

HARVATEK



About Harvatek

Harvatek Corporation was founded in 1995 and are listed on Taiwan Stock Exchange (TWSE) in 2003 under ticker number 6168.

Also one of the SMD LEDs leading manufacturers in the world with 800 employees worldwide.

www.harvatek.com



Manufacturing



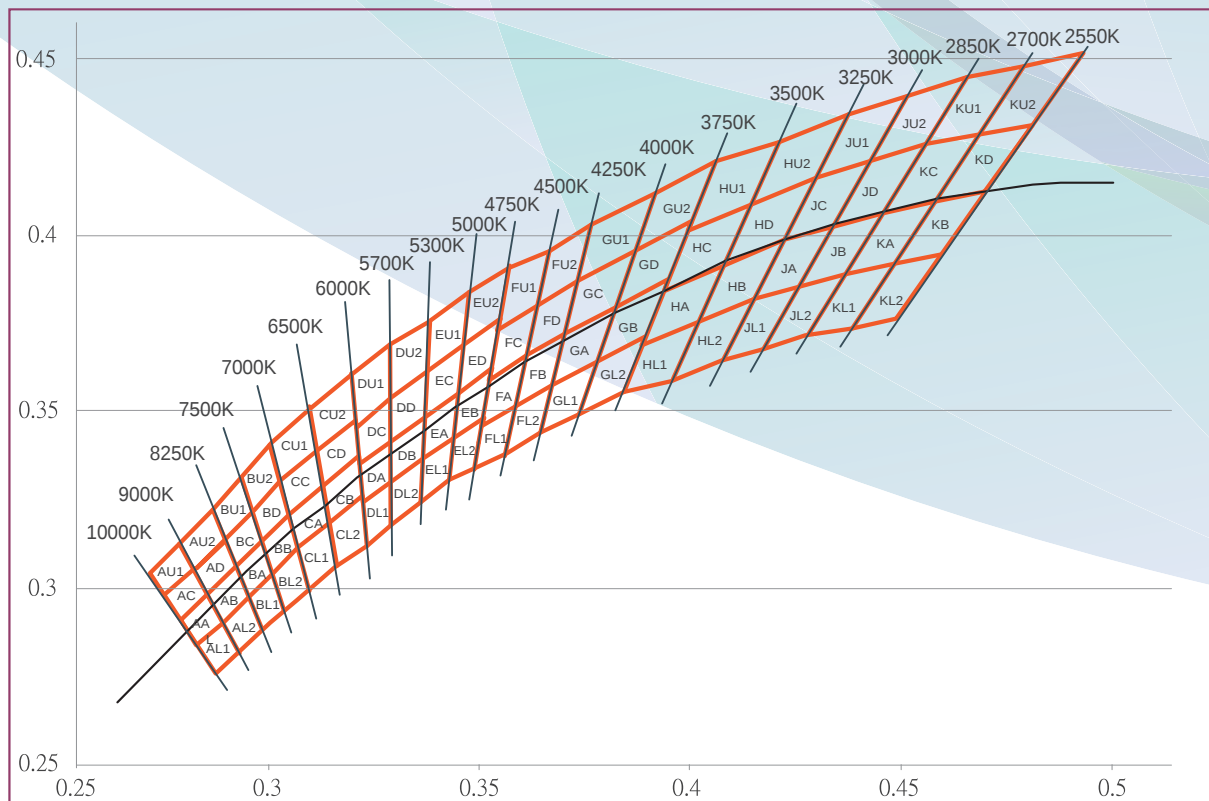
Headquarters

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General Specification

Correlated Color Temperature Rank (Bin Table)



AA	0.283	0.284	0.295	0.297	0.307	0.311	0.322	0.324	0.337	0.337
	0.279	0.291	0.292	0.306	0.305	0.321	0.322	0.335	0.337	0.349
BA	0.286	0.299	0.298	0.313	0.313	0.329	0.329	0.342	0.345	0.355
	0.289	0.291	0.301	0.304	0.314	0.319	0.329	0.330	0.344	0.343
CA	0.283	0.284	0.295	0.297	0.307	0.311	0.322	0.324	0.337	0.337
	0.289	0.291	0.301	0.304	0.314	0.319	0.329	0.330	0.344	0.343
DA	0.286	0.299	0.298	0.313	0.313	0.329	0.329	0.342	0.345	0.355
	0.292	0.306	0.305	0.321	0.321	0.337	0.337	0.349	0.353	0.362
EA	0.295	0.297	0.307	0.311	0.322	0.326	0.337	0.337	0.352	0.349
	0.289	0.291	0.301	0.304	0.314	0.319	0.329	0.330	0.344	0.343
AB	0.279	0.291	0.292	0.306	0.305	0.321	0.322	0.335	0.337	0.349
	0.275	0.298	0.290	0.314	0.303	0.330	0.321	0.346	0.338	0.362
BB	0.286	0.299	0.298	0.313	0.313	0.329	0.329	0.342	0.345	0.355
	0.279	0.291	0.292	0.306	0.305	0.321	0.322	0.335	0.337	0.349
CB	0.286	0.299	0.298	0.313	0.313	0.329	0.329	0.342	0.345	0.355
	0.282	0.306	0.296	0.322	0.312	0.339	0.329	0.342	0.346	0.369
DB	0.290	0.314	0.303	0.330	0.321	0.348	0.338	0.362	0.355	0.376
EB	0.292	0.306	0.305	0.321	0.321	0.337	0.337	0.349	0.353	0.362
	0.286	0.299	0.298	0.313	0.313	0.329	0.329	0.342	0.345	0.355
AC	0.287	0.276	0.298	0.288	0.309	0.299	0.323	0.312	0.336	0.325
	0.283	0.284	0.295	0.297	0.307	0.311	0.322	0.324	0.337	0.337
BC	0.289	0.291	0.301	0.304	0.314	0.319	0.329	0.330	0.344	0.343
	0.293	0.282	0.304	0.294	0.316	0.306	0.329	0.318	0.343	0.331
CC	0.287	0.276	0.298	0.288	0.309	0.299	0.323	0.312	0.336	0.325
	0.293	0.282	0.304	0.294	0.316	0.306	0.329	0.318	0.343	0.331
DC	0.289	0.291	0.301	0.304	0.314	0.319	0.329	0.330	0.344	0.343
	0.295	0.297	0.307	0.311	0.322	0.326	0.337	0.337	0.352	0.349
EC	0.298	0.288	0.309	0.299	0.323	0.312	0.336	0.325	0.350	0.334
	0.293	0.282	0.304	0.294	0.316	0.306	0.329	0.318	0.343	0.331
AD	0.275	0.298	0.290	0.314	0.303	0.330	0.321	0.346	0.338	0.362
	0.272	0.304	0.286	0.322	0.301	0.342	0.320	0.360	0.338	0.376
BD	0.279	0.313	0.294	0.331	0.310	0.351	0.329	0.369	0.348	0.384
	0.282	0.306	0.296	0.322	0.312	0.339	0.329	0.354	0.346	0.369
CD	0.275	0.298	0.290	0.314	0.303	0.330	0.321	0.346	0.338	0.362
	0.272	0.304	0.286	0.322	0.301	0.342	0.320	0.360	0.338	0.376
DD	0.279	0.313	0.294	0.331	0.310	0.351	0.329	0.369	0.348	0.384
	0.282	0.306	0.296	0.322	0.312	0.339	0.329	0.354	0.346	0.369
DL1	0.275	0.298	0.290	0.314	0.303	0.330	0.321	0.346	0.338	0.362
	0.272	0.304	0.286	0.322	0.301	0.342	0.320	0.360	0.338	0.376
DL2	0.279	0.313	0.294	0.331	0.310	0.351	0.329	0.369	0.348	0.384
	0.282	0.306	0.296	0.322	0.312	0.339	0.329	0.354	0.346	0.369
AL1	0.283	0.284	0.295	0.297	0.307	0.311	0.322	0.324	0.337	0.337
	0.289	0.291	0.301	0.304	0.314	0.319	0.329	0.330	0.344	0.343
AL2	0.293	0.282	0.304	0.294	0.316	0.306	0.329	0.318	0.343	0.331
	0.287	0.276	0.298	0.288	0.309	0.299	0.323	0.312	0.336	0.325
BL1	0.293	0.282	0.304	0.294	0.316	0.306	0.329	0.318	0.343	0.331
	0.289	0.291	0.301	0.304	0.314	0.319	0.329	0.330	0.344	0.343
BL2	0.295	0.297	0.307	0.311	0.322	0.326	0.337	0.337	0.352	0.349
	0.298	0.288	0.309	0.299	0.323	0.312	0.336	0.325	0.350	0.334
CL1	0.293	0.282	0.304	0.294	0.316	0.306	0.329	0.318	0.343	0.331
	0.275	0.298	0.290	0.314	0.303	0.330	0.321	0.346	0.338	0.362
CL2	0.272	0.304	0.286	0.322	0.301	0.342	0.320	0.360	0.338	0.376
CU1	0.279	0.313	0.294	0.331	0.310	0.351	0.329	0.369	0.348	0.384
	0.282	0.306	0.296	0.322	0.312	0.339	0.329	0.354	0.346	0.369
CU2	0.275	0.298	0.290	0.314	0.303	0.330	0.321	0.346	0.338	0.362
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	0.272	0.304	0.286	0.322	0.301	0.342	0.320	0.360	0.338	0.376
EU1	0.279	0.313	0.294	0.331	0.310	0.351	0.329	0.369	0.348	0.384
	0.282	0.306	0.296	0.322	0.312	0.339	0.329	0.354	0.346	0.369
EU2	0.275	0.298	0.290	0.314	0.303	0.330	0.321	0.346	0.338	0.362
	0.272	0.304	0.286	0.322	0.301	0.342	0.320	0.360	0.338	0.376

FA	0.351	0.347	GA	0.367	0.358	HA	0.389	0.369	JA	0.415	0.381	KA	0.437	0.389
	0.353	0.360		0.370	0.372		0.394	0.385		0.422	0.398		0.447	0.407
	0.362	0.366		0.383	0.380		0.408	0.392		0.434	0.403		0.458	0.410
	0.359	0.352		0.378	0.365		0.402	0.375		0.426	0.385		0.448	0.392
FB	0.351	0.347	GB	0.367	0.358	HB	0.389	0.369	JB	0.415	0.381	KB	0.437	0.389
	0.359	0.352		0.378	0.365		0.402	0.375		0.426	0.385		0.448	0.392
	0.362	0.366		0.383	0.380		0.408	0.392		0.434	0.403		0.458	0.410
	0.370	0.372		0.395	0.388		0.422	0.398		0.447	0.407		0.470	0.413
FC	0.367	0.358	GC	0.390	0.372	HC	0.415	0.381	JC	0.437	0.389	KC	0.459	0.394
	0.359	0.352		0.378	0.365		0.402	0.375		0.426	0.385		0.448	0.392
	0.353	0.360		0.370	0.372		0.394	0.385		0.422	0.398		0.447	0.407
	0.364	0.380		0.387	0.396		0.415	0.409		0.443	0.421		0.469	0.429
FD	0.362	0.366	GD	0.383	0.380	HD	0.408	0.392	JD	0.434	0.403	KD	0.458	0.410
	0.364	0.380		0.387	0.396		0.415	0.409		0.443	0.421		0.469	0.429
	0.374	0.387		0.401	0.404		0.430	0.417		0.456	0.426		0.481	0.432
	0.370	0.372		0.395	0.388		0.422	0.398		0.447	0.407		0.470	0.413
FL1	0.362	0.366	GL1	0.383	0.380	HL1	0.408	0.392	JL1	0.434	0.403	KL1	0.458	0.410
	0.350	0.334		0.364	0.344		0.385	0.356		0.407	0.364		0.428	0.372
	0.351	0.347		0.367	0.358		0.389	0.369		0.415	0.381		0.437	0.389
	0.359	0.352		0.378	0.365		0.402	0.375		0.426	0.385		0.448	0.392
FL2	0.357	0.339	GL2	0.374	0.349	HL2	0.395	0.359	JL2	0.418	0.368	KL2	0.438	0.374
	0.350	0.334		0.364	0.344		0.385	0.356		0.407	0.364		0.428	0.372
	0.357	0.339		0.374	0.349		0.395	0.359		0.418	0.368		0.438	0.374
	0.359	0.352		0.378	0.365		0.402	0.375		0.426	0.385		0.448	0.392
FU1	0.367	0.358	GU1	0.390	0.372	HU1	0.415	0.381	JU1	0.437	0.389	KU1	0.459	0.394
	0.364	0.344		0.385	0.356		0.407	0.364		0.428	0.372		0.449	0.376
	0.357	0.339		0.374	0.349		0.395	0.359		0.418	0.368		0.438	0.374
	0.367	0.358		0.390	0.372		0.415	0.381		0.437	0.389		0.459	0.394
FU2	0.364	0.344	GU2	0.385	0.356	HU2	0.407	0.364	JU2	0.428	0.372	KU2	0.449	0.376
	0.357	0.339		0.374	0.349		0.395	0.359		0.418	0.368		0.438	0.374
	0.355	0.374		0.374	0.387		0.400	0.402		0.430	0.417		0.456	0.426
	0.357	0.391		0.377	0.403		0.406	0.421		0.438	0.435		0.466	0.445
FU2	0.367	0.396	GU2	0.391	0.412	HU2	0.421	0.426	JU2	0.452	0.440	KU2	0.479	0.448
	0.364	0.380		0.387	0.396		0.415	0.409		0.443	0.421		0.469	0.429
	0.355	0.374		0.374	0.387		0.400	0.402		0.430	0.417		0.456	0.426
	0.364	0.380		0.387	0.396		0.415	0.409		0.443	0.421		0.469	0.429
FU2	0.367	0.396	GU2	0.391	0.412	HU2	0.421	0.426	JU2	0.452	0.440	KU2	0.479	0.448
	0.377	0.403		0.406	0.421		0.438	0.435		0.466	0.445		0.493	0.451
	0.374	0.387		0.401	0.404		0.430	0.417		0.456	0.426		0.481	0.432
	0.364	0.380		0.387	0.396		0.415	0.409		0.443	0.421		0.469	0.429

Application Notes

Precautions

- Avoid exposure to moisture at all times during transportation or storage.
- Anti-Static precaution must be taken when handling GaN, InGaN, and AlInGaP products.
- It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage beyond the specified limit. We strongly advise do not drive reverse voltage to LED.
- Avoid operation beyond the limits as specified by the absolute maximum ratings.
- Avoid direct contact the surface of the LED emits light.
- If possible, assemble the unit in a clean room or dust-free environment.
- When the LEDs are illuminating, the maximum ambient temperature should be first considered before operation.
- The appearance and specifications of the products may be modified for improvement without further notice.

Storage

It's recommended to store the products in the following conditions:

Humidity: 60% RH Max.

Temperature: 5°C ~ 30°C (14 °F ~86 °F).

- Shelf life in sealed bag : 12 month at <40°C and <90% RH. (Base on aluminum laminated moisture barrier bag.)
- After the bag is opened, devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing must be :
 1. Mounted within 72 hours at factory conditions of $\leq 30^{\circ}\text{C}$ / 60%RH, or
 2. Stored at $\leq 10\%$ RH with zip-lock sealed (time ≤ 168 hours)

Baking

It's recommended to bake before soldering once the pack is unsealed open & re-sealed after 72 hours.

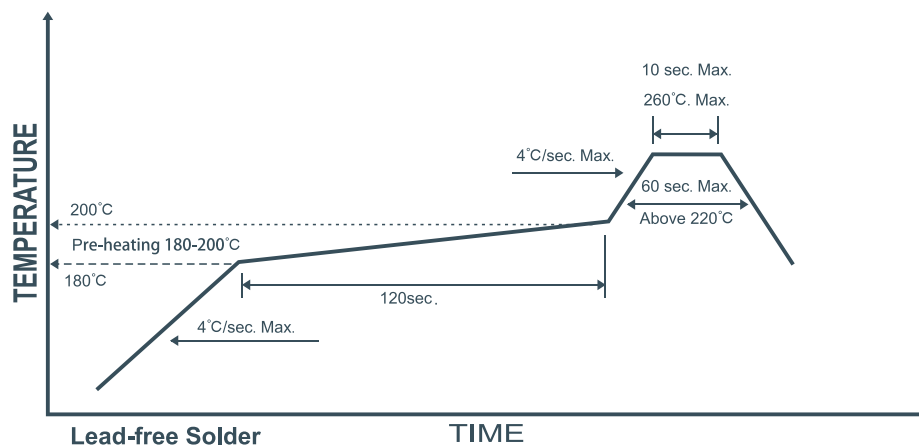
The conditions are as follows:

- $60\pm 3^{\circ}\text{C}$ x (12~24hrs) and <5% RH, taped reel type.
- $100\pm 3^{\circ}\text{C}$ x (45min~1hr), bulk type.
- $130\pm 3^{\circ}\text{C}$ x (15~30min), bulk type.

Soldering

Recommend soldering paste specifications:

- Operating temperature : Above 220°C , 60 sec.
- Peak temperature: 260°C Max., 10 sec Max..
- Never attempt next proves until the component is cooled down to room temperature after reflow.
- The recommended reflow soldering profile (measured on the surface of the LED terminal) is as following :



Cleaning

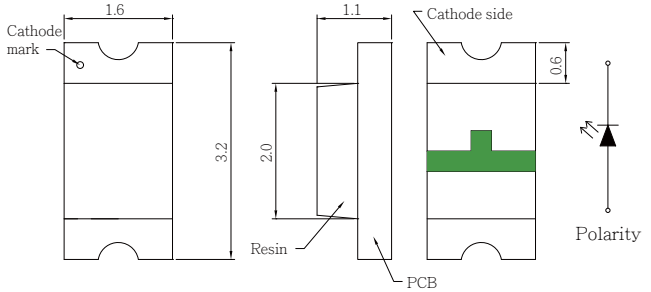
Following are cleaning procedures after soldering :

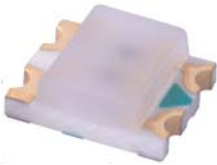
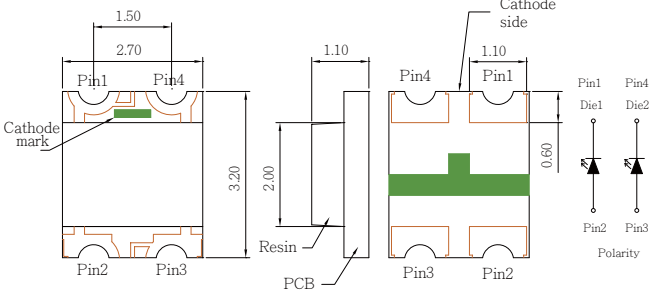
- An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended.
- Temperature x Time should be : $< 50^{\circ}\text{C}$ x 30 sec, or $< 30^{\circ}\text{C}$ x 3 min.
- Ultrasonic cleaning: $< 15\text{W}$ / bath ; Bath volume: 1 liter max.
- Curing : 100°C max, < 3min.

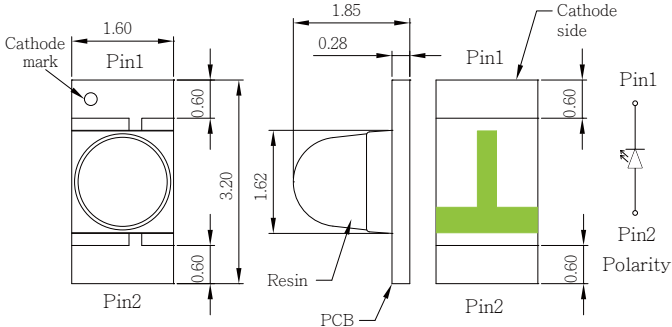
Cautions of Pick and Place

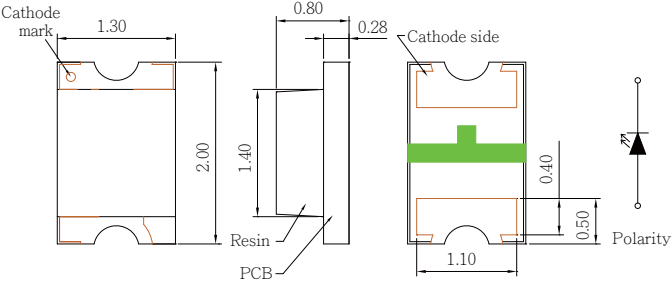
- Avoid stress on the resin at elevated temperature.
- Avoid rubbing or scraping the resin by any object.
- Electric-static may cause damage to the component. Please ensure that the equipment is properly grounded. Use of an ionizer fan is recommended.

Surface Mount Chip LED • PCB • Top View

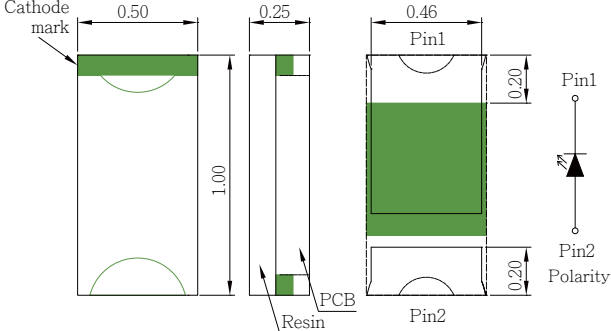
Series	Appearance		Outline drawing							
B150										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1501TX	3.2*1.6*1.1	○ White	--	3.2	--	x=0.300, y=0.296	--	300	--	20
B1501USD		● Red	--	2.1	--	629	--	120	--	
B1501NG		● Green	--	3.3	--	527	--	285	--	
B1501NB		● Blue	--	3.3	--	470	--	180	--	
B1501UYG		● Yellow Green	--	2.0	--	571	--	71.5	--	
B1501UY		● Amber	--	1.9	--	589	--	112.5	--	

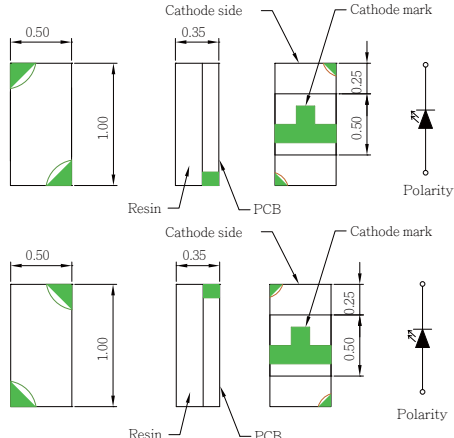
Series	Appearance		Outline drawing							
B155										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1552HQQQ	3.2*2.7*1.1	● Red	--	2.0	--	631	--	71.5	--	20
		● Yellow Green	--	2.0	--	573	--	71.5	--	
B1552SDYG		● Red	--	2.1	--	629	--	11.25	--	
		● Yellow Green	--	2.2	--	573	--	11.25	--	
B1552USNB		● Red	--	2.0	--	624	--	112.5	--	
		● Blue	--	3.3	--	470	--	71.5	--	
B1552USNG		● Red	--	2.0	--	624	--	112.5	--	
		● Green	--	3.3	--	525	--	285	--	

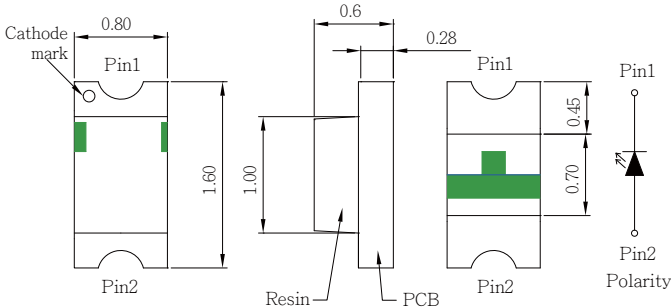
Series	Appearance		Outline drawing							
B159										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1591USD	3.2*1.6*1.85	Red	--	2.0	--	624	--	900	--	20
B1591NG		Green	--	3.3	--	527	--	1440	--	
B1591NB		Blue	--	3.3	--	470	--	715	--	
B1591UYG		Yellow Green	--	2.1	--	571	--	715	--	
B1591UY		Amber	--	2.0	--	589	--	900	--	
B1591UD		Orange	--	2.0	--	605	--	2250	--	

Series	Appearance		Outline drawing							
B170										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1701TX	2.0*1.3*0.8	White	--	3.3	--	x=0.300 y=0.310	--	390	--	20
B1701USD		Red	--	1.9	--	624	--	112.5	--	
B1701NG		Green	--	3.3	--	527	--	285	--	
B1701NB		Blue	--	3.3	--	470	--	71.5	--	
B1701UYG		Yellow Green	--	2.0	--	573	--	45	--	
B1701UY		Amber	--	2.0	--	589	--	71.5	--	
B1701UD		Orange	--	2.0	--	605	--	71.5	--	

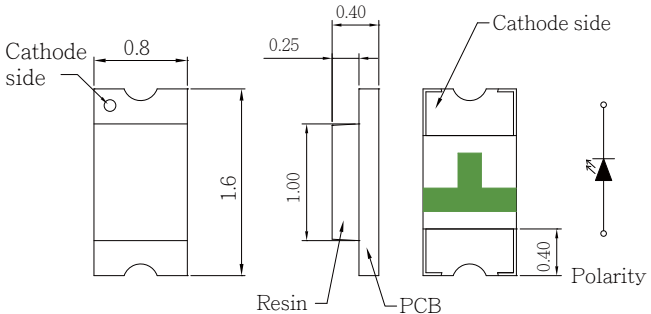
Surface Mount Chip LED • PCB • Top View

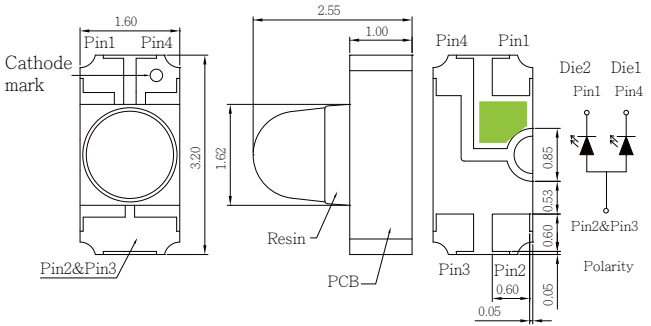
Series	Appearance		Outline drawing							
B181										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1811TX	1.0*0.5*0.25	○ White	--	2.9	--	x=0.290 y=0.285	--	140	--	5

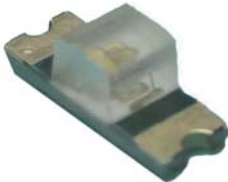
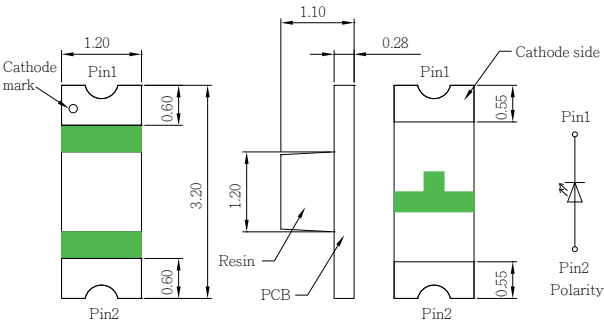
Series	Appearance		Outline drawing							
B185										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1851TX	1.0*0.5*0.35	○ White	--	2.8	--	x=0.290 y=0.285	--	170	--	5
B1851NG		● Green	--	2.8	--	530	--	112.5	--	
B1851NB		● Blue	--	2.8	--	472	--	50	--	

Series	Appearance		Outline drawing							
B191										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ_D (nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1911TX	1.6*0.8*0.6	○ White	--	3.2	--	x=0.290 y=0.285	--	450	--	20
B1911USD		● Red	--	2.0	--	624	--	560	--	
B1911NG		● Green	--	3.3	--	525	--	285	--	
B1911NB		● Blue	--	3.3	--	470	--	71.5	--	
B1911UY		● Amber	--	2.2	--	585	--	4.5	--	
B1911YG		● Yellow Green	--	2.2	--	573	--	11.25	--	
B1911TX		○ White	--	2.9	--	x=0.200 y=0.341	--	100	--	5
B1911USD		● Red	--	2.0	--	624	--	28.5	--	
B1911NB		● Blue	--	2.8	--	472	--	18	--	
B1911UY		● Amber	--	2.0	--	589	--	18	--	

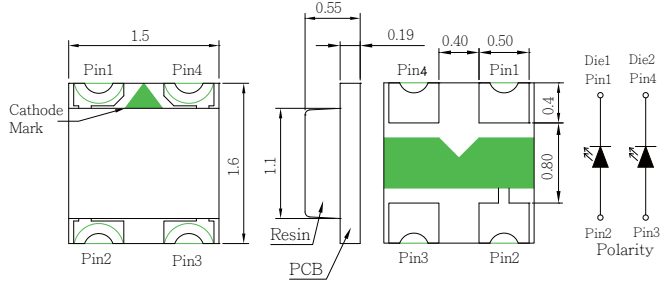
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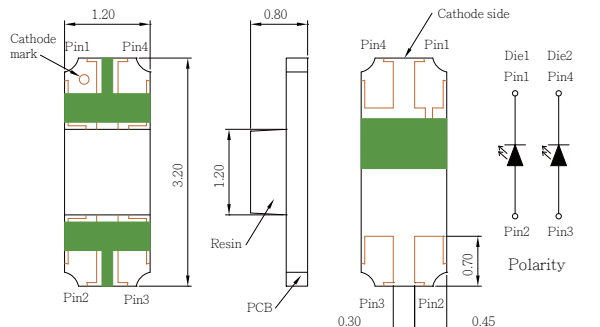
Series	Appearance		Outline drawing							
B193										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ_D (nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1931TX	1.6*0.8*0.4	○ White	--	3.2	--	x=0.280 y=0.293	--	510	--	20
B1931USD		● Red	--	1.9	--	624	--	71.5	--	
B1931NG		● Green	--	3.3	--	529	--	285	--	
B1931NB		● Blue	--	3.3	--	470	--	45	--	
B1931UD		● Orange	--	2.0	--	605	--	112.5	--	
B1931UY		● Amber	--	2.0	--	589	--	112.5	--	
B1931YG		● Yellow Green	--	2.1	--	571	--	71.5	--	
B1931TX		○ White	--	2.7	--	x=0.290 y=0.285	--	65	--	5
B1931USD		● Red	--	1.9	--	622	--	28.5	--	
B1931NG		● Green	--	2.8	--	525	--	100	--	
B1931NB		● Blue	--	2.8	--	472	--	28.5	--	
B1931UD		● Orange	--	2.0	--	605	--	20	--	
B1931UY		● Amber	--	1.9	--	589	--	18	--	

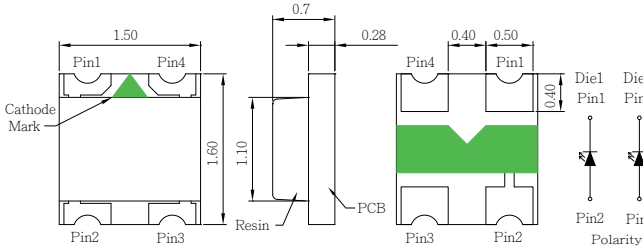
Series	Appearance		Outline drawing							
B259										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ_D (nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B2592UDTX	3.2*1.6*2.55	● Orange	--	1.9	--	605	--	28.5	--	5
		○ White	--	2.8	--	x=0.290, y=0.285	--	80	--	
B2592USNG		● Bright Red	--	2.0	--	624	--	285	--	
		● Green	--	3.3	--	525	--	285	--	

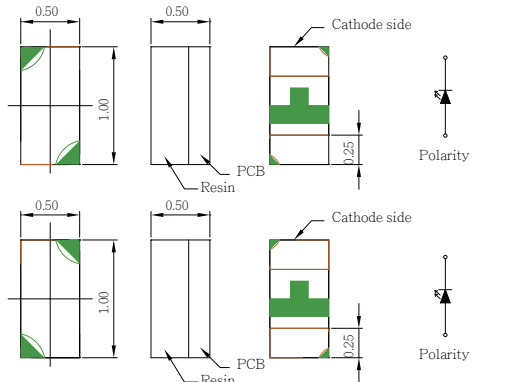
Series	Appearance		Outline drawing							
B260										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ_D (nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B2601USD	3.2*1.2*1.1	● Red	--	1.9	--	624	--	112.5	--	20
B2601NG		● Green	--	3.3	--	525	--	285	--	
B2601NB		● Blue	--	3.3	--	470	--	71.5	--	
B2601UYG		● Yellow Green	--	2.1	--	571	--	71.5	--	
B2601UY		● Amber	--	2.0	--	589	--	180	--	

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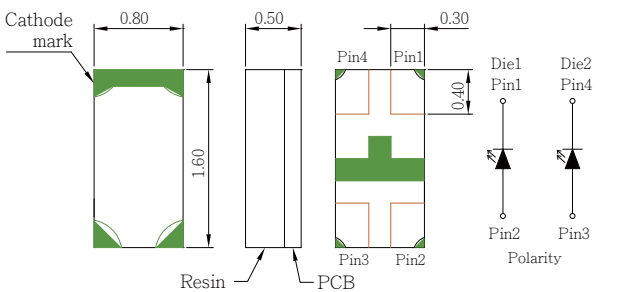
Series	Appearance	Outline drawing									
B261											
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)	
			min.	typ.	max.		min.	typ.	max.		
B2611TX	1.6*1.5*0.55	○ White	--	2.9	--	x=0.290, y=0.285	--	160	--	5	
B2612UDTX		● Orange	--	2.0	--	605	--	28.5	--		
		○ White	--	2.9	--	x=0.290, y=0.285	--	160	--		

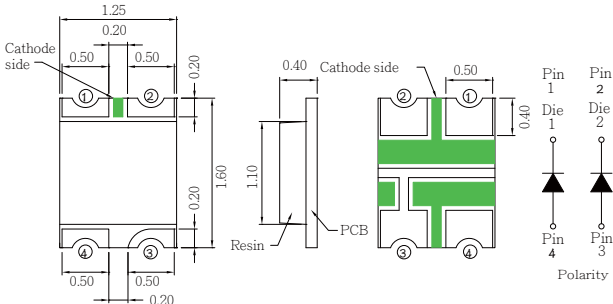
Series	Appearance		Outline drawing							
B263										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ_D (nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B2632USNB	3.2*1.2*0.8	● Red	--	2.0	--	624	--	45	--	20
		● Blue	--	3.3	--	470	--	71.5	--	

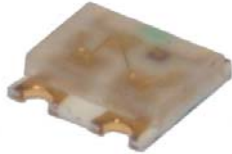
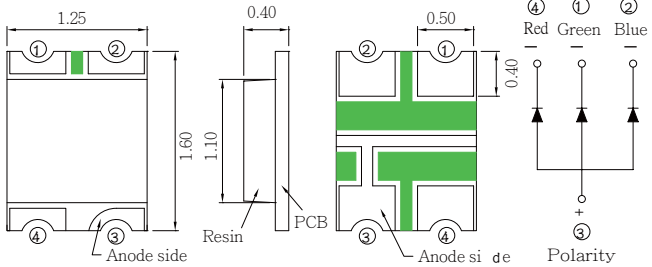
Series	Appearance		Outline drawing							
B264										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ_D (nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B2642USUG	1.6*1.5*0.7	● Red	--	1.9	--	622	--	112.5	--	20
		● Yellow Green	--	2.0	--	573	--	71.5	--	

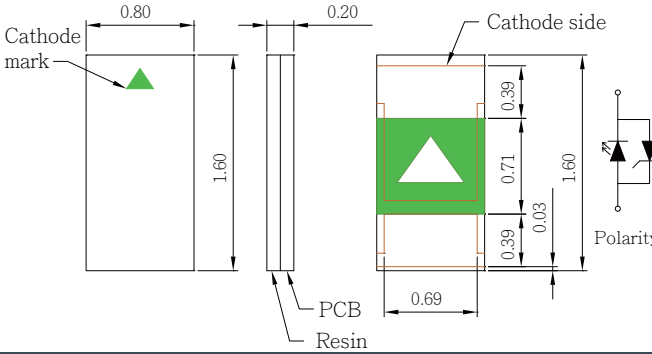
Series	Appearance		Outline drawing							
B284										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ_D (nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B2841TX	1.0*0.5*0.5	○ White	--	3.2	--	x=0.290 y=0.285	--	250	--	20
B2841USD		● Red	--	2.0	--	624	--	112.5	--	
B2841NG		● Green	--	3.3	--	525	--	285	--	
B2841NB		● Blue	--	3.3	--	470	--	71.5	--	
B2841UD		● Orange	--	3.3	--	605	--	45	--	
B2841UYG		● Yellow Green	--	2.1	--	571	--	45	--	

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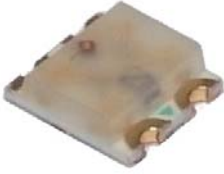
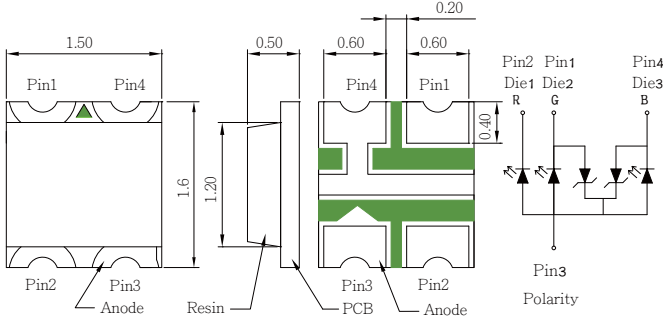
Series	Appearance		Outline drawing							
B297										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B297USUG	1.6*0.8*0.5	● Red	--	2.0	--	624	--	112.5	--	20
		● Yellow Green	--	2.1	--	571	--	71.5	--	
B297UDNB		● Orange	--	2.0	--	605	--	17	--	
		● Blue	--	3.3	--	470	--	40	--	
B2972UDUG		● Orange	--	2.0	--	605	--	71.5	--	
		● Yellow Green	--	2.1	--	571	--	71.5	--	
B2972USNB		● Red	--	2.0	--	624	--	71.5	--	20
		● Blue	--	3.3	--	470	--	71.5	--	
B2972USNG		● Red	--	1.9	--	624	--	180	--	
		● Green	--	3.3	--	525	--	285	--	
B297USDNB		● Orange	--	2.0	--	605	--	18	--	
		● Blue	--	2.8	--	472	--	18	--	
B2972USNB		● Red	--	2.0	--	624	--	28.5	--	5
		● Blue	--	2.8	--	472	--	28.5	--	

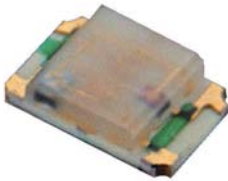
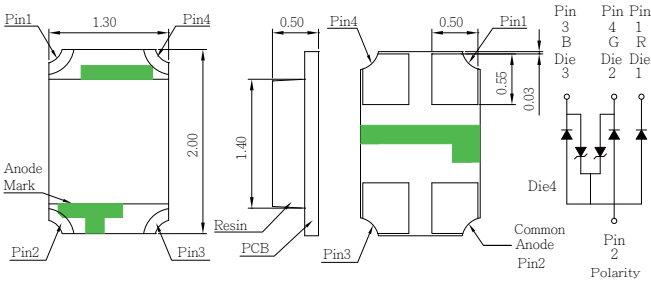
Series	Appearance		Outline drawing							
B2G3										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B2G32USNB	1.6*1.25*0.4	Red	--	1.9	--	622	--	28.5	--	5
		Blue	--	2.8	--	472	--	18	--	
B2G32USNG		Red	--	2.0	--	622	--	28.5	--	
		Green	--	2.8	--	529	--	112.5	--	

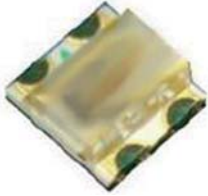
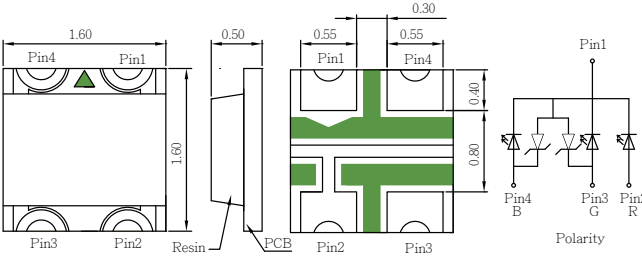
Series	Appearance		Outline drawing							
B3G3										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ_D (nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B3G3FCH	1.6*1.25*0.4	Red	--	1.9	--	622	--	112.5	--	20
		Green	--	3.3	--	527	--	285	--	
		Blue	--	3.3	--	470	--	112.5	--	

Series	Appearance		Outline drawing							
E19R1										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ_D (nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
E19R1TX	1.6*0.8*0.2	○ White	--	2.8	--	x=0.290 y=0.285	--	165	--	5

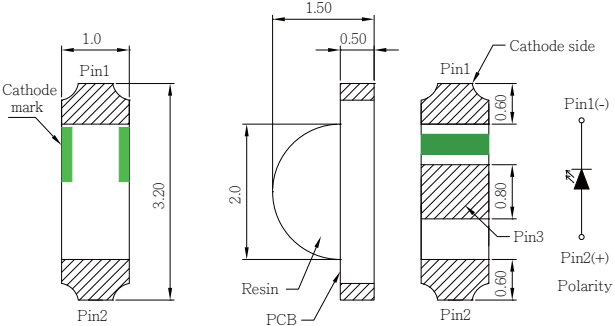
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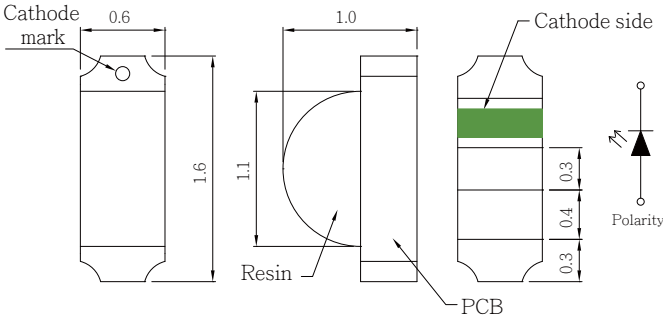
Series	Appearance		Outline drawing							
E3613										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V_F)			λ_D (nm)/ CIE (x, y)	Luminous Intensity (mcd)			I_F (mA)
			min.	typ.	max.		min.	typ.	max.	
E3613FCH	1.6*1.5*0.5	● Red	--	1.9	--	621	--	100	--	10
		● Green	--	2.9	--	521	--	360	--	
		● Blue	--	2.9	--	465	--	100	--	

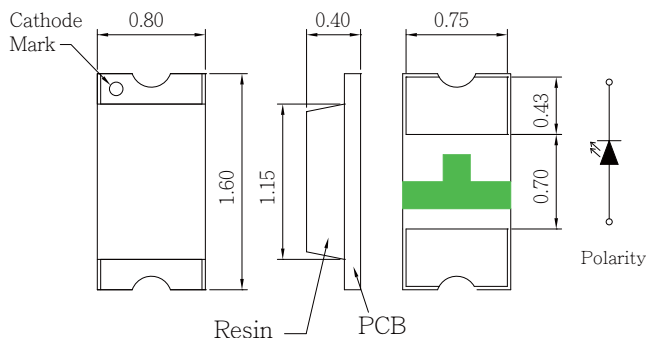
Series	Appearance		Outline drawing							
E3743										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V_F)			λ_D (nm)/ CIE (x, y)	Luminous Intensity (mcd)			I_F (mA)
			min.	typ.	max.		min.	typ.	max.	
E3743FCH	2.0*1.3*0.5	● Red	--	2.0	--	624	--	112.5	--	20
		● Green	--	3.3	--	525	--	180	--	
		● Blue	--	3.3	--	465	--	71.5	--	

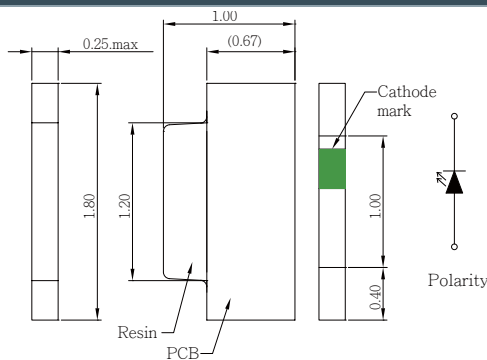
Series	Appearance		Outline drawing							
E3853										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
E3853FCH	1.6*1.6*0.5	Red	--	2.0	--	624	--	45	--	5
		Green	--	2.9	--	525	--	56	--	
		Blue	--	2.9	--	465	--	11.5	--	

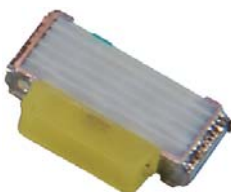
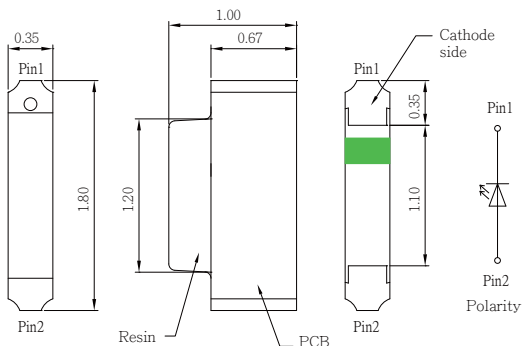
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Series	Appearance		Outline drawing							
B110										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1101USD	3.2*1.5*1.0	● Red	--	1.8	--	624	--	112.5	--	20
B1101NG		● Green	--	3.3	--	525	--	285	--	
B1101NB		● Blue	--	3.3	--	470	--	112.5	--	
B1101UYG		● Yellow Green	--	2.1	--	571	--	71.5	--	
B1101UY		● Amber	--	1.9	--	589	--	71.5	--	

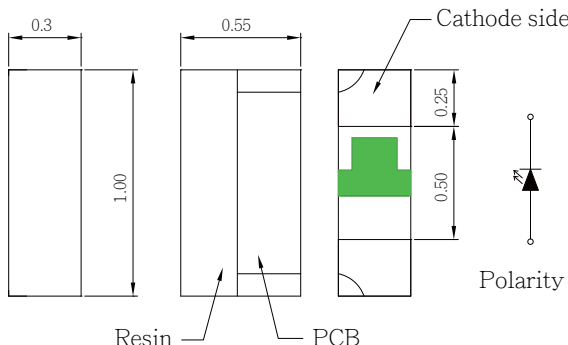
Series	Appearance		Outline drawing							
B121										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1211USD	1.6*1.0* 0.6	● Red	--	2.0	--	624	--	112.5	--	20
B1211NG		● Green	--	3.3	--	527	--	285	--	
B1211NB		● Blue	--	3.3	--	470	--	71.5	--	
B1211UYG		● Yellow Green	--	2.1	--	571	--	71.5	--	
B1211UY		● Amber	--	1.9	--	590	--	140	--	
B1211UD		● Orange	--	2.0	--	605	--	71.5	--	
B1211TX		○ White	--	3.3	--	x=0.290, y=0.285	--	245	--	

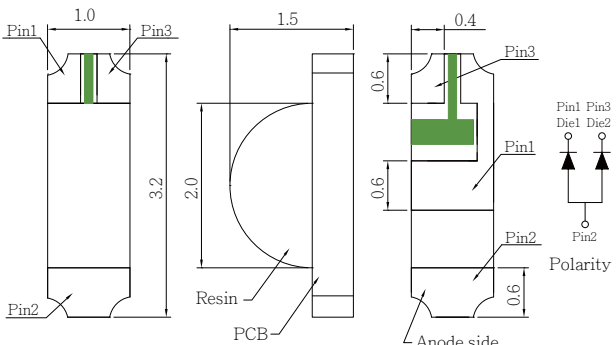
Series	Appearance		Outline drawing							
B122										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1221NB	1.6*0.4*0.8	● Blue	--	2.8	--	472	--	28.5	--	5

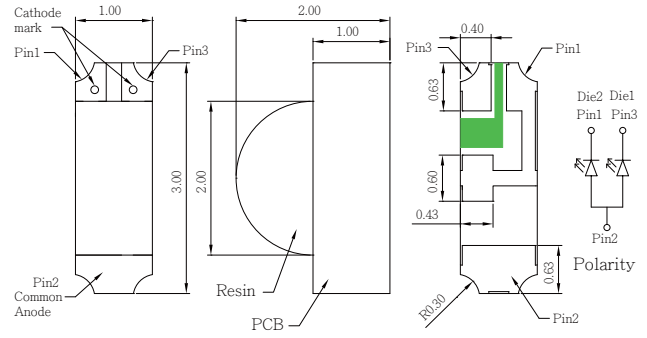
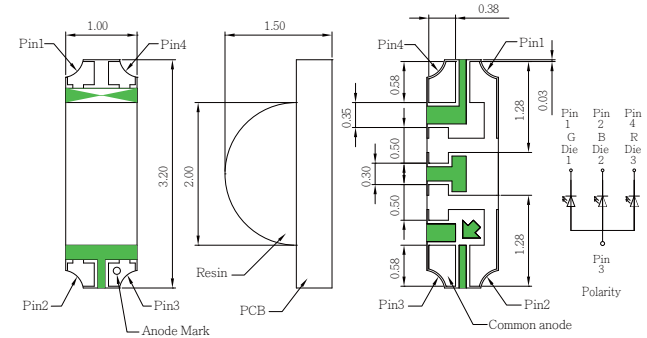
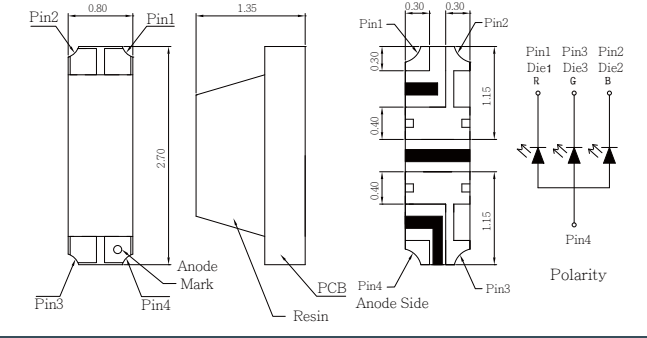
Series	Appearance		Outline drawing							
B129										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1291TX	1.8*1.0*0.25	○ White	--	2.9	--	x=0.309, y=0.315	--	90	--	5

Series	Appearance		Outline drawing							
B12H										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B12H1TX	1.8*1.0*0.35	○ White	--	2.9	--	x=0.270, y=0.255	--	270	--	20

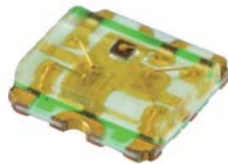
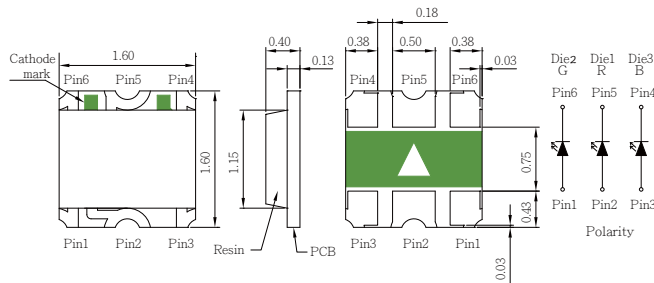
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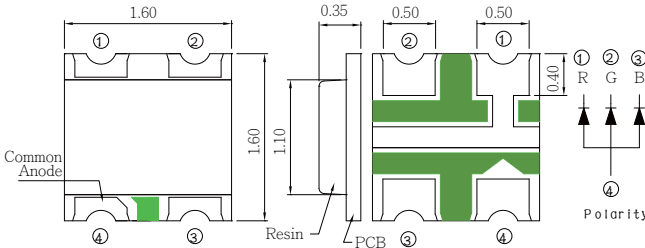
Series	Appearance	Outline drawing								
B186										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B1861TX	1.0*0.55*0.3	○ White	--	2.8	--	x=0.290, y=0.285	--	160	--	5
B1861NB		● Blue	--	2.9	--	472	--	28.5	--	

Series	Appearance		Outline drawing							
B210										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B2102UDUG	3.2*1.5*1.0	● Orange	--	2.1	--	605	--	71.5	--	20
		● Yellow Green	--	2.1	--	571	--	71.5	--	
B2102USNB		● Red	--	2.0	--	624	--	71.5	--	
		● Blue	--	3.3	--	470	--	112.5	--	
B2102USUG		● Red	--	2.0	--	622	--	71.5	--	
		● Yellow Green	--	2.0	--	573	--	45	--	
B2102UDTX		● Orange	--	1.9	--	605	--	18	--	5
		○ White	--	2.0	--	x=0.290, y=0.285	--	70	--	
B2102UDNB		● Orange	--	2.0	--	605	--	18	--	
		● Blue	--	2.8	--	472	--	28.5	--	
		● Amber	--	2.0	--	589	--	28.5	--	
B2102UYNG		● Green	--	2.8	--	529	--	180	--	

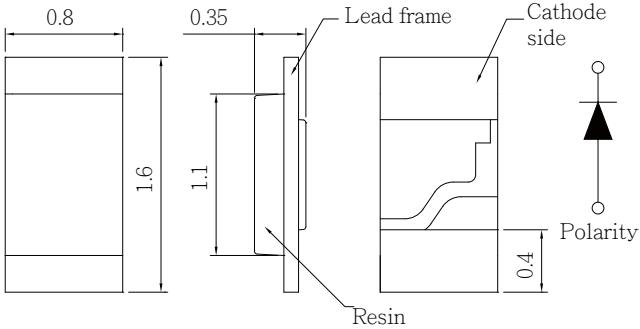
Series	Appearance		Outline drawing							
B2132										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B2132USUG	3.0*1.0*2.0	● Orange	--	2.0	--	605	--	112.5	--	5
		○ White	--	2.9	--	x=0.290, y=0.285	--	71.5	--	
Series	Appearance		Outline drawing							
B3113										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B3113FCH	3.2*1.5*1.0	● Red	--	2.0	--	624	--	112.5	--	20
		● Green	--	3.3	--	525	--	180	--	
		● Blue	--	3.3	--	470	--	71.5	--	
Series	Appearance		Outline drawing							
B3213										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B3213FCH	2.7*1.35*0.8	● Red	--	2.4	--	620	--	42	--	5
		● Green	--	3.2	--	532	--	175	--	
		● Blue	--	3.2	--	470	--	42	--	

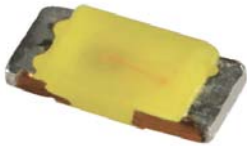
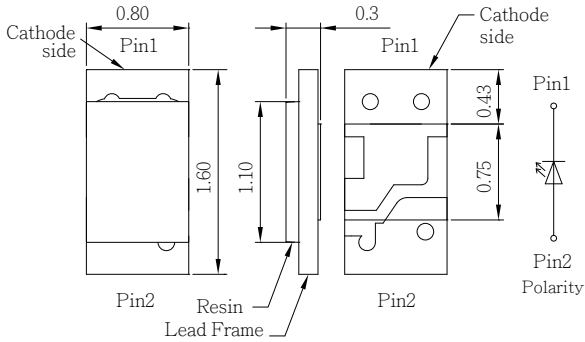
Surface Mount Chip LED • PCB • Side View

Series	Appearance		Outline drawing							
B3803										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B3803FCH	1.6*1.6*0.4	● Red	--	2.0	--	622	--	112.5	--	20
		● Green	--	3.2	--	527	--	285	--	
		● Blue	--	3.2	--	470	--	71.5	--	
B3803FYQ		● Yellow	--	2.0	--	589	--	71.5	--	20
		● Yellow Green	--	2.1	--	571	--	71.5	--	
		● Blue	--	3.2	--	470	--	71.5	--	

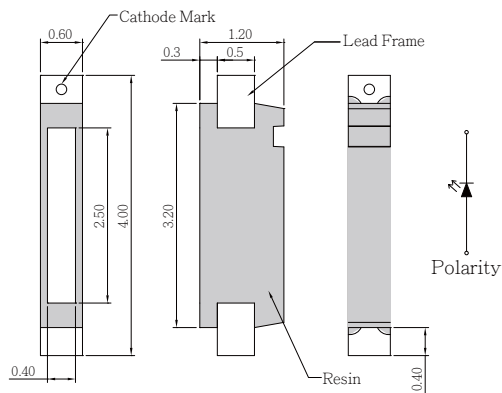
Series	Appearance	Outline drawing								
B3843										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B3843FCH	1.6*1.6*0.4	Red	--	2.0	--	622	--	71.5	--	20
		Green	--	3.2	--	527	--	360	--	
		Blue	--	3.2	--	470	--	71.5	--	

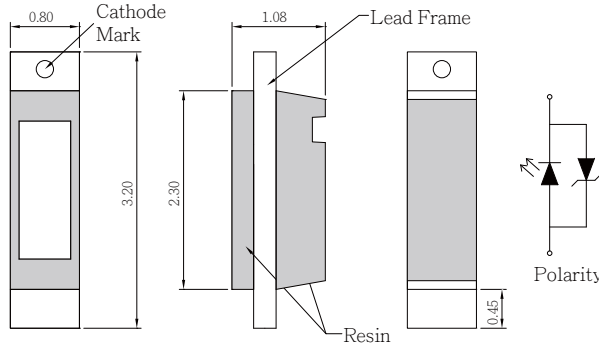
Surface Mount Chip LED • Leadframe • Top View

Series	Appearance		Outline drawing							
F196										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
F1961UYG	1.6*0.8*0.35	● Yellow Green	--	2.0	--	571	--	71.5	--	20
F1961USD		● Red	--	2.0	--	624	--	28.5	--	5
F1961NG		● Green	--	2.8	--	529	--	180	--	
F1961TX		○ White	--	2.8	--	x=0.290, y=0.285	--	220	--	

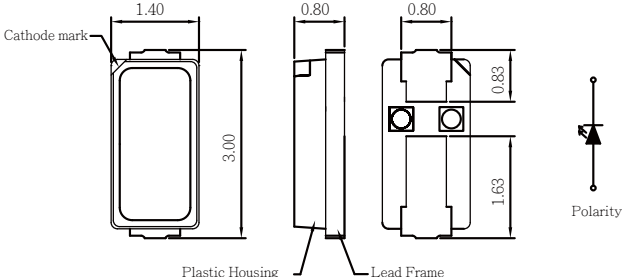
Series	Appearance		Outline drawing							
F199										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λ D(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
F1991NB	1.6*0.8*0.3	● Blue	--	2.8	--	472	--	45	--	5
F1991NG		● Green	--	2.8	--	529	--	180	--	
F1991TX		○ White	--	3.0	--	x=0.290, y=0.285	--	400	--	

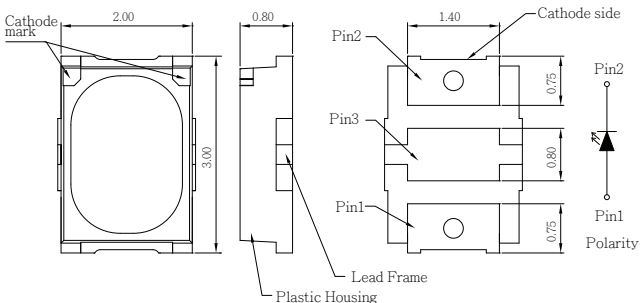
Surface Mount Chip LED • Leadframe • Side View

Series	Appearance		Outline drawing							
F136										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
F1361TX	4.0*0.6*1.2	○ White	--	3.3	--	x=0.280, y=0.280	--	1640	--	20

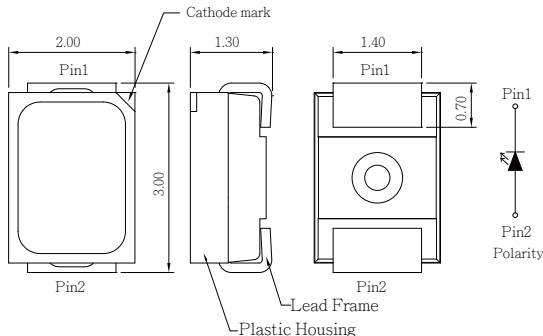
Series	Appearance	Outline drawing									
V118											
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)	
			min.	typ.	max.		min.	typ.	max.		
V1181TX	3.2*0.8*1.1	○ White	--	3.2	--	x=0.280, y=0.260	--	1920	--	20	
V1181TX		○ White	--	3.3	--	x=0.311, y=0.313	--	1512	--		

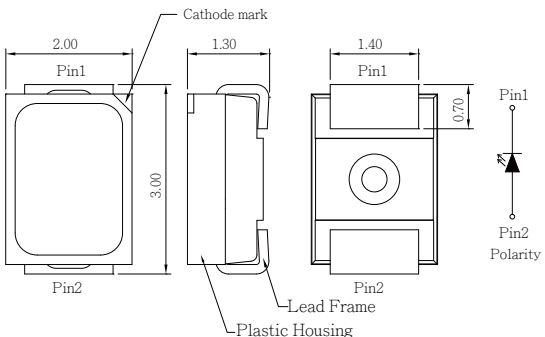
Surface Mount Chip LED • PLCC • Top View

Series	Appearance		Outline drawing								
T136											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T1361DNC	3.0*1.4*0.8	○ Pure White	> 70	--	3.2	--	6000K	--	12	--	30
		○ Neutral White		--	3.2	--	4000K	--	12	--	
		● Warm White		--	3.2	--	3000K	--	10.5	--	
T1361DND		○ Pure White	> 80	--	3.2	--	6000K	--	11	--	
		○ Neutral White		--	3.2	--	4000K	--	11	--	
		● Warm White		--	3.2	--	3000K	--	10	--	

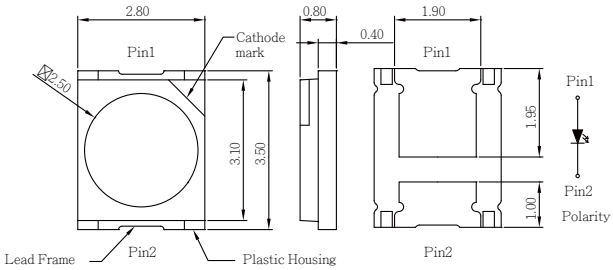
Series	Appearance		Outline drawing								
T157											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T1571DNC	3.0*2.1*0.8	○ Pure White	> 70	--	3.2	--	6000K	--	12	--	30
		○ Neutral White		--	3.2	--	4000K	--	12	--	
		● Warm White		--	3.2	--	3000K	--	10.5	--	
T1571DND		○ Pure White	> 80	--	3.2	--	6000K	--	11	--	
		○ Neutral White		--	3.2	--	4000K	--	11	--	
		● Warm White		--	3.2	--	3000K	--	10	--	
T1571DNC		○ Pure White	> 70	--	3.2	--	6000K	--	25	--	60
		○ Neutral White		--	3.2	--	4000K	--	25	--	
		● Warm White		--	3.2	--	3000K	--	23	--	
T1571DND		○ Pure White	> 80	--	3.2	--	6000K	--	24	--	
		○ Neutral White		--	3.2	--	4000K	--	24	--	
		● Warm White		--	3.2	--	3000K	--	22	--	

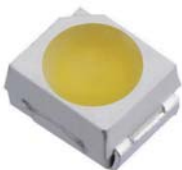
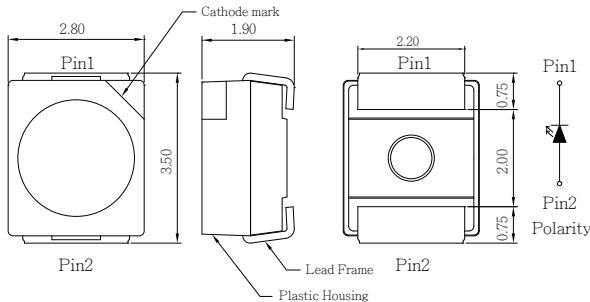
Surface Mount Chip LED • PLCC • Top View

Series	Appearance		Outline drawing								
T159											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T1591DNC	3.0*2.0*1.3	○ Pure White	> 70	--	3.2	--	6000K	--	7.3	--	20
○ Neutral White		--		3.2	--	4000K	--	7.3	--		
○ Warm White		--		3.2	--	3000K	--	6.8	--		
T1591DND		> 80	○ Pure White	--	3.2	--	6000K	--	7.0	--	
○ Neutral White			--	3.2	--	4000K	--	6.9	--		
○ Warm White			--	3.2	--	3000K	--	6.4	--		

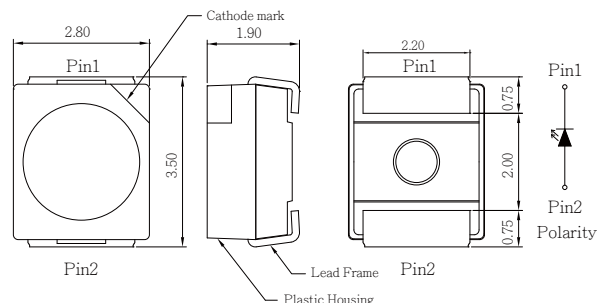
Series	Appearance		Outline drawing								
T159											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Intensity (mcd)			I _F (mA)
T1591USD	3.0*2.0*1.3	● Red	--	--	2.1	--	622	--	180	--	20
T1591UY		● Amber	--	--	2.1	--	590	--	1100	--	
T1591UYG		● Yellow Green	--	--	2.1	--	575	--	112.5	--	
T1591NB		● Blue	--	--	3.2	--	470	--	180	--	
T1591NG		● Green	--	--	3.2	--	525	--	1400	--	

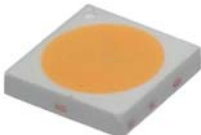
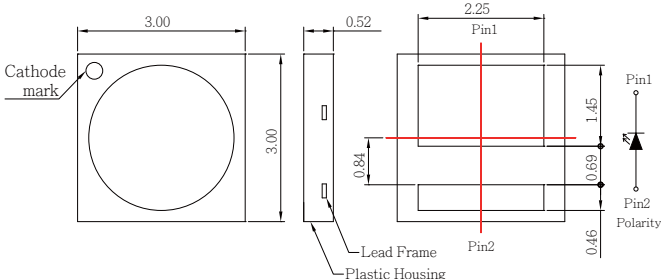
Surface Mount Chip LED • PLCC • Top View

Series	Appearance	Outline drawing									
T167											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V_F)			CIE(x,y)/ CCT(K)	Luminous Flux (lm)			I_F (mA)
				min.	typ.	max.		min.	typ.	max.	
T1671TX	3.5*2.8*0.8	○ White	--	--	3.6	--	x=0.270 y=0.240	--	70	--	280

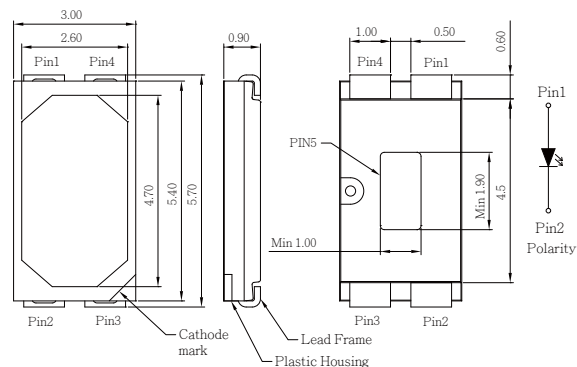
Series	Appearance		Outline drawing								
T169											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Intensity (mcd)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T1691DNC	3.5*2.8*1.8	○ Pure White	> 70	--	3.2	--	6000K	--	2850	--	20
		○ Neutral White		--	3.2	--	4000K	--	2850	--	
		● Warm White		--	3.2	--	3000K	--	2685	--	
T1691DND		○ Pure White	> 80	--	3.2	--	6000K	--	2710	--	
		○ Neutral White		--	3.2	--	4000K	--	2620	--	
		● Warm White		--	3.2	--	3000K	--	2500	--	

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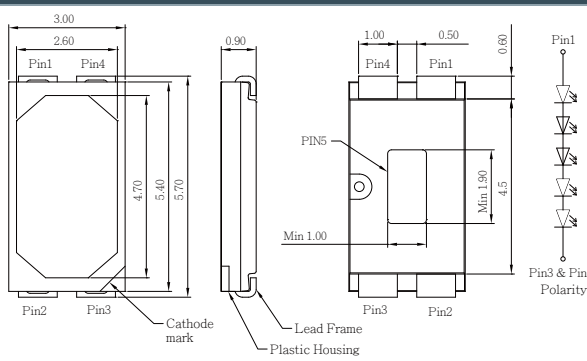
Series	Appearance		Outline drawing								
T169											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Intensity (mcd)			I _F (mA)
T1691UD	3.5*2.8*1.9	● Orange	--	--	2.0	--	605	--	180	--	20
T1691NB		● Blue	--	--	3.2	--	470	--	500	--	
T1691USD		● Red	--	--	2.0	--	622	--	1200	--	
T1691UYG		● Yellow Green	--	--	2.0	--	575	--	112.5	--	
T1691UY		● Amber	--	--	2.0	--	590	--	1200	--	
T1691NG		● Green	--	--	3.2	--	525	--	800	--	

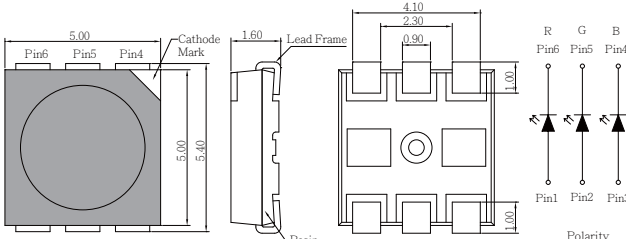
Series	Appearance		Outline drawing								
T321X											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			CIE(x,y)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
T3211TX	3.0*3.0*0.52	○ White	--	min.	typ.	max.	x=0.270 y=0.240	min.	typ.	max.	400

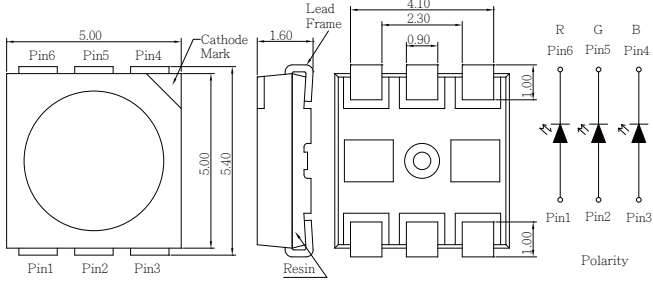
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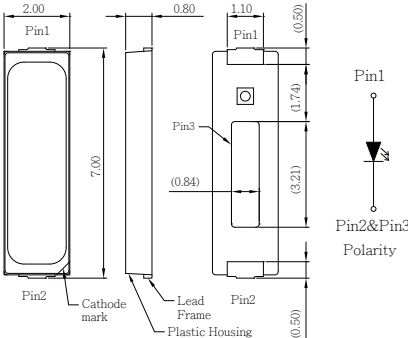
Series	Appearance		Outline drawing								
T5301											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			CIE(x,y)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T5301DNC	5.7*3.0*0.9	○ Pure White	> 70	--	3.2	--	6000K	--	59	--	150
		○ Neutral White		--	3.2	--	4000K	--	59	--	
		○ Warm White		--	3.2	--	3000K	--	55	--	
T5301DND		○ Pure White	> 80	--	3.2	--	6000K	--	56	--	
		○ Neutral White		--	3.2	--	4000K	--	56	--	
		○ Warm White		--	3.2	--	3000K	--	53	--	
T5301TX	○ White	--	--	3.2	--	x=0.270 y=0.240	--	35	--	120	

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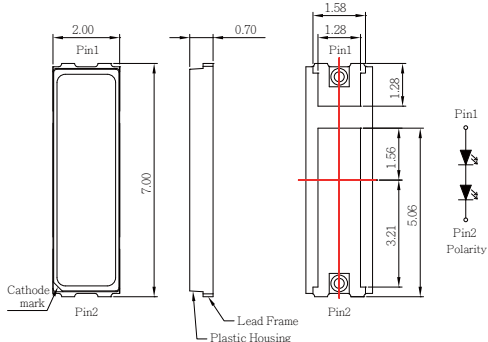
Series	Appearance		Outline drawing								
T5335											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
T5335DND	5.7*3.0*0.9	○ Pure White	> 80	--	15.6	--	6000K	--	55	--	30
		○ Neutral White		--	15.6	--	4000K	--	55	--	
		● Warm White		--	15.6	--	3000K	--	50	--	

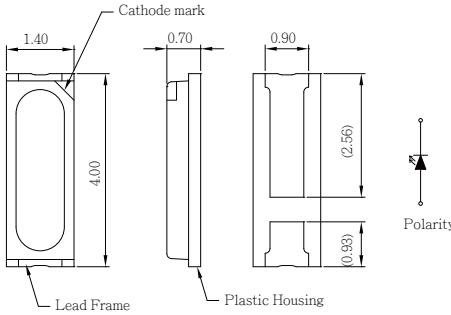
Series	Appearance		Outline drawing								
T3A83											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Intensity (mcd)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T3A83DNC	5.0*5.4*1.6	○ Pure White	> 70	--	2.8	--	6000K	--	8000	--	60
		○ Neutral White		--	2.8	--	4000K	--	8000	--	
		● Warm White		--	2.8	--	3000K	--	7800	--	
T3A83DND		○ Pure White	> 80	--	2.8	--	6000K	--	7000	--	
		○ Neutral White		--	2.8	--	4000K	--	6700	--	
		● Warm White		--	2.8	--	3000K	--	6300	--	

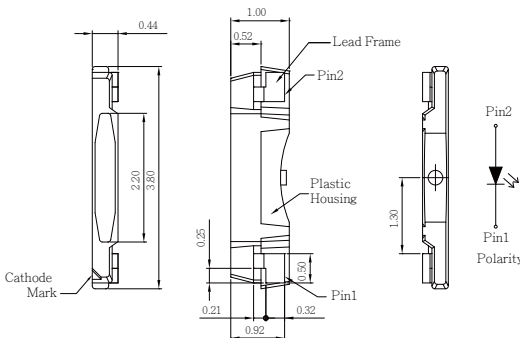
Series	Appearance			Outline drawing							
T3A83											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λ D(nm)/ CCT(K)	Luminous Intensity (mcd)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T3A83FCH	5.4*5.0*1.6	Red	--	--	2.2	--	622	--	710	--	20
		Green	--	--	3.2	--	525	--	1400	--	
		Blue	--	--	3.2	--	470	--	320	--	

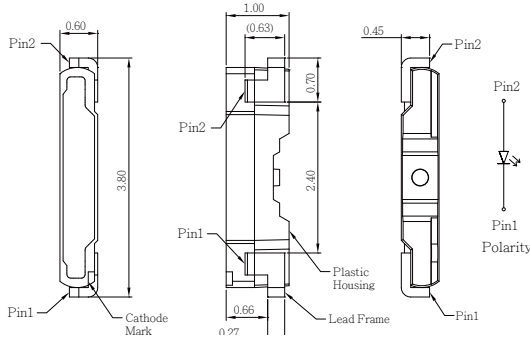
Series	Appearance			Outline drawing							
T7201											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			CIE(x,y)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T7201TX	7.0*2.0*0.8	○ White	--	--	3.3	--	x=0.270 y=0.240	--	35	--	120

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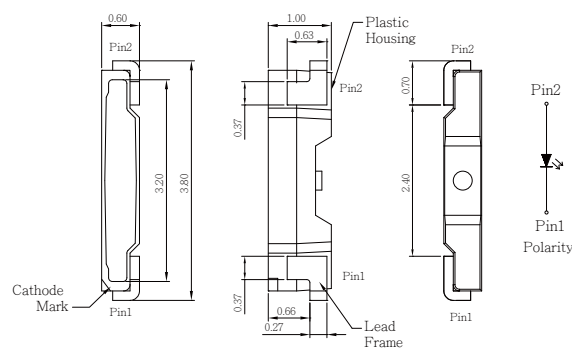
Series	Appearance		Outline drawing								
T7222											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			CIE(x,y)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T7222TX	7.0*2.0*0.7	○ White	--	--	6.5	--	x=0.270 y=0.240	--	95	--	150

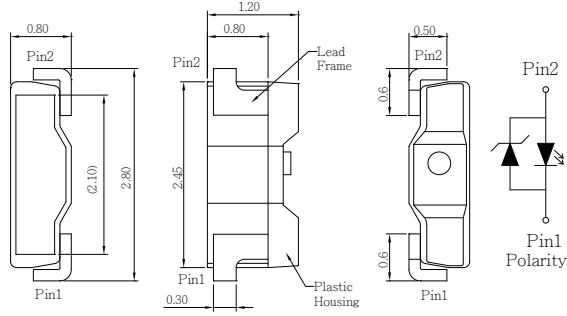
Series	Appearance		Outline drawing								
T1401											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			CIE(x,y)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T1401TX	4.0*1.4*0.7	○ White	--	--	3.0	--	x=0.270 y=0.240	--	20	--	60

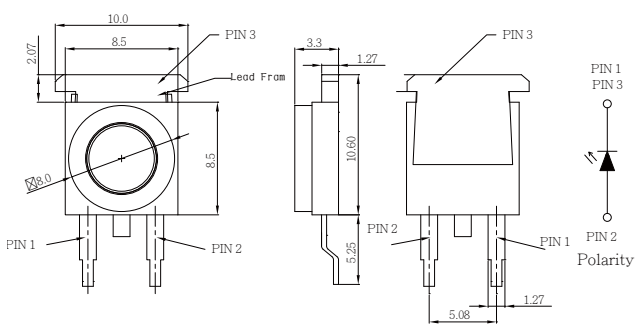
Series	Appearance		Outline drawing							
F104										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
F1041SP	3.8*1.0*0.44	○ White	--	3.0	--	x=0.290 y=0.280	--	2600	--	20

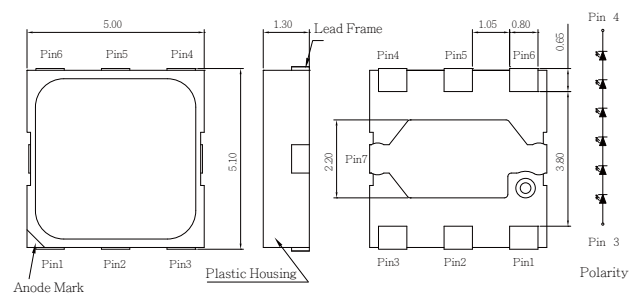
Series	Appearance		Outline drawing							
F105										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
F1051SP	3.8*1.0*0.6	○ White	--	3.0	--	x=0.290 y=0.280	--	3000	--	20

Surface Mount Chip LED • PLCC • Side View

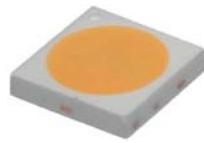
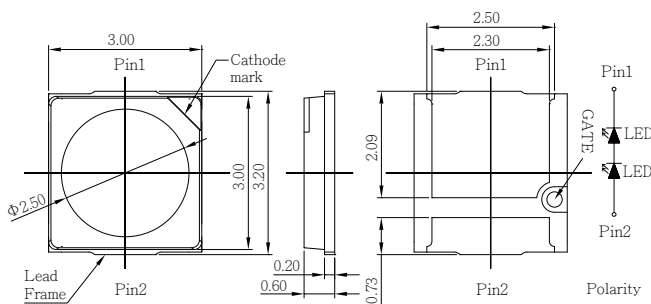
Series	Appearance		Outline drawing							
F107										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
F1071SP	3.8*1.0*0.6	○ White	--	3.0	--	x=0.290 y=0.280	--	3200	--	20

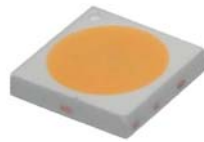
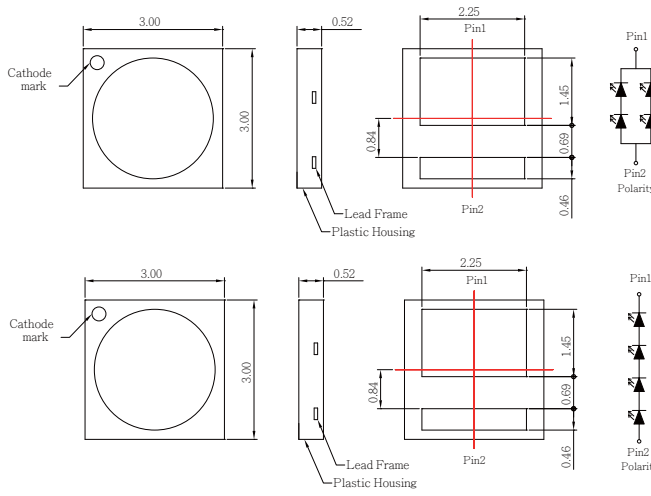
Series	Appearance		Outline drawing							
V108										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
V1081SP	2.8*1.2*0.8	○ White	--	3.0	--	x=0.290 y=0.280	--	1450	--	20

Series	Appearance		Outline drawing								
P178											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λ D(nm)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
P178BPU	15.9*10*3.3	○ Pure White	> 70	--	3.3	--	6000K	--	105	--	350
		○ Neutral White		--	3.3	--	4000K	--	90	--	
		● Warm White		--	3.3	--	3000K	--	90	--	

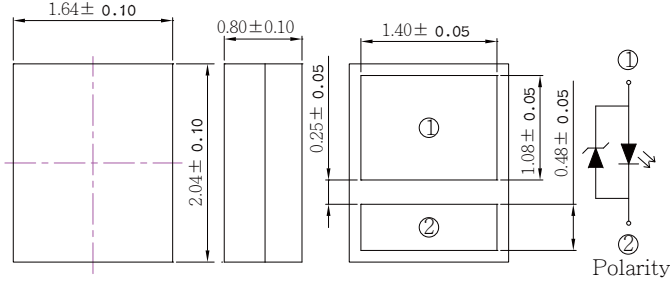
Series	Appearance		Outline drawing								
T1A63											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T1A63DNC	5.0*5.2*1.3	○ Pure White	> 70	--	3.2	--	6000K	--	110	--	300
		○ Neutral White		--	3.2	--	4000K	--	100	--	
		● Warm White		--	3.2	--	3000K	--	90	--	
T1A63DND		○ Pure White	> 80	--	3.2	--	6000K	--	105	--	
		○ Neutral White		--	3.2	--	4000K	--	95	--	
		● Warm White		--	3.2	--	3000K	--	85	--	

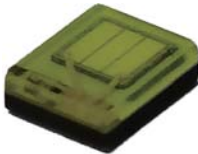
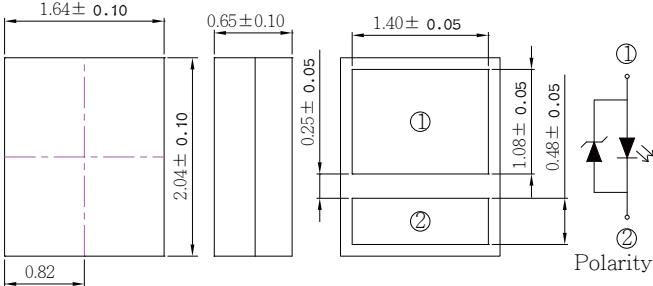
High Power LED • General

Series	Appearance		Outline drawing								
T3212											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λ D(nm)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
T3212DND	3.0*3.0*0.52	○ Pure White	> 80	--	6.2	--	6000K	--	100	--	150
		○ Neutral White		--	6.2	--	4000K	--	100	--	
		● Warm White		--	6.2	--	3000K	--	88	--	

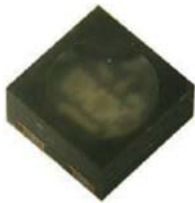
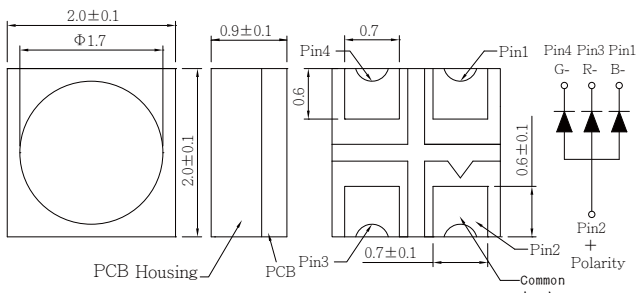
Series	Appearance		Outline drawing								
T3214											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
T3214DND	3.0*3.0*0.52	○ Pure White	> 80	--	12.6	--	6000K	--	100	--	75
		○ Neutral White		--	12.6	--	4000K	--	100	--	
		● Warm White		--	12.6	--	3000K	--	88	--	
		○ Pure White		--	6.2	--	6000K	--	100	--	150
		○ Neutral White		--	6.2	--	4000K	--	100	--	
		● Warm White		--	6.2	--	3000K	--	88	--	

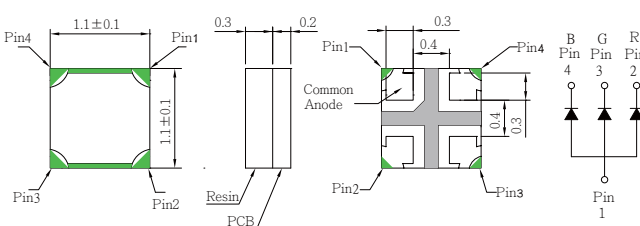
Flash LED

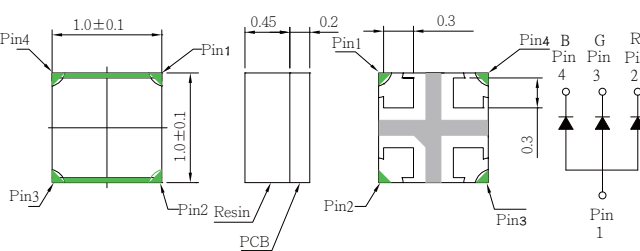
Series	Appearance		Outline drawing							
D171										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
D1711TX	2.04*1.64*0.8	○ Pure White	--	3.5	--	6000K	--	220	--	1000
			--	3.2	--		--	100	--	500

Series	Appearance		Outline drawing							
E171										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CCT(K)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
E17C1TX	2.04*1.64*0.65	○ Pure White	--	3.2	--	6000K	--	240	--	1000
			--	3.2	--		--	120	--	500

Display LED

Series	Appearance		Outline drawing							
B2C23										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B2D23FCH	2.0*2.0*0.9	● Ultra Bright Red	--	1.9	--	624	--	90	--	20
		● Green	--	3.2	--	525	--	360	--	
		● Blue	--	3.3	--	470	--	45	--	

Series	Appearance		Outline drawing							
B3053										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B3053FCH	1.0*1.0*0.5	● Ultra Bright Red	--	2.0	--	621	--	77	--	10
		● Green	--	2.8	--	531	--	160	--	5
		● Blue	--	2.8	--	471	--	40	--	5

Series	Appearance		Outline drawing							
B30D3										
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD(nm)/ CIE (x, y)	Luminous Intensity (mcd)			I _F (mA)
			min.	typ.	max.		min.	typ.	max.	
B30D3FCH	1.0*1.0*0.65	● Ultra Bright Red	--	1.9	--	624	--	35	--	10
		● Green	--	3.2	--	530	--	50	--	5
		● Blue	--	3.3	--	470	--	9	--	5

Digital Display LED

Series		Appearance								
HCD88442										
Part Number	Size (LxW mm)	Color	Segment Width	CA/ CC	λ D(nm)/ CIE(x,y)	Resin Color	Face Color	Luminous Intensity (mcd)		
								min.	typ.	max.
HCD88442	53.2*38.4	● Red	--	CA	645	White	Black	2750	--	12000

Series		Appearance								
HCD88532										
Part Number	Segment Height mm(inch)	Color	Segment Width	CA/ CC	λ D(nm)/ CIE(x,y)	Resin Color	Face Color	Luminous Intensity (mcd)		
								min.	typ.	max.
HCD88532	14.22 (0.56)	○ White	7.9	CA	x=0.290 y=0.310	White	Gray	--	180	--

Series		Appearance								
HCD89002										
Part Number	Segment Height mm(inch)	Color	Segment Width	CA/ CC	λ D(nm)/ CIE(x,y)	Resin Color	Face Color	Luminous Intensity (mcd)		
								min.	typ.	max.
HCD89002	7 (0.28)	● Green	6	CA	572	White	Black	800	2100	--

Digital Display LED

Series		Appearance								
HCD89045										
Part Number	Segment Height mm(inch)	Color	Segment Width	CA/CC	$\lambda D(nm)/$ CIE(x,y)	Resin Color	Face Color	Luminous Intensity (mcd)		
								min.	typ.	max.
HCD89045	7 (0.28)	● Blue	4.85	CA	470	White	Black	1.7	2.1	--

Series		Appearance								
HNT4242B										
Part Number	Segment Height mm(inch)	Color	Segment Width	CA/CC	$\lambda D(nm)/$ CIE(x,y)	Resin Color	Face Color	Luminous Intensity (mcd)		
								min.	typ.	max.
HNT4242B	10 (0.4)	● Red	6	CA	639	White	Gray	200	650	--

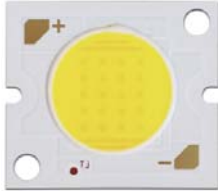
Lamp LED

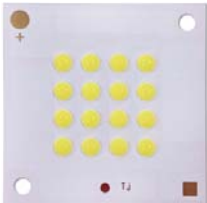
Series		Appearance									
HTV-1823-4D											
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD (nm)	Luminous Intensity (mcd)			Viewing Angle	I _F (mA)
			min.	typ.	max.	typ.	min.	typ.	max.	typ.	
HTV-1823-4D	5 Round LAMP	● Green	--	3.2	--	525	2750	--	12000	15	20

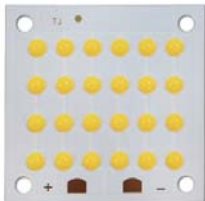
Series		Appearance									
HTV-333-41											
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD (nm)	Luminous Intensity (mcd)			Viewing Angle	I _F (mA)
			min.	typ.	max.	typ.	min.	typ.	max.	typ.	
HTV-333-41	3.0 Round LAMP	● Yellow	--	2.1	--	590	--	50	--	36	20

Series		Appearance									
HTV-631G-H102											
Part Number	Size (LxWxH mm)	Emitting Color	Forward Voltage (V _F)			λD (nm)	Luminous Intensity (mcd)			Viewing Angle	I _F (mA)
			min.	typ.	max.	typ.	min.	typ.	max.	typ.	
HTV-631G-H102	2.9 Round LAMP	● Yellow Green	--	2.1	--	572	--	25	--	55	20

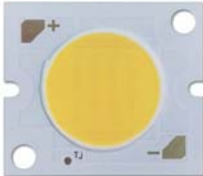
COB (Chip On Board) • Lighting Module

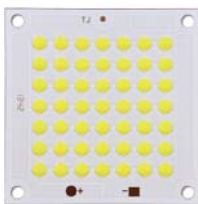
Series		Appearance										
HT 39												
Part Number	Size (LxWxH mm)	Emitting Color	Power Consumption	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)	Viewing angle 2θ1/3
				min.	typ.	max.		min.	typ.	max.		
HT-HT39C	22.8*25.8*1.0	○ Cool White	9.1W	--	30.5	--	5200K	--	1050	--	0.3	120
HT-HT39W		● Warm White		--	30.5	--	2900K	--	842	--		

Series		Appearance										
HT 64												
Part Number	Size (LxWxH mm)	Emitting Color	Power Consumption	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)	Viewing angle 2θ1/3
				min.	typ.	max.		min.	typ.	max.		
HT-HT64C	42.0*42.0*1.0	○ Cool White	17.6W	--	25.1	--	5200K	--	1880	--	0.7	140
HT-HT64W		● Warm White		--	25.1	--	2900K	--	1500	--		

Series		Appearance										
HT 65												
Part Number	Size (LxWxH mm)	Emitting Color	Power Consumption	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)	Viewing angle 2θ1/3
				min.	typ.	max.		min.	typ.	max.		
HT-HT65C	42.0*42.0*1.0	○ Cool White	26.3W	--	18.8	--	5200K	--	2780	--	1.4	140
HT-HT65W		● Warm White		--	18.8	--	2900K	--	2244	--		

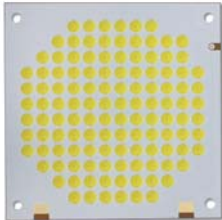
COB (Chip On Board) • Lighting Module

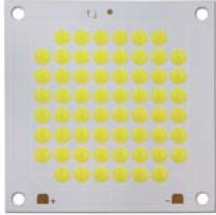
Series		Appearance										
HT 71												
Part Number	Size (LxWxH mm)	Emitting Color	Power Consumption	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)	Viewing angle 2θ1/3
				min.	typ.	max.		min.	typ.	max.		
HT-HT71C	22.8*25.8*1.0	○ Cool White	11.28W	--	64.5	--	5200K	--	1175	--	0.175	120
HT-HT71W		● Warm White		--	64.5	--	2900K	--	1030	--	0.175	

Series		Appearance										
XT 35												
Part Number	Size (LxWxH mm)	Emitting Color	Power Consumption	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)	Viewing angle 2θ1/3
				min.	typ.	max.		min.	typ.	max.		
HT-XT35C	54.0*54.0*1.0	○ Cool White	53.8W	--	22	--	5200K	--	6189	--	2.45	140
HT-XT35W		● Warm White		--	22	--	2900K	--	5005	--		

Series		Appearance										
XT 36												
Part Number	Size (LxWxH mm)	Emitting Color	Power Consumption	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)	Viewing angle 2θ1/3
				min.	typ.	max.		min.	typ.	max.		
HT-XT36C	70.0*70.0*1.0	○ Cool White	269.5W	--	35	--	5200K	--	29645	--	7.7	140
HT-XT36W		● Warm White		--	35	--	2900K	--	24255	--		

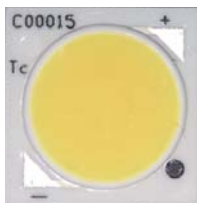
COB (Chip On Board) • Lighting Module

Series		Appearance										
XT 73												
Part Number	Size (LxWxH mm)	Emitting Color	Power Consumption	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)	Viewing angle 2θ1/3
				min.	typ.	max.		min.	typ.	max.		
HT-XT73C	70.0*70.0*1.0	○ Cool White	133.2W	--	34.6	--	5200K	--	14540	--	3.85	140
HT-XT73W		● Warm White		--	34.6	--	2900K	--	11600	--		

Series		Appearance												
XT 74														
		Part Number	Size (LxWxH mm)	Emitting Color	Power Consumption	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)	Viewing angle 2θ1/3
						min.	typ.	max.		min.	typ.	max.		
						HT-XT74C	54.0*54.0*1.0	○ Cool White		65.1W	--	31		
HT-XT74W	● Warm White	--	31	--	2900K	--		5860	--					

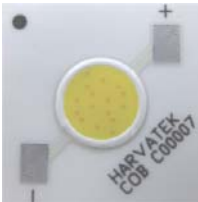
COB (Chip On Board) • Ceramic Series

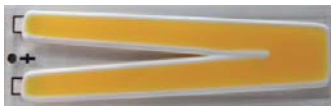
Series		Appearance									
1215											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
HT-CT48	15*12*1.65	● Warm White	>80	32	36	40	3000K	--	840	--	180
HT-CT47				32	36	40	3000K	--	1050	--	240

Series		Appearance									
1515 High Voltage											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
HT-CT42	15*15*1.65	Warm White	>80	130	144	158	3000K	--	750	--	40

Series		Appearance									
2020											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
HT-CT46	20*20*1.65	Warm White	>80	32	36	40	3000K	--	1450	--	300
HT-CT43				66	72	80	3000K	--	1800	--	210

COB (Chip On Board) • Ceramic Series

Series		Appearance									
2020 High CRI (MR-16)											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
HT-CT41	20*20*1.65	● Warm White	>90	15	18	21	2700K	--	750	--	400

Series		Appearance									
COG											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
HT-GT50	41*12*2	● Warm White	>80	98	108	118	2700K	200	--	--	18

Series		Appearance									
COG											
Part Number	Size (LxWxH mm)	Emitting Color	CRI	Forward Voltage (V _F)			CCT(K)	Luminous Flux (lm)			I _F (mA)
				min.	typ.	max.		min.	typ.	max.	
HT-GT51	41*6*2	● Warm White	>80	80	82	90	2700K	250	--	--	20

This image shows a full page of white paper with horizontal blue ruling lines. The word "memo" is printed in a light blue font at the top left corner. The lines are evenly spaced and extend across the width of the page.