Kingbright

Optoelectronic Components

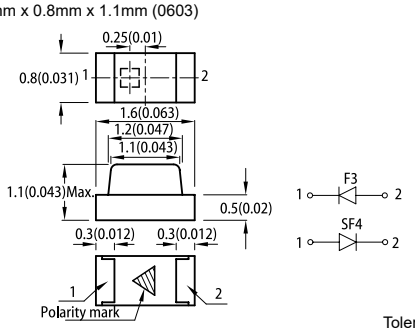
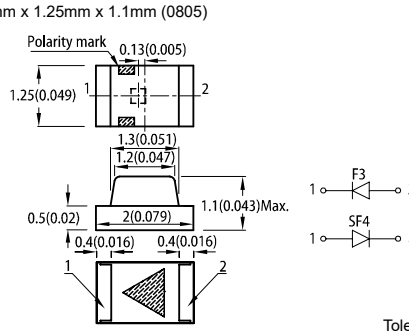
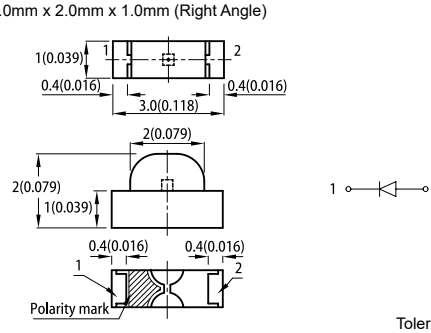
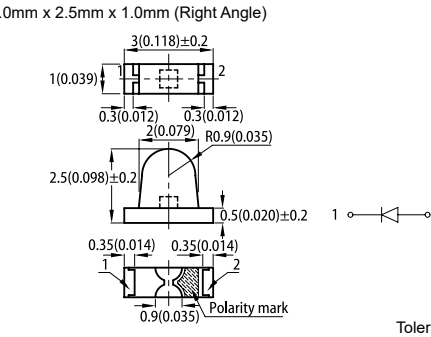
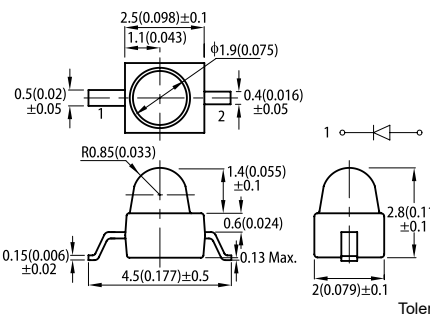
2025-2027

Infrared & Phototransistor

Kingbright's selection of infrared emitting diode products are suitable for consumer applications, home automation, computer peripherals and industrial applications. Selections are available in both SMD and through-hole packages.

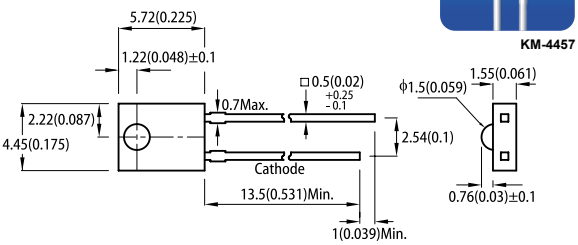
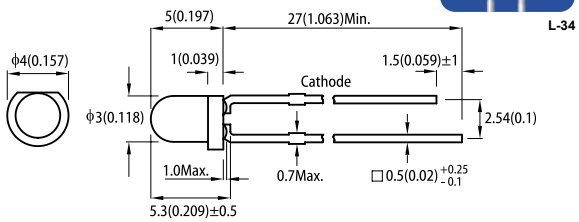
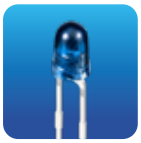
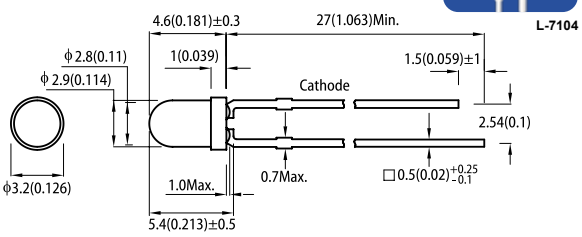
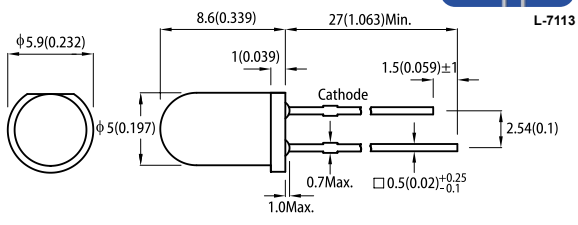



INFRARED EMITTING DIODE

Part Number	Material	λP (nm)	Lens Type	Po (mW/sr) @20mA *50mA		Viewing Angle	Dimensions
				Min.	Typ.	2θ1/2	
KP-1608F3C	GaAs	940	water clear	0.8	2	150°	1.6mm x 0.8mm x 1.1mm (0603)  Units: mm (inch) Tolerance: ± 0.1 (0.004)
KP-1608SF4C	GaAlAs	880	water clear	0.8	1.5	150°	
KP-2012F3C	GaAs	940	water clear	0.8	2	160°	2.0mm x 1.25mm x 1.1mm (0805)  Units: mm (inch) Tolerance: ± 0.1 (0.004)
KP-2012SF4C	GaAlAs	880	water clear	0.8	1.5	160°	
KPA-3010F3C	GaAs	940	water clear	0.8	2	160°	3.0mm x 2.0mm x 1.0mm (Right Angle)  Units: mm (inch) Tolerance: ± 0.15 (0.006)
KPPA-3010SF4C	GaAlAs	880	water clear	1	2.5	30°	3.0mm x 2.5mm x 1.0mm (Right Angle)  Units: mm (inch) Tolerance: ± 0.15 (0.006)
KM2520F3C03	GaAs	940	water clear	3	8	20°	2mm Subminiature IR Emitter  Units: mm (inch) Tolerance: ± 0.25 (0.01)
				*8	*16		

NOTE:
1. Radiant intensity value is traceable to CIE127-2007 standards.

INFRARED EMITTING DIODE

Part Number	Material	λP (nm)	Lens Type	Po (mW/sr) @20mA *50mA		Viewing Angle	Dimensions
				Min.	Typ.	2θ1/2	
KM-4457F3C-R	GaAs	940	water clear	2	5	70°	1.5mm (Side Look)  KM-4457  Units: mm (inch) Tolerance: ± 0.25 (0.01)
L-34F3C	GaAs	940	water clear	3	8	50°	T-1 (3mm) Round  L-34
				*8	*15		
L-34SF4C	GaAlAs	880	water clear	3	8	50°	 Units: mm (inch) Tolerance: ± 0.25 (0.01)
				*5	*16		
L-7104F3C	GaAs	940	water clear	3	8	30°	T-1 (3mm) Round  L-7104
				*12	*25		
L-7104F3BT	GaAs	940	blue transparent	3	8	30°	 Units: mm (inch) Tolerance: ± 0.25 (0.01)
				*12	*25		
L-7113F3C	GaAs	940	water clear	8	20	20°	T-1 3/4 (5mm) Round  L-7113
				*25	*50		
L-7113F3BT	GaAs	940	blue transparent	8	20	20°	 Units: mm (inch) Tolerance: ± 0.25 (0.01)
				*25	*50		
L-7113SF4C	GaAlAs	880	water clear	6	15	20°	
				*15	*40		
L-7113SF6C	GaAlAs	860	water clear	18	40	20°	
				*55	*100		
L-7113SF7C	GaAlAs	850	water clear	12	30	20°	
				*40	*90		

NOTE:
1. Radiant intensity value is traceable to CIE127-2007 standards.

PHOTOTRANSISTOR

Part Number	Lens Type
KP-1608P1C	water clear
KP-2012P3C	water clear
KP-3216P3C	water clear
KPA-3010P3C	water clear
KM-4457P3C-F-R	water clear
L-3DP3BT	blue transparent
L-7113P3C	water clear

Electrical and Radiant Characteristics T_A =25°C

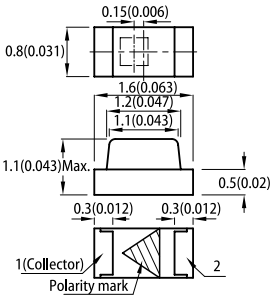
Parameter	Symbol	Part Number	Min.	Typ.	Max.	Unit	Test Conditions
Collector-to-Emitter Breakdown Voltage	$V_{BR\ CEO}$	-	30	-	-	V	I_C = 100μA Ee = 0mW/cm²
Emitter-to-Collector Breakdown Voltage	$V_{BR\ ECO}$	-	5	-	-	V	I_E = 100μA Ee = 0mW/cm²
Collector-to-Emitter Saturation Voltage	$V_{CE\ (SAT)}$	-	-	-	0.8	V	I_C = 2mA Ee = 20mW/cm²
Collector Dark Current	I_{CEO}	-	-	-	100	nA	V_{CE} = 10V Ee = 0mW/cm²
Rise Time (10% to 90%)	t_r	-	-	15	-	μs	V_{CE} = 5V I_C = 1mA R_L = 1KΩ
Fall Time (90% to 10%)	t_f	-	-	15	-	μs	
On State Collector Current	$I_{(ON)}$	KP-1608P1C	0.1	0.3	-	mA	V_{CE} = 5V, Ee = 1mW/cm² λ = 940nm
		KP-2012P3C	0.2	0.4			
		KP-3216P3C	0.2	0.4			
		KPA-3010P3C	0.2	0.4			
		KM-4457P3C-F-R	0.35	0.8			
		L-3DP3BT	0.3	0.8			
		L-7113P3C	0.5	2.5			

Absolute Maximum Rating T_A =25°C

Parameter	Maximum Ratings
Collector-to-Emitter Voltage	30V
Emitter-to-Collector Voltage	5V
Power Dissipation at (or below) 25°C Free Air Temperature	100mW
Operating Temperature Range	-40°C~ +85°C
Storage Temperature Range	-40°C~ +85°C
KM-4457P3C-F-R L-3DP3BT L-7113P3C Lead Soldering Temperature (>5mm for 5 sec)	260°C

Dimensions

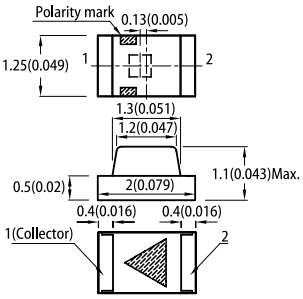
1.6mm x 0.8mm x 1.1mm (0603)




KP-1608

Units: mm (inch)
Tolerance: ± 0.1 (0.004)

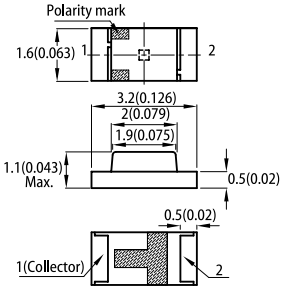
2.0mm x 1.25mm x 1.1mm (0805)




KP-2012

Units: mm (inch)
Tolerance: ± 0.1 (0.004)

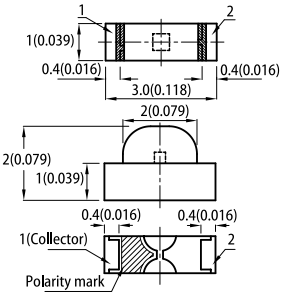
3.2mm x 1.6mm x 1.1mm (1206)




KP-3216

Units: mm (inch)
Tolerance: ± 0.2 (0.008)

3.0mm x 2.0mm x 1.0mm (Right Angle)

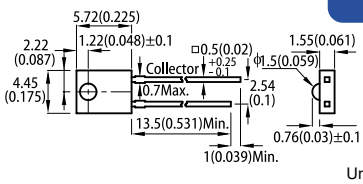



KPA-3010

Units: mm (inch)
Tolerance: ± 0.15 (0.006)

1.5mm (Side Look)

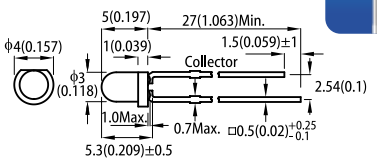

KM-4457



Units: mm (inch)
Tolerance: ± 0.25 (0.01)

T-1 (3mm)

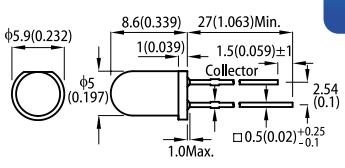

L-3D



Units: mm (inch)
Tolerance: ± 0.25 (0.01)

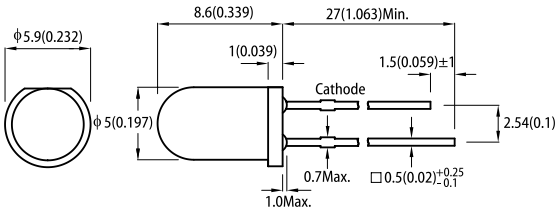
T-1 3/4 (5mm)


L-7113



Units: mm (inch)
Tolerance: ± 0.25 (0.01)

PHOTODIODE

Part Number	Lens Type	Dimensions
L-7113PD1BT/BD	black diffused	T-1 3/4 (5mm) Photodiode  L-7113  Units: mm (inch) Tolerance: ± 0.25 (0.01)

Electrical and Optical Characteristics T_A =25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Reverse Break Down Voltage	$V_{(BR)R}$	33	170	-	V	I_R = 100μA H = 0mW/cm²
Reverse Dark Current	$ID_{(R)}$	-	-	10	nA	V_R = 10V H = 0mW/cm²
Open Circuit Voltage	V_{OC}	-	390	-	mV	λ = 940nm H = 5mW/cm²
Rise Time	t_r	-	6	-	ns	V_R = 10V λ = 940nm R_L = 1000Ω
Fall Time	t_f	-	6	-	ns	
Light Current	I_S	1.2	2.0	-	μA	V_R = 5V Ee = 0.08mW/cm² λ = 940nm
Total Capacitance	C_T	-	5	-	pF	V_R = 10V F = 1MHZ H = 0mW/cm²
Range of Spectral Bandwidth	$\lambda_{0.1}$	670	-	1070	nm	-
Wavelength of Peak Sensitivity	λ_p	-	940	-	nm	-

Absolute Maximum Rating T_A =25°C

Parameter	Maximum Ratings
Power Dissipation	150mW
Lead Soldering Temperature (>2mm)	260°C for 3 sec
Lead Soldering Temperature (>5mm)	260°C for 5 sec

Parameter	Maximum Ratings
Operating Temperature Range	-40°C~ +85°C
Storage Temperature Range	-40°C~ +85°C

OPTO-SENSOR

Kingbright opto-sensors can be used in many industries, including manufacturing, automation, robotic and automotive applications. Our opto-sensors offer accuracy, reliability and versatility in various size and packages.




LIGHT SENSOR

Part Number	Lens Type	Dimensions
KPS-3227SP1C	water clear	3.2 mm x 2.7 mm x 1.1 mm (Ambient Light Sensor)


KPS-3227

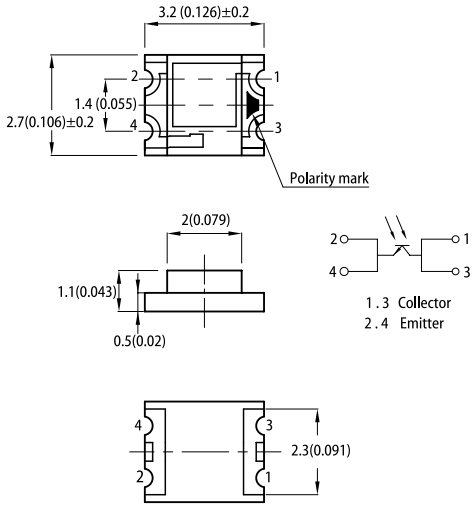
Electrical and Optical Characteristics T_A =25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector Emitter Breakdown Voltage	B_{Vceo}	60	-	-	V	Iceo = 100μA
Emitter Collector Breakdown Voltage	B_{Veco}	4	-	-	V	Ieco = 100μA
Collector Dark Current	I_D	-	10	100	nA	V_{CE} = 5V, Ev = 0Lx
Light Current (1)	I_{PH1}	-	6	-	μA	V_{CE} = 5V, Ev = 100Lx[1]
Light Current (2)	I_{PH2}	-	130	-	μA	V_{CE} = 5V, Ev = 1000Lx[1]
Light Current (3)	I_{PH3}	-	950	-	μA	V_{CE} = 5V, Ev = 1000Lx[2]
Light Current (4)	I_{PH4}	-	420	-	μA	V_{CE} = 5V, Ev = 1000Lx[3]
Light Test Current	I_{TPH}	40	-	290	μA	V_{CE} = 5V, Ev = 100Lx, at 630nm LED[4]
Saturation Output Voltage	V_O	4.5	4.7	-	V	V_{CC} = 5V, Ev = 1000Lx[1] R_L = 75KΩ
Response Wavelength	λ	390	-	700	nm	>10% Response
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	0.4	V	I_C = 10mA
Range of Spectral Bandwidth	$\lambda_{0.1}$	390	-	950	nm	
Wavelength of Peak Sensitivity	λ_p	-	580	-	nm	-

Notes:
1. White Fluorescent light (Color Temperature = 6200K) is used as light source.
2. Illuminance by CIE standard illuminant-A/2856K,incandescet lamp.
3. Sunlight (Color Temperature = 4600K) is used as light source.
4. 630nm LED is substituted in mass production.

Absolute Maximum Rating T_A =25°C

Parameter	Symbol	Maximum Ratings	Test Conditions
Collector Emitter Voltage	V_{ceo}	60V	Iceo = 100μA
Emitter-Collector Voltage	V_{eco}	4V	Ieco = 100μA
Operating Temperature	T_{opr}	-40°C~ +85°C	-
Storage Temperature	T_{stg}	-40°C~ +85°C	-



Units: mm (inch)
Tolerance: ± 0.1 (0.004)