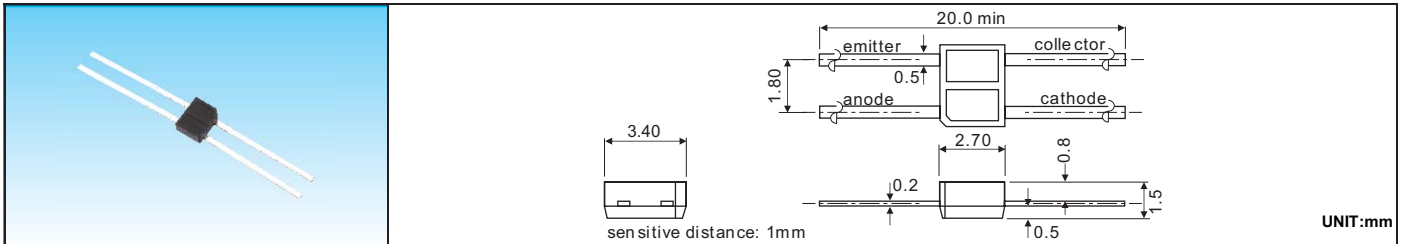




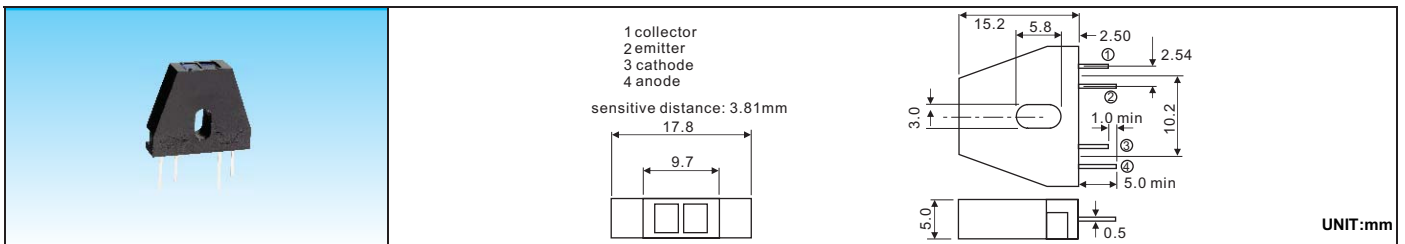
Reflector

Ta=25°C

Device No	Feature	Electro-optical Characteristics						
		Ic Min	IF	VCE	ICEOMax	Tr Typ	Tf Typ	VCE(sat)Max
		mA	mA	V	uA	us	us	V



HRS-CD	reflector distance 1mm	0.23	20	5	1.0	40	60	0.4
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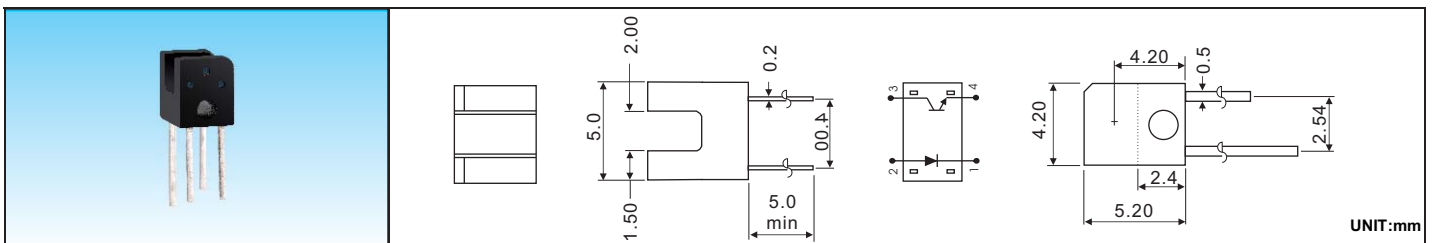
HRS-4C2D	reflector distance 3.81mm	3.35	20	5	3.0	40	60	0.4
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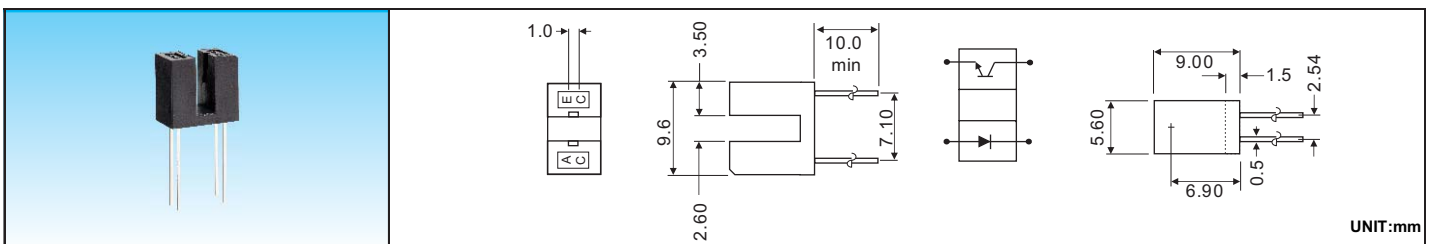
Photo Interrupter

Ta=25°C

Device No	Feature	Electro-optical Characteristics						
		Ic Min	IF	VCE	ICEOMax	Tr Typ	Tf Typ	VCE(sat)Max
		mA	mA	V	uA	us	us	V



HINT-2050	gap=2.0mm	1.0	20	5	0.5	10	10	0.4
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HINT-2600	gap=2.6mm	1.5	20	5	20	15	15	0.4
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Photo Interrupter



Ta=25°C

Device No	Feature	Electro-optical Characteristics							
		Ic Min	IF	VCE	ICEOMax	Tr Typ	Tf Typ	VCE(sat)Max	
		mA	mA	V	uA	us	us	V	
	gap=3.0mm		1.5	20	10	0.1	20	20	0.4
	gap=3.1mm		2	20	5	20	15	15	1.0
	gap=5.0mm		1.0	20	10	0.1	15	15	0.4
	gap=5.2mm		0.6	20	5	20	5	5	1.0

Infrared Products

Explanation of Part Number:

H I R B 5 - 4 3 D - C
 ① ② ③ ④ ⑤ ⑥ ⑦

1. Infrared products kinds:

HIR: infrared emitter.
 HPD: photo diode.
 HPT: photo transistor.

2. Shape distinguish:

B: bell (round) type.
 R: rectangular type.
 MIB: miniature bell type.
 CL: chip SMD type.

3. Identification No:

4. Lens appearance:

1: black (cut visible light).
 2: colored clear.
 4: water clear.

5. Lead frame type:

2: no reflector cup, short lead, 2.29mm pitch.
 3: big reflector cup, long lead, 2.54mm pitch.
 4: small reflector cup, long lead, 2.54mm pitch.
 5: side look, big dice use, 2.54mm pitch.
 8: side look use, 2.54mm pitch.
 9: dual dice use, 2.54mm pitch.
 MIB, CL type no lead frame.

6. Dice kinds:

according to chip characteristic distinguish.
 A, B, C.... see below table.

7. View angle:

A, B, C... (C>B>A).

Infrared emitter:

Ta=25°C

type	Material	Absolute Maximum Rating				Electro-Optical Characteristics							
		P _D	I _F	I _{FM}	V _R	forward voltage			reverse current		wavelength		
						typ	Max	I _F	Max	V _R	λ _p	Δλ	I _F
C	GaAlAs/GaAs	135	80	1000	5	1.21	1.40	20	10	5	940	50	50
D	GaAlAs/GaAs	150	100	1500	5	1.18	1.35	20	10	5	940	50	50
E	GaAlAs/GaAs	170	100	1000	5	1.35	1.50	20	10	5	880	70	50
G	GaAlAs/GaAlAs	170	100	1000	4	1.47	1.60	20	10	4	850	45	50
L1	GaAlAs/GaAlAs	390	150	1000	4	2.10	2.60	150	10	4	850	45	150
H	GaAlAs/GaAlAs	170	100	1000	4	1.50	1.70	20	10	4	875	45	50
P	GaAlAs/GaAlAs	170	100	1000	5	1.70	2.00	20	10	4	770	30	20
unit		mW	mA	mA	V	V	V	mA	mA	V	nm	nm	mA

I_{FM} condition : 0.1% duty cycle, pulse width=10us.

Photo diode:

Ta=25°C

type	Absolute Maximum Rating				Electro-Optical Characteristics							
	sensitive area	P _D	V _R	V _{oc}	I _{sc}	forward voltage			responsive speed		terminal capacitance	wavelength
						typ	Max	I _F	T _r	T _f	C _t	λ _p
A	7.16	150	33	350	35	1.3	1.6	100	45	45	72	900
C	1.55	100	30	410	16	1.3	1.8	100	10	10	42	900
D	0.19	50	20	390	2	1.0	1.5	40	6	6	50	900
E	0.66	70	30	410	7	1.0	1.5	40	10	10	42	900
unit	mm ²	mW	V	mV	uA	V	V	mA	ns	ns	pf	nm

Photo transistor:

Ta=25°C

type	Absolute Maximum Rating				Electro-Optical Characteristics							
	P _c	V _{CEO}	V _{ECO}	I _c	dark current		responsive speed				Wavelength	
					I _{CEO}	V _{CEP}	Typ	V _{CE}	I _c	R _L	λ _p	
B	150	30	5	50	100	10	15/20	5	1	1000	900	
D	150	30	5	50	100	10	15/20	5	1	1000	900	
E	250	15	5	70	100	10	40/60	5	10	1000	900	
H	300	30	5	25	100	20	15/18	5	1	1000	900	
J	300	30	5	25	100	20	15/18	5	0.1	10000	570	
unit	mW	V	V	mA	nA	V	us	V	mA	Ω	nm	



Infrared Emitters

Ta=25°C

Device No	Wavelength	Lens Color	Forward Voltage		Radiant Output Power (mw/sr)			View Angle 2θ1/2
	λp(nm)		Typ(V)	IF(mA)	Minimum	Typical	IF(mA)	

SMD 1206									UNIT:mm
	HIRCL-150C-4	940	Water clear	1.21	20	0.6	1.0	20	140
	HIRCL-150D-4	940		1.18		0.6	1.2		
	HIRCL-150E-4	880		1.35		0.4	0.6		
	HIRCL-150G-4	850		1.47		1.0	1.8		

SMD 0805									UNIT:mm
	HIRCL-170C-4	940	Water clear	1.21	20	0.6	1.0	20	140
	HIRCL-170D-4	940		1.18		0.6	1.2		
	HIRCL-170E-4	880		1.35		0.4	0.6		
	HIRCL-170G-4	850		1.47		1.0	1.8		

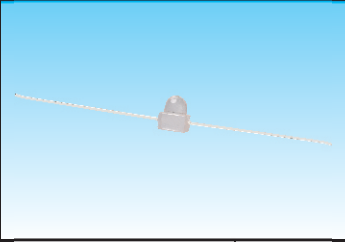
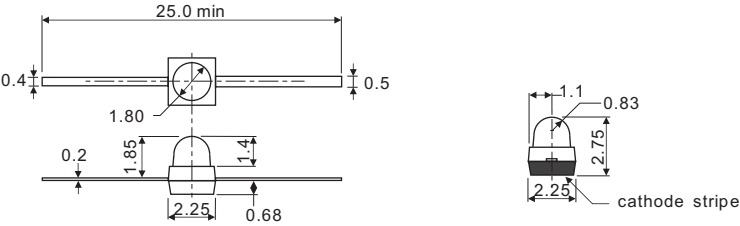
SMD 0603									UNIT:mm
	HIRCL-190C-4	940	Water clear	1.21	20	0.6	1.0	20	140
	HIRCL-190D-4	940		1.18		0.6	1.2		
	HIRCL-190E-4	880		1.35		0.4	0.6		
	HIRCL-190G-4	850		1.47		1.0	1.8		


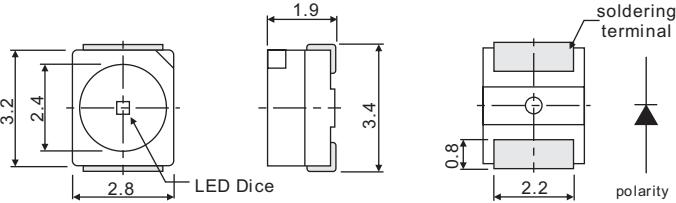
Infrared Emitters


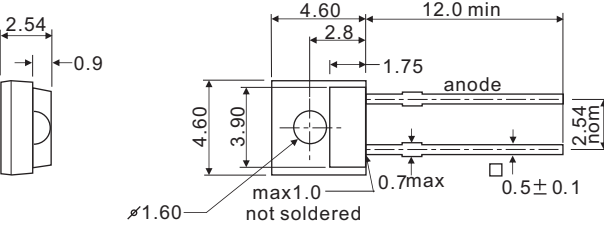


Ta=25°C

Device No	Wavelength	Lens Color	Forward Voltage		Radiant Output Power (mw/sr)			View Angle 2θ1/2
	λp(nm)		Typ(V)	IF(mA)	Minimum	Typical	IF(mA)	

φ 1.8									
	HIRMIB-4C	940	Water clear	1.21	20	3.0	8.0	20	25
	HIRMIB-4D	940		1.18		3.0	8.0		
	HIRMIB-4E	880		1.35		3.0	6.0		
	HIRMIB-4G	850		1.47		4.0	10.0		

reflector									
	HIRTLB2-4C	940	Water clear	1.20	20	1.00	1.80	20	120
	HIRTLB2-4D	940		1.20		1.20	2.00		
	HIRTLB2-4E	880		1.40		0.40	0.85		
	HIRTLB2-4G	850		1.47		5.00	9.00		

side look									
	HIRB1-48C	940	Water clear	1.21	20	0.30	12.5	20	30
	HIRB1-48D	940		1.25		15.0	25.0		
	HIRB1-48E	880		50	1.47	12.0	20.0	50	40
	HIRB1-48G	850			1.50	17.0	35.0		



Infrared Emitters

Ta=25°C

Device No	Wavelength	Lens Color	Forward Voltage		Radiant Output Power (mw/sr)			View Angle 2θ1/2
	λp(nm)		Typ(V)	IF(mA)	Minimum	Typical	IF(mA)	

side look									UNIT:mm
	HIRB1b-48C	940	Water clear	1.21	20	0.30	12.0	20	30
	HIRB1b-48D	940		1.25	50	15.0	25.0	50	40
	HIRB1b-48E	880		1.47		12.0	20.0		
	HIRB1b-48G	850		1.50		17.0	35.0		

ψ 3.0									UNIT:mm
	HIRB3J-44C	940	Water clear	1.21	20	3.0	6.5	20	50
	HIRB3J-44D	940		1.25	50	9.0	18.0	50	55
	HIRB3J-44E	880		1.47		7.0	15.0		
	HIRB3J-44G	850		1.50		10.0	25.0		
	HIRB3J-44Gb	850		1.50		14.0	28.0		


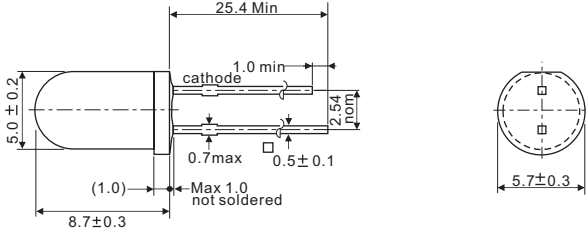
ψ 3.0									UNIT:mm
	HIRB3b-44C	940	Water clear	1.28	50	15.0	30.0	50	30
	HIRB3b-44D	940		1.25		15.0	28.0		
	HIRB3b-44E	880		1.47		13.0	22.0		
	HIRB3b-44G	850		1.50		25.0	52.0		
	HIRB3b-44Gb	850		1.50		28.0	56.0		


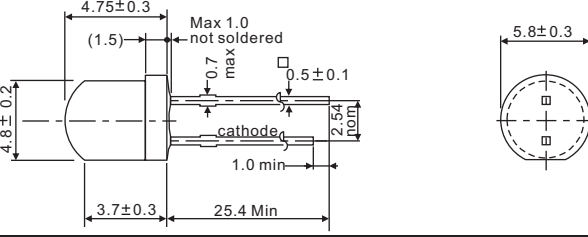
Infrared Emitters



Ta=25°C

Device No	Wavelength	Lens Color	Forward Voltage		Radiant Output Power (mw/sr)			View Angle
	λ_p (nm)		Typ(V)	IF(mA)	Minimum	Typical	IF(mA)	2 θ 1/2

ϕ 5									UNIT:mm
	HIRB5-43C-A	940	Water clear	1.28	50	35.0	70.0	50	15
	HIRB5-23C-B	940	Colored clear	1.28		25.0	60.0		20
	HIRB5-43C-B	940	Water clear	1.28		25.0	60.0		20
	HIRB5-23C-C	940	Colored clear	1.28		25.0	40.0		40
	HIRB5-43C-C	940	Water clear	1.28		25.0	40.0		40
	HIRB5-43C-D	940		1.28		15.0	30.0		50
	HIRB5-43D-A	940		1.25		45.0	80.0		15
	HIRB5-43D-B	940		1.25		40.0	70.0		20
	HIRB5-43D-C	940		1.25		30.0	50.0		35
	HIRB5-43D-D	940		1.25		20.0	35.0		50
	HIRB5-43E-A	880		1.47		35.0	65.0		15
	HIRB5-43E-B	880		1.47		25.0	50.0		20
	HIRB5-43E-C	880		1.47		20.0	35.0		40
	HIRB5-43E-D	880		1.47		12.5	25.0		50
	HIRB5-43G-A	850		1.50		65.0	140.0		12
	HIRB5-43G-B	850		1.50		60.0	100.0		18
	HIRB5-43G-C	850		1.50		50.0	80.0		35
	HIRB5-43G-D	850		1.50		25.0	55.0		50
	HIRB5-43H-C	875		1.55		70.0	130.0		35
HIRB5-43H-D	875	1.55		50.0		80.0	50		
HIRB5-43P-A	770	1.70	60.0	115.0	15				


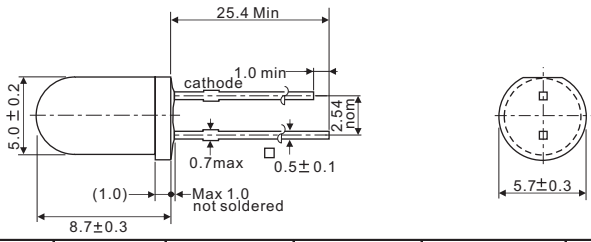
ϕ 5									UNIT:mm
	HIRB5G-43D	940	Water clear	1.25	50	12.0	20.0	50	60
HIRB5G-43G	850	Water clear	1.50	15.0		25.0	70		


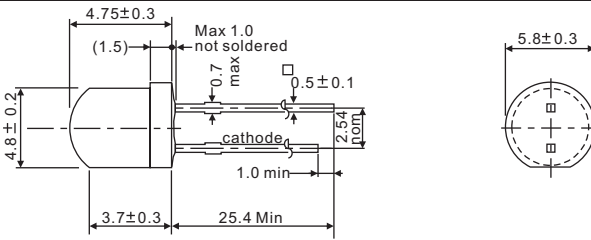



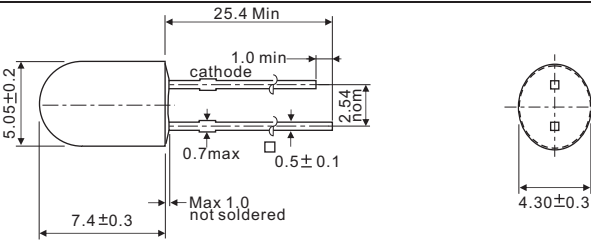
Infrared Emitters

Ta=25°C

Device No	Wavelength	Lens Color	Forward Voltage		Radiant Output Power (mw/sr)			View Angle 2θ1/2
	λp(nm)		Typ(V)	IF(mA)	Minimum	Typical	IF(mA)	

φ 5									UNIT:mm
	HIRB5-43Eb-A	880	Water clear	1.47	50	35.0	70.0	50	15
	HIRB5-43Eb-B	880		1.47		25.0	55.0		20
	HIRB5-43Eb-C	880		1.47		18.0	38.0		40
	HIRB5-43Eb-D	880		1.47		14.0	28.0		50
	HIRB5-43Gb-A	850		1.50		65.0	150.0		12
	HIRB5-43Gb-B	850		1.50		60.0	110.0		18
	HIRB5-43Gb-C	850		1.50		50.0	85.0		35
	HIRB5-43Gb-D	850		1.50		25.0	58.0		50
	HIRB5-43Hb-C	875		1.55		70.0	140.0		35
HIRB5-43Hb-D	875	1.55		40.0		85.0	50		

φ 5									UNIT:mm
	HIRB5G-43Gb	850	Water clear	1.50	50	15.0	28.0	50	70


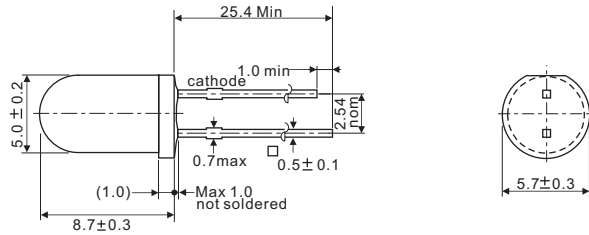
oval									UNIT:mm
	HIRB4Q-43D	940	Water clear	1.25	50	30.0	60.0	50	40/20
	HIRB4Q-43G	850		1.50		20.0	70.0		
	HIRB4Q-43Gb	850		1.50		30.0	74.0		


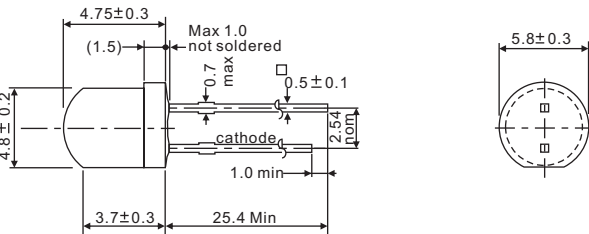
High Power Infrared Emitters


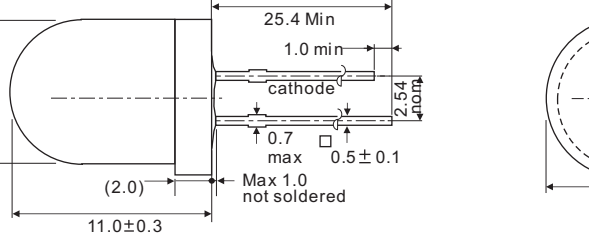


Ta=25°C

Device No	Wavelength	Lens Color	Forward Voltage		Radiant Output Power (mw/sr)			View Angle 2θ1/2
	λp(nm)		Typ(V)	IF(mA)	Minimum	Typical	IF(mA)	

φ 5									
	HIRB5-43L1-A	850	Water clear	2.1	150	220	420	150	12
	HIRB5-43L1-B	850		2.1		180	360		18
	HIRB5-43L1-C	850		2.1		150	300		35
	HIRB5-43L1-D	850		2.1		90	180		50

φ 5								
	HIRB5G-43L1	850	Water clear	2.1	150	40	80	150

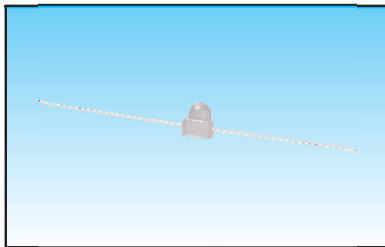
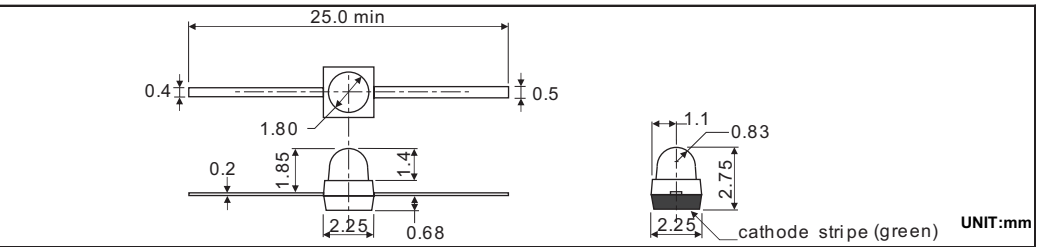
φ 8									
	HIRB8b-43L1-A	850	Water clear	2.1	150	200	400	150	24
	HIRB8b-43L1-B	850	Water clear	2.1	150	100	200	150	40



Photodiodes


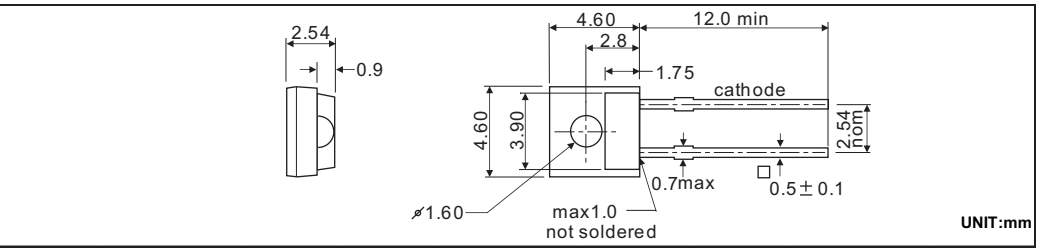
Ta=25°C

Device No	Lens Color	Sensitive Wavelength		Open Circuit Voc(v)	Dark Current (MAX)		Light Current (typ)			View Angle 2θ1/2
		λp(nm)	λ(nm)		Id(nA)	VR(V)	IP(μA)	VR(V)	Ev	

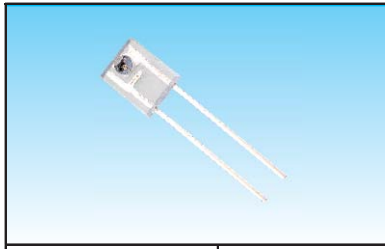
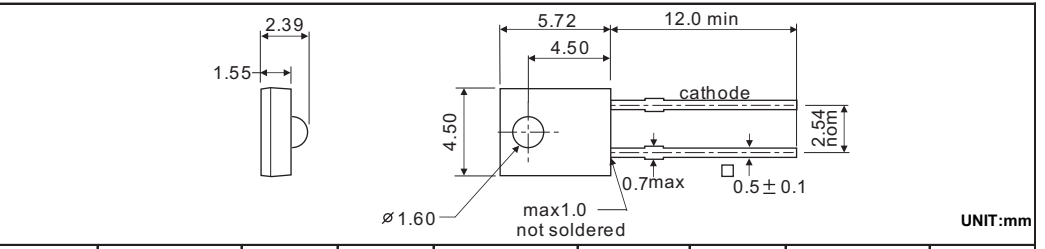
UNIT:mm

HPDMIB-4D	Water clear	900	500~1100	0.39	30	10	10	10	1000Lux	24
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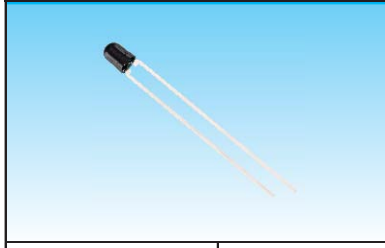
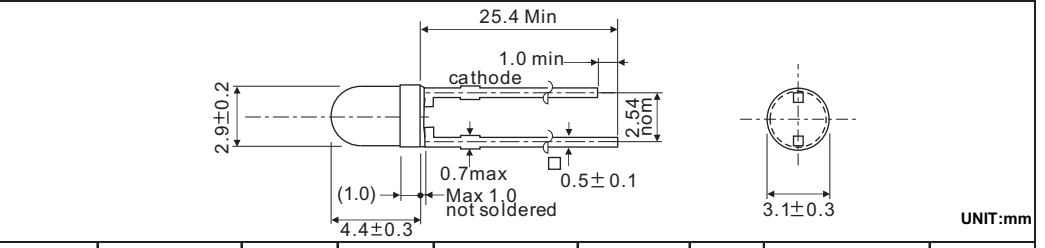
UNIT:mm

HPDB1-48D	Water clear	900	500~1100	0.39	30	10	10	10	1000Lux	40
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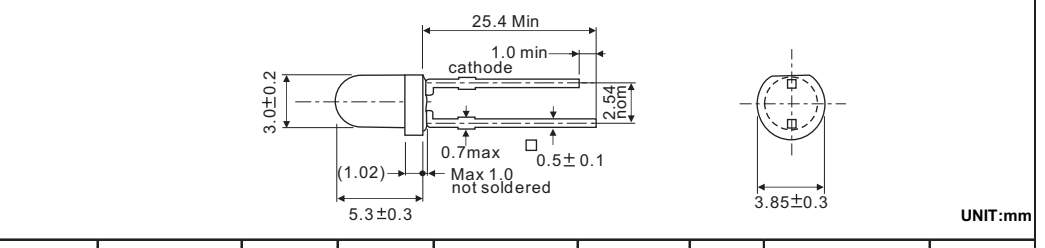
UNIT:mm

HPDB1b-48D	Water clear	900	500~1100	0.39	30	10	10	10	1000Lux	40
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UNIT:mm

HPDB3J-14D	Black	900	760~1000	0.39	30	10	5	10	0.5mw/cm ²	50
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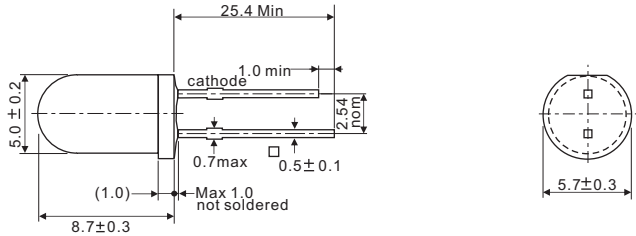

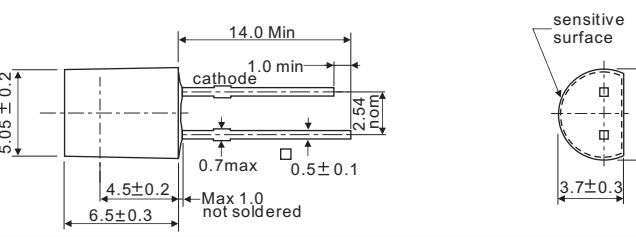
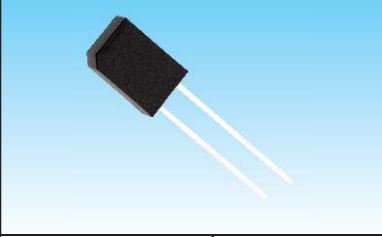
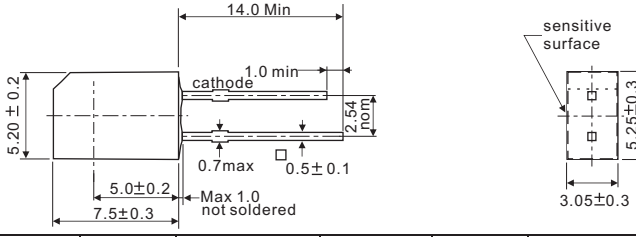
UNIT:mm

HPDB3b-14D	Black	900	760~1000	0.39	30	10	7	10	0.5mw/cm ²	20
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Photodiodes



Ta=25°C


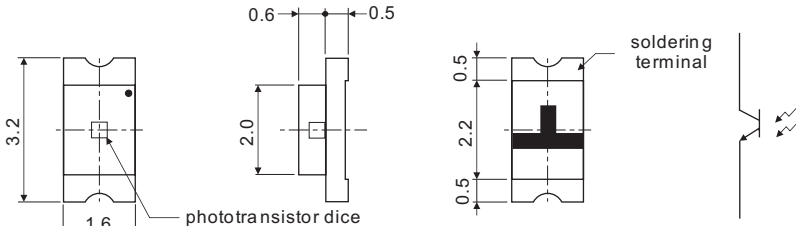
Device No	Lens Color	Sensitive Wavelength		Open Circuit Voc(v)	Dark Current (MAX)		Light Current (typ)			View Angle 2θ1/2
		λp(nm)	λ(nm)		Id(nA)	VR(V)	IP(uA)	VR(V)	Ev	
	Black			0.39	30	10	10	10	0.5mw/cm ²	30
		HPDB5-14D-B	Black							
	Black			0.35	30	10	20	10	0.5mw/cm ²	120
		HPDB5K-15A	Black							
	Black			0.35	30	10	17	10	0.5mw/cm ²	140
		HPDR3K-15A	Black							
HPDR3K-45A	Water clear	900	500~1100	0.35	30	10	70	10	1000Lux	



Phototransistors


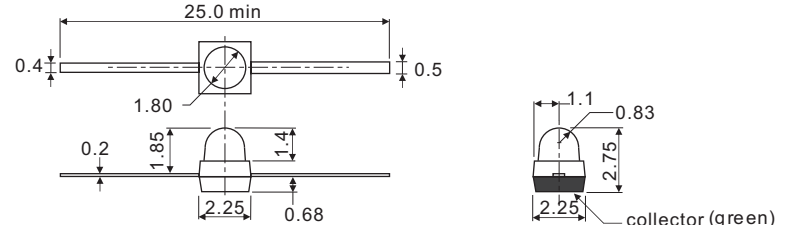
Ta=25°C

Device No	Lens Color	Sensitive Wavelength		VCEO	VECO	VCES	Ic		Radiant Sensitive Area mm ²	View Angle 2θ1/2
		λp(nm)	λ(nm)	Max(V)	Max(V)	Max(V)	Typ(mA)	VEC		


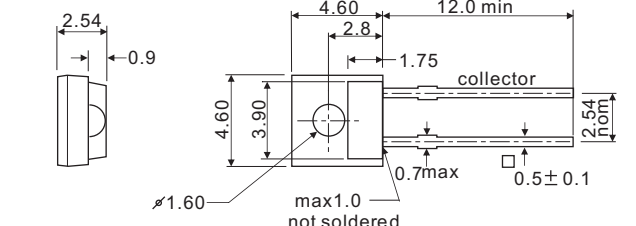
UNIT:mm

HPTCL-150D-4	Water clear	900	500~1100	20	5	0.4	0.4	5	0.19	140
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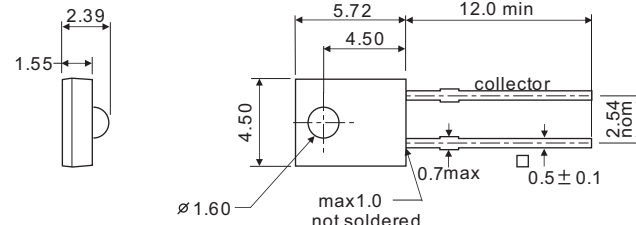
UNIT:mm

HPTMB-4D	Water clear	900	500~1100	20	5	0.4	1.2	5	0.19	24
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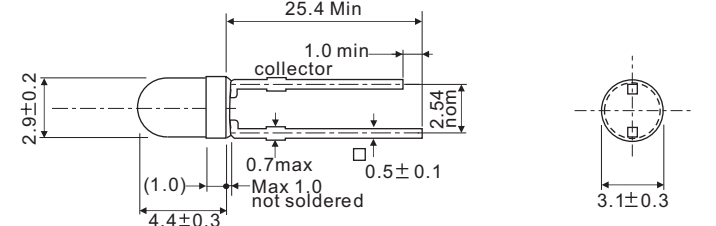
UNIT:mm

HPTB1-48B	Water	900	500~1100	30	5	0.4	0.5	5	0.19	40
HPTB1-48D	clear	900	500~1100	30	5	0.4	1.0	5	0.19	

UNIT:mm

HPTB1b-48D	Water clear	900	500~1100	30	5	0.4	1.0	5	0.19	40
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UNIT:mm


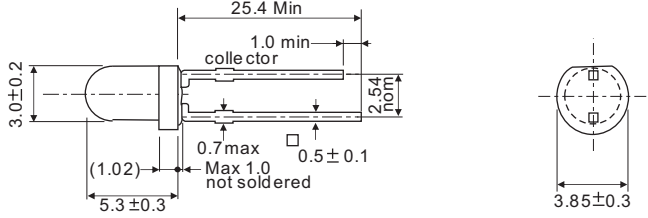
HPTB3J-44D	Water clear	900	500~1100	30	5	0.4	1.2	5	0.19	60
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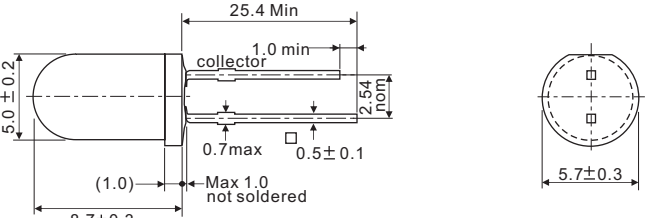
Phototransistors



Ta=25°C

Device No	Lens Color	Sensitive Wavelength		VCEO	VECO	VCES	Ic		Radiant Sensitive Area mm ²	View Angle 2θ1/2
		λp(nm)	λ(nm)	Max(V)	Max(V)	Max(V)	Typ(mA)	VEC		

										
HPTB3b-14D	Black	940	760~1000	30	5	0.4	1.5	5	0.19	20
HPTB3b-44D	Water clear	900	500~1100	30	5	0.4	1.5	5	0.19	


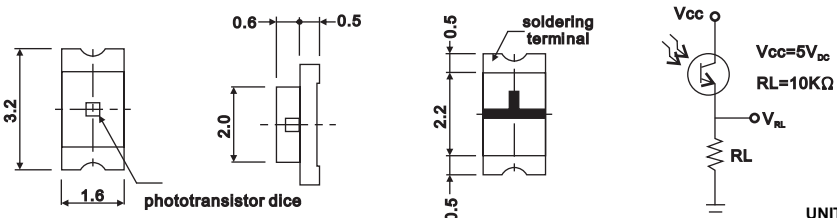
										
HPTB5-44D-B	Water clear	900	500~1100	30	5	0.4	3.0	5	0.19	30
HPTB5-14D-B	Black	940	760~1000	30	5	0.4	3.0	5	0.19	30


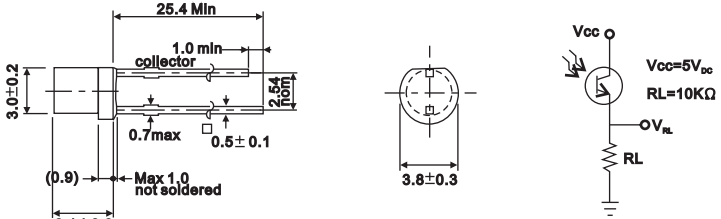
Phototransistors For Ambient Light



Ta=25°C

Device No	Lens Color	Peak Wavelength	VCEO	VECO	VCES	I _{RL}	Sensitive Area (mm ²)	View Angle 2θ1/2
		λp(nm)	Max(V)	Max(V)	Max(V)	Typ(μA)		

									
HPTCL-150J	Water clear	570	30	5	0.3	150	0.38	140	


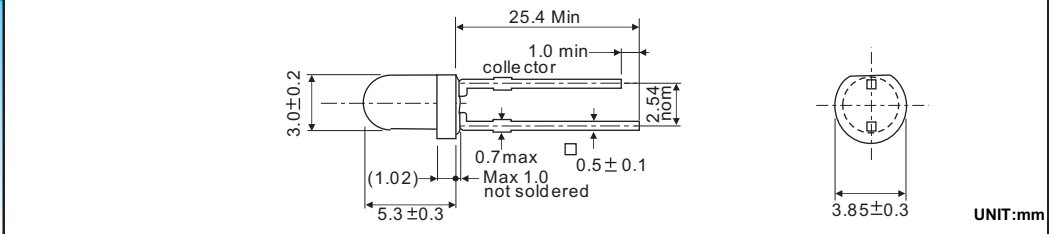
										
HPTC3C-44J	Water clear	570	30	5	0.3	150	0.38	110		


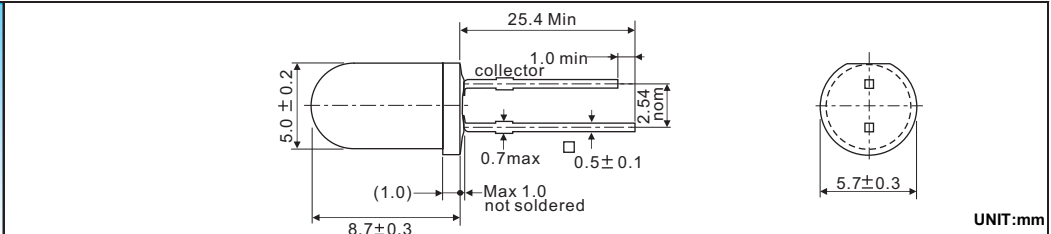
Phototransistors



Ta=25°C

Device No	Lens Color	Sensitive Wavelength		VCEO	VECO	VCES	Ic		Radiant Sensitive Area mm ²	View Angle 2θ1/2
		λp(nm)	λ(nm)	Max(V)	Max(V)	Max(V)	Typ(mA)	VEC		

	 <p>UNIT:mm</p>									
HPTB3b-14D	Black	940	760~1000	30	5	0.4	1.5	5	0.19	20
HPTB3b-44D	Water clear	900	500~1100	30	5	0.4	1.5	5	0.19	


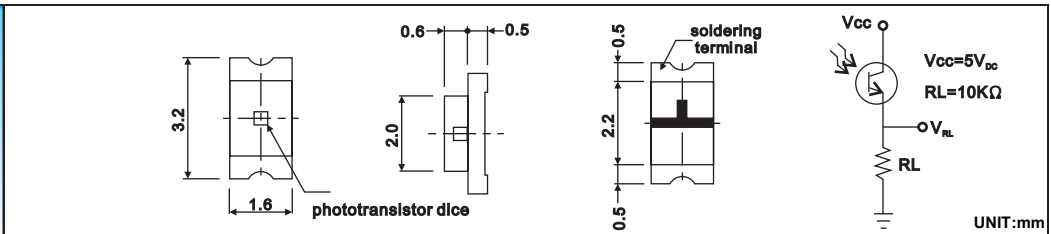
	 <p>UNIT:mm</p>									
HPTB5-44D-B	Water clear	900	500~1100	30	5	0.4	3.0	5	0.19	30
HPTB5-14D-B	Black	940	760~1000	30	5	0.4	3.0	5	0.19	30


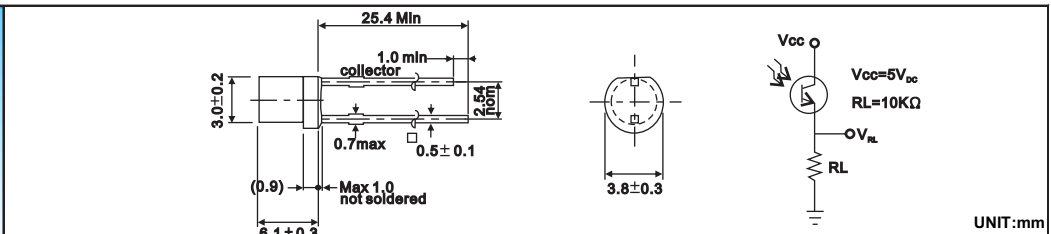
Phototransistors For Ambient Light



Ta=25°C

Device No	Lens Color	Peak Wavelength	VCEO	VECO	VCES	I _{RL}	Sensitive Area (mm ²)	View Angle 2θ1/2
		λp(nm)	Max(V)	Max(V)	Max(V)	Typ(μA)		

	 <p>UNIT:mm</p>									
HPTCL-150J	Water clear	570	30	5	0.3	150	0.38	140		

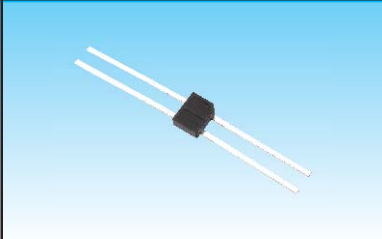
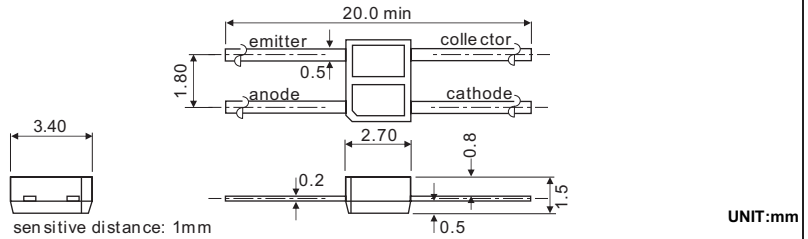
	 <p>UNIT:mm</p>									
HPTC3C-44J	Water clear	570	30	5	0.3	150	0.38	110		



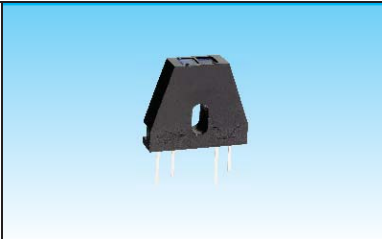
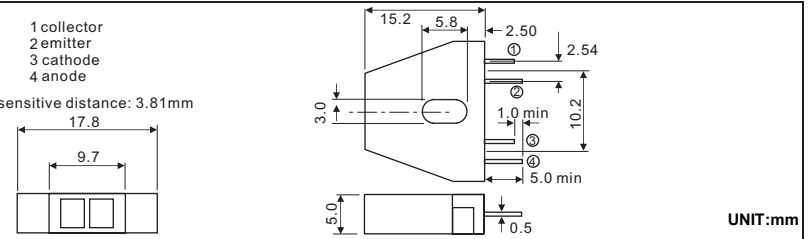
Reflector

Ta=25°C

Device No	Feature	Electro-optical Characteristics						
		Ic Min	IF	VCE	ICEOMax	Tr Typ	Tf Typ	VCE(sat)Max
		mA	mA	V	uA	us	us	V

HRS-CD	reflector distance 1mm	0.23	20	5	1.0	40	60	0.4
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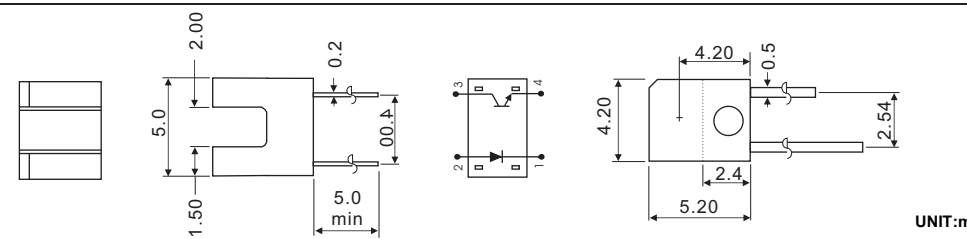
HRS-4C2D	reflector distance 3.81mm	3.35	20	5	3.0	40	60	0.4
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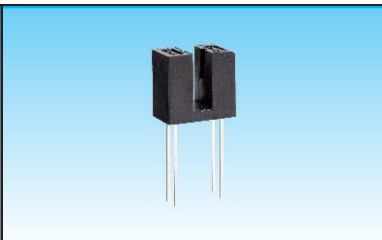
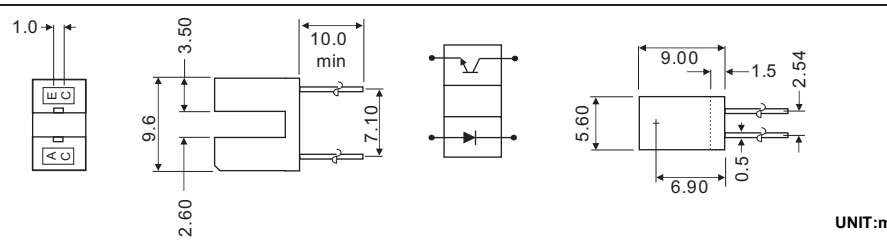
Photo Interrupter

Ta=25°C

Device No	Feature	Electro-optical Characteristics						
		Ic Min	IF	VCE	ICEOMax	Tr Typ	Tf Typ	VCE(sat)Max
		mA	mA	V	uA	us	us	V

HINT-2050	gap=2.0mm	1.0	20	5	0.5	10	10	0.4
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HINT-2600	gap=2.6mm	1.5	20	5	20	15	15	0.4
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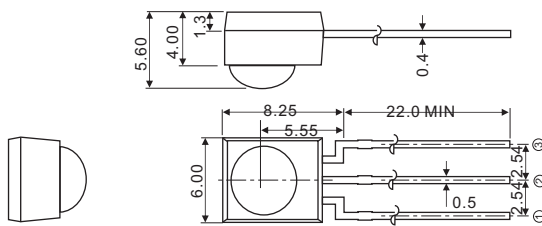


I.R. Receiver Pre-amp Module

Ta=25°C


Device No	Feature	Supply voltage	Controlling Distance	Low Level Pulse Width(us)			High Level Pulse Width(us)			Carrier wave frequency(kHz)
		Vcc(V)	L typ(M)	Min	Typ	Max	Min	Typ	Max	Fo (typical)

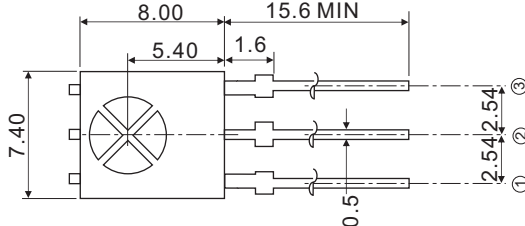




UNIT:mm


IR2638	small type 3pin	4.5~5.5	14	400	600	800	400	600	800	38.0
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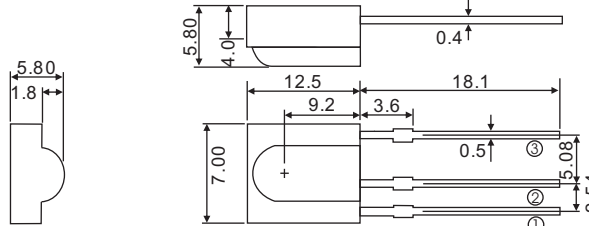




UNIT:mm

IR001T5	small type 3pin	4.5~5.5	35	480	600	720	480	600	720	38.0
IR1261		2.4~5.5	16	400	600	800	400	600	800	





UNIT:mm

IR5040	small type 3pin	4.5~5.5	12	400	600	800	400	600	800	38.0
IR5240		4.5~5.5	12	400	600	800	400	600	800	40.0
IR5440		4.5~5.5	12	400	600	800	400	600	800	36.0