3	1.0	120
	HR1-125R	hi-eff red	colored diffused	625	618	2.05	5.0	7.0	
	HR1-123	yellow green	colored diffused	570	567	2.15	3.0	8.0	
	HR1-124	yellow	colored diffused	589	585	2.10	5.0	6.0	
	HR1-125	orange	colored diffused	625	618	2.05	5.0	7.0	

1x5.0									
	HR1-132	hi-red	colored diffused	700	658	2.20	0.6	1.0	120
	HR1-135R	hi-eff red	colored diffused	625	618	2.05	6.0	7.0	
	HR1-133	yellow green	colored diffused	570	567	2.15	4.0	8.0	
	HR1-134	yellow	colored diffused	589	585	2.10	6.0	6.0	
	HR1-135	orange	colored diffused	625	618	2.05	6.0	7.0	

1x4.8									
	HR1b-132	hi-red	colored diffused	700	658	2.20	0.6	1.0	120
	HR1b-135R	hi-eff red	colored diffused	625	618	2.05	6.0	7.0	
	HR1b-133	yellow green	colored diffused	570	567	2.15	4.0	8.0	
	HR1b-134	yellow	colored diffused	589	585	2.10	6.0	6.0	
	HR1b-135	orange	colored diffused	625	618	2.05	6.0	7.0	

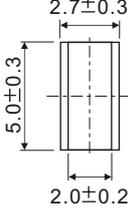
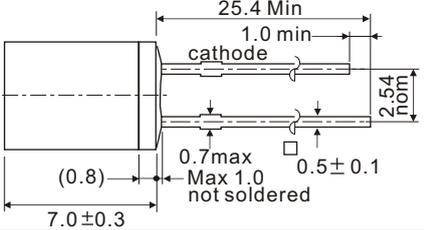
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

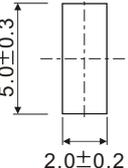
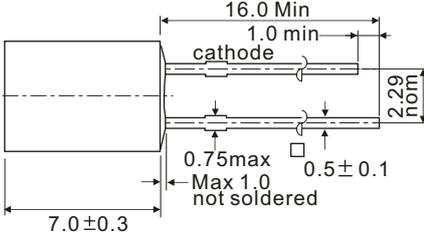
# Normal Indicator LEDs

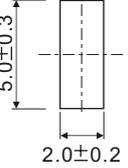
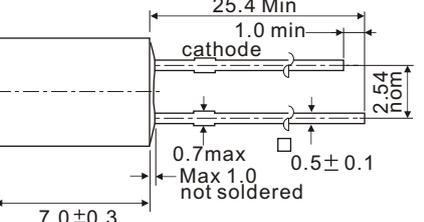
Rectangular type LEDs

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	

									
HR2-135R	hi-eff red	colored diffused	625	618	2.05	6.0	7.0		
HR2-133	yellow green	colored diffused	570	567	2.15	5.3	8.0		
HR2-134	yellow	colored diffused	589	585	2.10	6.0	6.0		
HR2-135	orange	colored diffused	625	618	2.05	6.0	7.0		

									
HR2N-125R	hi-eff red	colored diffused	625	618	2.05	5.0	5.0		
HR2N-123	yellow green	colored diffused	570	567	2.15	4.0	6.0		
HR2N-124	yellow	colored diffused	589	585	2.10	5.0	5.0		
HR2N-125	orange	colored diffused	625	618	2.05	5.0	5.0		

									
HR2N-135R	hi-eff red	colored diffused	625	618	2.05	6.0	7.0		
HR2N-133	yellow green	colored diffused	570	567	2.15	5.0	8.0		
HR2N-134	yellow	colored diffused	589	585	2.10	6.0	6.0		
HR2N-135	orange	colored diffused	625	618	2.05	6.0	7.0		

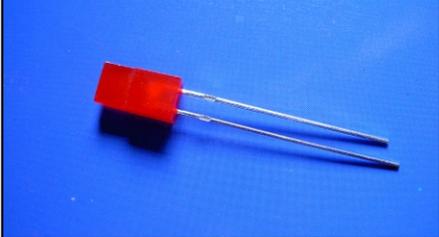
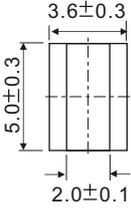
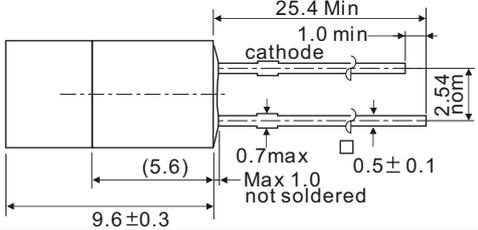
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

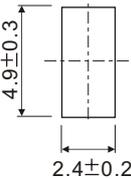
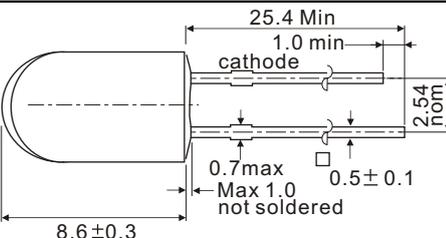
# Normal Indicator LEDs

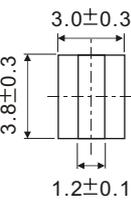
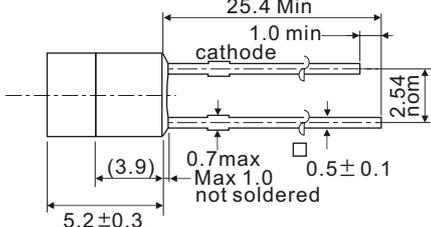
Rectangular type LEDs

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	

2X5.0									
	HR2a-132	hi-red	colored diffused	700	658	2.20	0.8	1.6	125
	HR2a-135R	hi-eff red	colored diffused	625	618	2.05	6.0	5.0	
	HR2a-133	yellow green	colored diffused	570	567	2.15	5.0	6.0	
	HR2a-134	yellow	colored diffused	589	585	2.10	6.0	4.0	
	HR2a-135	orange	colored diffused	625	618	2.05	6.0	5.0	

2.4X4.9									
	HRB2-432	hi-red	water clear	700	658	2.20	2.0	5.0	85
	HRB2-433	yellow green	water clear	570	567	2.15	30.0	50.0	
	HRB2-433CG	yellow green	water clear	570	567	2.15	70.0	150.0	
	HRB2-434	yellow	water clear	589	585	2.10	35.0	30.0	
	HRB2-435	orange	water clear	625	618	2.05	35.0	40.0	

1.2x3.8									
	HR3d-142	hi-red	colored diffused	700	658	2.20	1.0	1.2	120
	HR3d-145R	hi-eff red	colored diffused	625	618	2.05	7.0	8.0	
	HR3d-143	yellow green	colored diffused	570	567	2.15	8.0	10.0	
	HR3d-144	yellow	colored diffused	589	585	2.10	7.0	6.0	
	HR3d-145	orange	colored diffused	625	618	2.05	7.0	8.0	

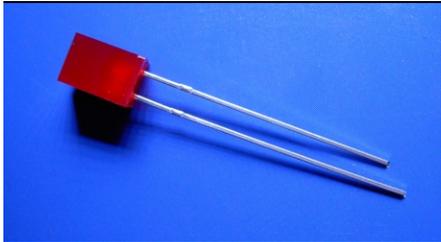
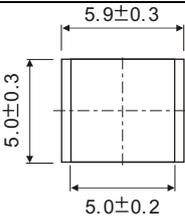
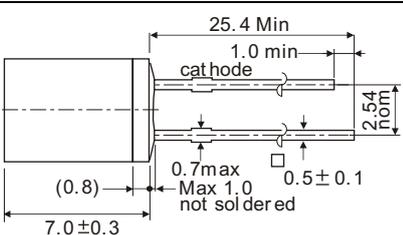
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

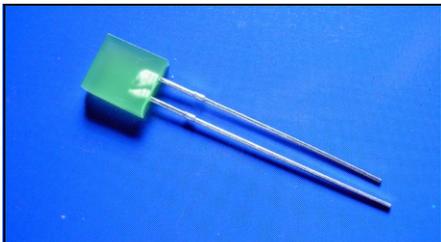
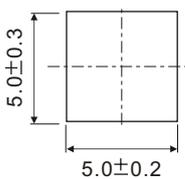
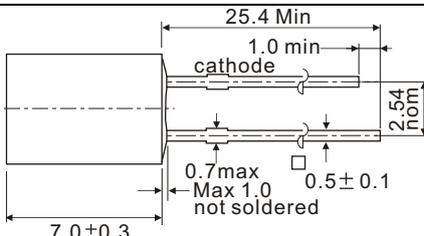
# Normal Indicator LEDs

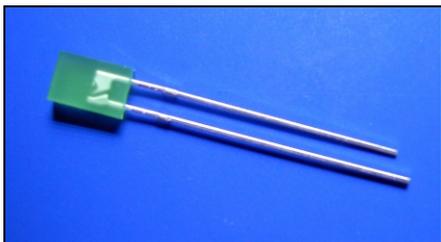
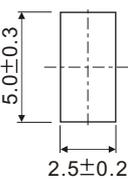
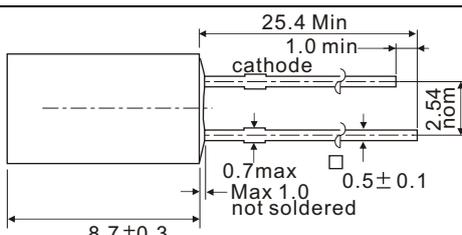
## Rectangular type LEDs

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	

5.0x5.0				HLR5-132	hi-red	colored diffused	700	658	2.20	0.7	0.6	110
	HLR5-135R	hi-eff red	colored diffused	625	618	2.05	9.0	6.0				
	HLR5-133	yellow green	colored diffused	570	567	2.15	4.5	7.0				
	HLR5-134	yellow	colored diffused	589	585	2.10	9.0	5.0				
	HLR5-135	orange	colored diffused	625	618	2.05	9.0	6.0				

5.0x5.0				HLR5N-132	hi-red	colored diffused	700	658	2.20	0.7	0.6	110
	HLR5N-135R	hi-eff red	colored diffused	625	618	2.05	9.0	6.0				
	HLR5N-133	yellow green	colored diffused	570	567	2.15	4.5	7.0				
	HLR5N-134	yellow	colored diffused	589	585	2.10	9.0	5.0				
	HLR5N-135	orange	colored diffused	625	618	2.05	9.0	6.0				

2.5x5.0				HR5b-132	hi-red	colored diffused	700	658	2.20	1.0	1.1	120
	HR5b-135R	hi-eff red	colored diffused	625	618	2.05	6.0	6.0				
	HR5b-133	yellow green	colored diffused	570	567	2.15	5.0	6.0				
	HR5b-134	yellow	colored diffused	589	585	2.10	6.0	5.5				
	HR5b-135	orange	colored diffused	625	618	2.05	6.0	6.0				

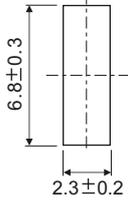
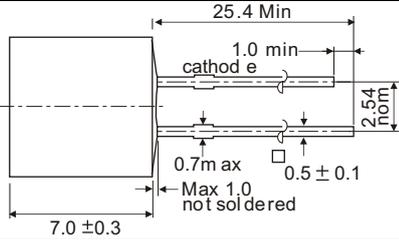
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

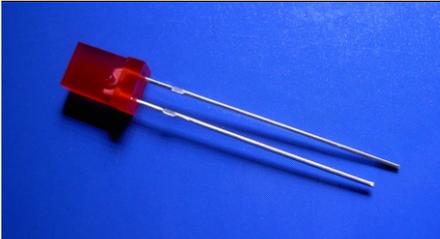
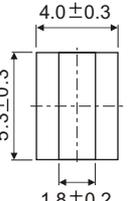
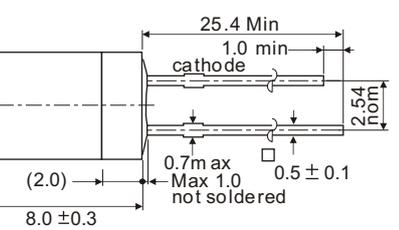
# Normal Indicator LEDs

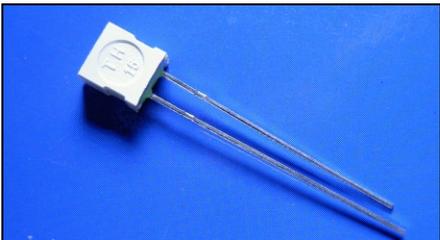
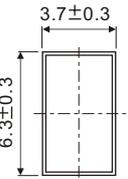
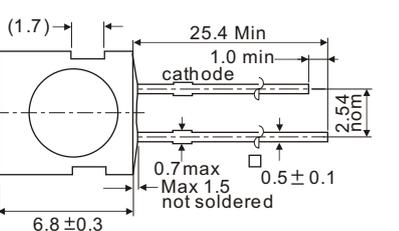
Rectangular type LEDs

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	

2.3x6.8									
	HR7-132	hi-red	colored diffused	700	658	2.20	0.8	1.0	110
	HR7-135R	hi-eff red	colored diffused	625	618	2.05	8.0	5.0	
	HR7-133	yellow green	colored diffused	570	567	2.15	7.0	7.0	
	HR7-134	yellow	colored diffused	589	585	2.10	8.0	4.0	
HR7-135	orange	colored diffused	625	618	2.05	8.0	5.0		

1.8x5.3									
	HR8-132	hi-red	colored diffused	700	658	2.20	1.0	1.1	120
	HR8-135R	hi-eff red	colored diffused	625	618	2.05	8.0	6.0	
	HR8-133	yellow green	colored diffused	570	567	2.15	9.0	6.0	
	HR8-134	yellow	colored diffused	589	585	2.10	8.0	5.5	
HR8-135	orange	colored diffused	625	618	2.05	8.0	6.0		

3.7x6.3									
	HR9a-132	hi-red	colored diffused	700	658	2.20	1.0	1.1	120
	HR9a-135R	hi-eff red	colored diffused	625	618	2.05	8.0	6.0	
	HR9a-133	yellow green	colored diffused	570	567	2.15	9.0	6.0	
	HR9a-134	yellow	colored diffused	589	585	2.10	8.0	5.5	
HR9a-135	orange	colored diffused	625	618	2.05	8.0	6.0		

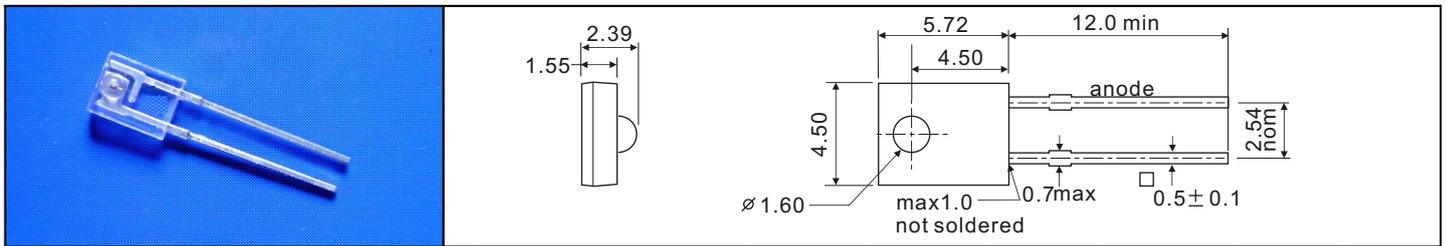
IV1:Labsphere LED-1100 IV2:EXELTRON 2001.

# Normal Indicator LEDs

## Rectangular type LEDs

IF=20mA Ta=25°C

Device No	Color		Wavelength (nm)		VF	Brightness (mcd)		View
	Emitter	Lens	$\lambda_p$	$\lambda_d$	Typical (V)	IV1	IV2	Angle 2 $\theta$ 1/2



side look	HB1b-485	hi-eff red	water clear	625	618	2.05	20.0	25.0	40
	HB1b-483	yellow green	water clear	570	567	2.15	25.0	27.0	
	HB1b-484	yellow	water clear	589	585	2.10	20.0	20.0	
	HB1b-486CR	super red	water clear	660	643	1.80	40.0	90.0	
	HB1b-486AR	super red	water clear	660	643	1.90	80.0	150.0	

IV1:Labsphere LED-1100 IV2:EXELTRON 2001.