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Samsung LED COB Package

- High color quality COB
- Standard COB (B-series Gen2)
- Small LES COB (C-series)
- D-series

High color quality COB

Advanced color quality features optimized for premium lighting applications

Vivid Color COB Available in B-series and C-series

- Vivid color high intensity type
- For more brilliant & attractive displaying
 - Vivid white without yellowish tint
 - Excellent color quality & saturated colors
 - Suitable solution for commercial spot lighting



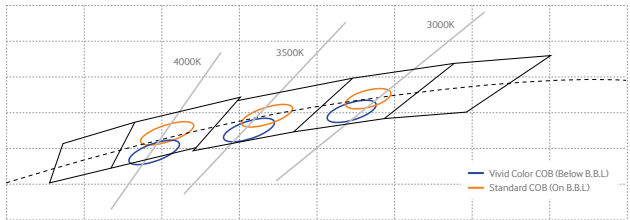
Halogen Lamp



Vivid Color COB

CCT		B-series	C-series
Vivid	3000K	○	○
	3500K	○	○
	4000K	○	○

The chromaticity of vivid color COB



Ultra High CRI COB Available in B-series

- Achieving true colors for premium lighting
- Ultra high CRI: Typ. Ra 97
 - Ultra high CRI COB has high values through R1 to R15
 - Excellent color quality
 - Achieving the real true color light



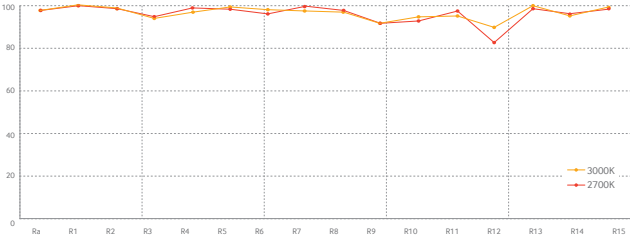
Standard COB (CRI 80+)



Ultra High CRI COB (CRI 95+)

CCT		B-series
Ra 95+	2700K	○
	3000K	○
	3500K	○

Excellent color index distribution (R9 typ.90 @ Ra 95+)



Standard COB B-series Gen2

Excellent performance improvement from previous series

- The new standard COB Gen2 of Samsung COB B-series offers superior performance. The outline dimension and mechanical size of Gen2 is exactly same as previous series.
- Chip on Board (COB) solution makes it easy to design in
 - Simple assembly reduces manufacturing cost
 - Low thermal resistance
 - InGaN/GaN MQW LED with long time reliability
 - Completed 9,000 hours of LM-80 testing

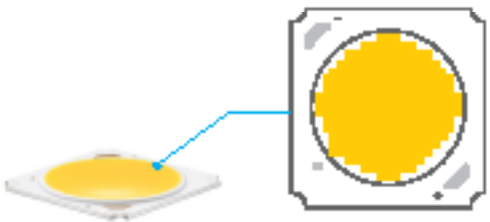


Tc =25°C		LC006B	LC008B	LC013B	LC019B	LC026B	LC033B	LC040B
LES		8 mm		11 mm	12.4 mm	17 mm		
Vf		35.5 V	36.5 V	35.5 V				
Watt.	Typ.	6.4 W (180 mA)	8.6 W (240 mA)	12.8 W (360 mA)	19.2 W (540 mA)	25.6 W (720 mA)	32 W (900 mA)	38.3 W (1,080 mA)
	Max.	12.2 W (330 mA)	15.8 W (420 mA)	24.4 W (660 mA)	36.3 W (980 mA)	48.1 W (1,300 mA)	59.9 W (1,620 mA)	70.3 W (1,900 mA)
Size		13.5 x 13.5 mm		17.0 x 17.0 mm		21.5 x 21.5 mm		

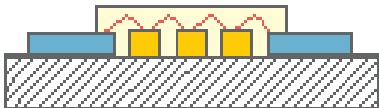


World leading lm/W & low thermal resistance

Superior reflective in-house



Low thermal resistance by metal substrate and small chip



Low thermal resistance below 0.8 K/W @85°C

Small LES COB C-series

High lumen density COB – high intensity, suitable solution for narrow beam spot & down light

The small LES COB, C-series reduces the space required for the LES by 50%, while doubling the center beam candle power (CBCP).

- Samsung new small LES COB adapted new flip chip
- Low droop characteristic by current & thermal
- High reliability
- Completed 6,000 hours of LM-80 testing
- Excellent color quality – high R9 value R9 15 (@Ra 80+) / R9 60 (@Ra 90+)

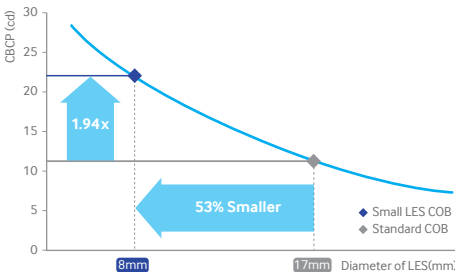


Tc =85°C		LC010C	LC020C	LC040C
LES		6 mm	8 mm	11 mm
Vf		34.5 V		
Watt.	Typ.	9.3 W (270 mA)	18.6 W (540 mA)	37.3 W (1,080 mA)
	Max.	14.6 W (405 mA)	29.2 W (810 mA)	58.5 W (1,620 mA)
Size		12.0 x 15.0 mm		16.0 x 19.0 mm



High intensity

Samsung new small LES COB can make 2 times higher CBCP through smaller LES size.

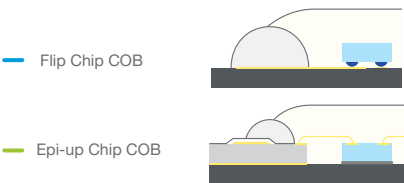
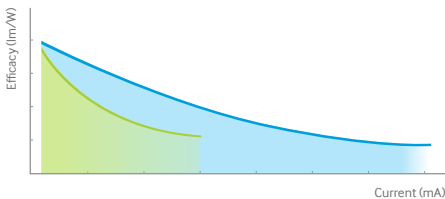


Standard COB

Small LES COB

New flip chip based technology

- Low droop characteristic by current & thermal
- No wire bonding
- High reliability



D-Series

Providing strong portfolio for expanding various line up options

The new D-series of Samsung COB provides a full line up for various applications – spot light, down light, flood light etc.

- Chip on Board (COB) solution makes it easy to design in
- Simple assembly reduces manufacturing & tooling cost
- Low thermal resistance
- Completed 6,000 hours of LM-80 testing



Tc =85°C		LC003D	LC006D	LC009D	LC013D	LC016D	LC019D	LC026D	LC040D	LC060D	LC080D
LES		9.8 mm				14.5 mm			22 mm		
Vf		34.6 V									
Watt.	Typ.	3.1 W (90 mA)	6.2 W (180 mA)	9.4 W (270 mA)	12.5 W (360 mA)	15.6 W (450 mA)	18.7 W (540 mA)	24.9 W (720 mA)	37.4 W (1,080 mA)	56.1 W (1,080 mA)	84.2 W (1,620 mA)
	Max.	6.0 W (160 mA)	12.0 W (320 mA)	17.9 W (480 mA)	23.9 W (640 mA)	29.9 W (800 mA)	36.3 W (970 mA)	48.2 W (1,290 mA)	72.5 W (1,940 mA)	108.9 W (1,940 mA)	163.4 W (2,910 mA)
Size		13.5 x 13.5 mm				19.0 x 19.0 mm			28.0 x 28.0 mm		



Samsung recommends 'D-series' solutions for various applications

Following applications and usage of conventional light source



Specification

B-series Gen2

Product	CRI Min.	CCT (K)	Tc = 25℃		Tc = 85℃		IF (mA)	Part number
			Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)	Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)		
 LC006B	Vivid	3000	800	125	728	118	180	SPHWW1HDN82VYHV3CF
		3500	816	128	742	120		SPHWW1HDN82VYHU3CF
		4000	824	129	749	121		SPHWW1HDN82VYHT3CF
	95	2700	683	107	622	101		SPHWW1HDN828YHW3CC
		3000	704	110	641	104		SPHWW1HDN828YHV3CC
		3500	726	114	660	107		SPHWW1HDN828YHU3CC
	90	2700	768	120	698	113		SPHWW1HDN827YHW3CG
		3000	800	125	728	118		SPHWW1HDN827YHV3CG
		3500	816	128	742	120		SPHWW1HDN827YHU3CG
	80	4000	824	129	749	121		SPHWW1HDN827YHT3CG
		2700	914	143	832	134		SPHWW1HDN825YHW3EE
		3000	952	149	866	140		SPHWW1HDN825YHV3EE
	70	3500	971	152	884	143		SPHWW1HDN825YHU3EE
		4000	990	155	901	146		SPHWW1HDN825YHT3EE
		5000	980	153	892	144		SPHCW1HDN825YHRT3E
	70	5700	980	153	892	144		SPHCW1HDN825YHQT3E
		3000	980	153	882	143		SPHWW1HDN823YHVT3GE
		4000	1,029	161	926	150		SPHWW1HDN823YHTT3GE
 LC008B	Vivid	3000	1,091	124	992	117	240	SPHCW1HDN823YHRT3GE
		3500	1,112	127	1,012	119		SPHWW1HDN94VYHV3FG
		4000	1,123	128	1,022	121		SPHWW1HDN94VYHU3FG
	95	2700	932	106	848	100		SPHWW1HDN948YHW3EC
		3000	961	110	874	103		SPHWW1HDN948YHV3EC
		3500	990	113	900	106		SPHWW1HDN948YHU3EC
	90	2700	1,047	120	953	112		SPHWW1HDN947YHW3FG
		3000	1,091	124	992	117		SPHWW1HDN947YHV3FG
		3500	1,112	127	1,012	119		SPHWW1HDN947YHU3FG
	80	4000	1,123	128	1,022	121		SPHWW1HDN947YHT3FG
		2700	1,246	142	1,134	134		SPHWW1HDN945YHW3KH
		3000	1,298	148	1,181	139		SPHWW1HDN945YHV3KH
	70	3500	1,324	151	1,205	142		SPHWW1HDN945YHU3KH
		4000	1,351	154	1,229	145		SPHWW1HDN945YHT3KH
		5000	1,337	153	1,217	143		SPHCW1HDN945YHRTKH
	70	5700	1,337	153	1,217	143		SPHCW1HDN945YHQT3KH
		3000	1,337	153	1,203	142		SPHWW1HDN943YHVT3MG
		4000	1,404	160	1,264	149		SPHWW1HDN943YHTT3MG
 LC013B	Vivid	3000	1,632	128	1,485	120	360	SPHCW1HDN943YHRT3MG
		3500	1,664	130	1,515	122		SPHWW1HDNA2VYHV31F
		4000	1,681	132	1,529	124		SPHWW1HDNA2VYHU31F
	95	2700	1,394	109	1,269	103		SPHWW1HDNA2VYHT31F
		3000	1,437	112	1,308	106		SPHWW1HDNA28YHW31E
		3500	1,481	116	1,347	109		SPHWW1HDNA28YHV31E
	90	2700	1,566	123	1,425	115		SPHWW1HDNA28YHU31E
		3000	1,632	128	1,485	120		SPHWW1HDNA27YHV31G
		3500	1,664	130	1,515	122		SPHWW1HDNA27YHU31G
	80	4000	1,681	132	1,529	124		SPHWW1HDNA27YHT31G
		2700	1,865	146	1,697	137		SPHWW1HDNA25YHW31E
		3000	1,943	152	1,768	143		SPHWW1HDNA25YHV31E
	70	3500	1,981	155	1,803	146		SPHWW1HDNA25YHU31E
		4000	2,021	158	1,839	149		SPHWW1HDNA25YHT31E
		5000	2,001	157	1,821	147		SPHCW1HDNA25YHRT1E
	70	5700	2,001	157	1,821	147		SPHCW1HDNA25YHQT1E
		3000	2,001	157	1,801	146		SPHWW1HDNA23YHVT1F
		4000	2,101	164	1,891	153		SPHWW1HDNA23YHTT1F
 LC019B	Vivid	3000	2,399	125	2,183	118	540	SPHCW1HDNA23YHRT1F
		3500	2,447	128	2,226	120		SPHWW1HDNB2VYHV32J
		4000	2,471	129	2,248	121		SPHWW1HDNB2VYHU32J
	95	2700	2,050	107	1,865	101		SPHWW1HDNB28YHW31F
		3000	2,113	110	1,923	104		SPHWW1HDNB28YHV31F
		3500	2,177	114	1,981	107		SPHWW1HDNB28YHU31F
	90	2700	2,303	120	2,095	113		SPHWW1HDNB27YHW32K
		3000	2,399	125	2,183	118		SPHWW1HDNB27YHV32K
		3500	2,447	128	2,226	120		SPHWW1HDNB27YHU32K
	80	4000	2,471	129	2,248	121		SPHWW1HDNB27YHT32K
		2700	2,741	143	2,495	134		SPHWW1HDNB25YHW31H
		3000	2,856	149	2,599	140		SPHWW1HDNB25YHV31H
	70	3500	2,913	152	2,651	143		SPHWW1HDNB25YHU31H
		4000	2,971	155	2,704	146		SPHWW1HDNB25YHT31H
		5000	2,941	153	2,677	144		SPHCW1HDNB25YHRT1H
	70	5700	2,941	153	2,677	144		SPHCW1HDNB25YHQT1H
		3000	2,941	153	2,647	143		SPHWW1HDNB23YHVT2F
		4000	3,088	161	2,779	150		SPHWW1HDNB23YHTT2F
 LC026B	Vivid	5000	3,118	163	2,806	151	720	SPHCW1HDNB23YHRT2F
		3000	3,264	128	2,970	120		SPHWW1HDNC2VYHV32F
		3500	3,329	130	3,029	122		SPHWW1HDNC2VYHU32F
	95	4000	3,361	132	3,059	124		SPHWW1HDNC2VYHT32F
		2700	2,789	109	2,538	103		SPHWW1HDNC28YHW32F
		3000	2,875	112	2,616	106		SPHWW1HDNC28YHV32F
	90	3500	2,961	116	2,695	109		SPHWW1HDNC28YHU32F
		2700	3,133	123	2,851	115		SPHWW1HDNC27YHW32G
		3000	3,264	128	2,970	120		SPHWW1HDNC27YHV32G
	80	3500	3,329	130	3,029	122		SPHWW1HDNC27YHU32G
		4000	3,361	132	3,059	124		SPHWW1HDNC27YHT32G
		2700	3,730	146	3,394	137		SPHWW1HDNC25YHW32H
	70	3000	3,885	152	3,535	143		SPHWW1HDNC25YHV32H
		3500	3,963	155	3,606	146		SPHWW1HDNC25YHU32H
		4000	4,042	158	3,678	149		SPHWW1HDNC25YHT32H
	70	5000	4,002	157	3,642	147		SPHCW1HDNC25YHRT2H
		5700	4,002	157	3,642	147		SPHCW1HDNC25YHQT2H
		3000	4,002	157	3,602	146		SPHWW1HDNC23YHVT3F
70	4000	4,202	164	3,782	153	SPHWW1HDNC23YHTT3F		
	5000	4,242	166	3,818	154	SPHCW1HDNC23YHRT3F		

Specification

D-series

Product	CRI Min.	CCT (K)	Tc = 85℃		IF (mA)	Part number
			Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)		
 LC003D	80	2700	413	132.7	90	SPHWWAHDNA25YZW3A9
		3000	435	139.7		SPHWWAHDNA25YZV3B1
		3500	451	144.9		SPHWWAHDNA25YZU3B2
		4000	457	146.7		SPHWWAHDNA25YZT3B3
		5000	462	148.4		SPHWWAHDNA25YZR3B3
		5700	462	148.4		SPHWWAHDNA25YZQ3B3
	90	6500	457	146.7		SPHWWAHDNA25YZP3B3
		2700	349	112.1		SPHWWAHDNA27YZW3A3
		3000	365	117.3		SPHWWAHDNA27YZV3A4
		3500	377	121.2		SPHWWAHDNA27YZU3A5
 LC006D	80	4000	385	123.6	180	SPHWWAHDNA27YZT3A6
		2700	832	133.6		SPHWWAHDNB25YZW3E9
		3000	875	140.5		SPHWWAHDNB25YZV3F3
		3500	902	144.8		SPHWWAHDNB25YZU3F5
		4000	923	148.2		SPHWWAHDNB25YZT3F8
		5000	928	149.1		SPHWWAHDNB25YZR3F8
	90	5700	928	149.1		SPHWWAHDNB25YZQ3F8
		6500	918	147.4		SPHWWAHDNB25YZP3F7
		2700	709	113.8		SPHWWAHDNB27YZW3D7
		3000	743	119.3		SPHWWAHDNB27YZV3E9
 LC009D	80	3500	768	123.4	270	SPHWWAHDNB27YZU3E0
		4000	784	125.9		SPHWWAHDNB27YZT3E4
		2700	1,209	129.5		SPHWWAHDNC25YZW3H1
		3000	1,278	136.8		SPHWWAHDNC25YZV3H2
		3500	1,315	140.8		SPHWWAHDNC25YZU3H2
		4000	1,347	144.1		SPHWWAHDNC25YZT3H2
	90	5000	1,357	145.3		SPHWWAHDNC25YZR3H2
		5700	1,357	145.3		SPHWWAHDNC25YZQ3H2
		6500	1,341	143.6		SPHWWAHDNC25YZP3H2
		2700	1,038	111.1		SPHWWAHDNC27YZW3G8
 LC013D	80	3000	1,087	116.3	360	SPHWWAHDNC27YZV3H0
		3500	1,122	120.1		SPHWWAHDNC27YZU3H0
		4000	1,147	122.8		SPHWWAHDNC27YZT3H0
		2700	1,589	127.6		SPHWWAHDND25YZW3H5
		3000	1,673	134.3		SPHWWAHDND25YZV3H5
		3500	1,725	138.5		SPHWWAHDND25YZU3H6
	90	4000	1,757	141.0		SPHWWAHDND25YZT3H6
		5000	1,772	142.3		SPHWWAHDND25YZR3H6
		5700	1,772	142.3		SPHWWAHDND25YZQ3H6
		6500	1,746	140.2		SPHWWAHDND25YZP3H6
 LC016D	80	2700	1,359	109.1	450	SPHWWAHDND27YZW3H2
		3000	1,423	114.2		SPHWWAHDND27YZV3H3
		3500	1,473	118.3		SPHWWAHDND27YZU3H4
		4000	1,505	120.8		SPHWWAHDND27YZT3H4
		2700	2,065	132.6		SPHWWAHDNE25YZW3H9
		3000	2,182	140.1		SPHWWAHDNE25YZV3J0
	90	3500	2,263	145.4		SPHWWAHDNE25YZU3J1
		4000	2,304	148.0		SPHWWAHDNE25YZT3J1
		5000	2,324	149.3		SPHWWAHDNE25YZR3J2
		5700	2,324	149.3		SPHWWAHDNE25YZQ3J2

Product	CRI Min.	CCT (K)	Tc = 85℃		IF (mA)	Part number
			Luminous flux Typ. (lm)	Luminous efficacy Typ. (lm/W)		
 LC019D	80	2700	2,458	131.5	540	SPHWWAHDNF25YZW3J3
		3000	2,592	138.7		SPHWWAHDNF25YZV3J4
		3500	2,672	143.0		SPHWWAHDNF25YZU3J5
		4000	2,726	145.9		SPHWWAHDNF25YZT3J5
		5000	2,756	147.5		SPHWWAHDNF25YZR3J6
		5700	2,756	147.5		SPHWWAHDNF25YZQ3J6
	90	6500	2,726	145.9		SPHWWAHDNF25YZP3J5
		2700	2,104	112.6		SPHWWAHDNE27YZW3H9
		3000	2,207	118.1		SPHWWAHDNE27YZV3J0
		3500	2,287	122.4		SPHWWAHDNE27YZU3J1
 LC026D	80	4000	2,337	125.1	720	SPHWWAHDNE27YZT3J2
		2700	3,225	129.5		SPHWWAHDNG25YZW3K0
		3000	3,389	136.0		SPHWWAHDNG25YZV3K2
		3500	3,488	140.0		SPHWWAHDNG25YZU3K3
		4000	3,558	142.8		SPHWWAHDNG25YZT3K3
		5000	3,588	144.0		SPHWWAHDNG25YZR3K4
	90	5700	3,588	144.0		SPHWWAHDNG25YZQ3K4
		6500	3,558	142.8		SPHWWAHDNG25YZP3K3
		2700	2,760	110.8		SPHWWAHDNG27YZW3J6
		3000	2,903	116.5		SPHWWAHDNG27YZV3J7
 LC040D	80	3500	2,990	120.0	1,080	SPHWWAHDNG27YZU3J8
		4000	3,051	122.5		SPHWWAHDNG27YZT3J8
		2700	4,996	133.7		SPHWWAHDNI25YZW3M7
		3000	5,257	140.7		SPHWWAHDNI25YZV3M9
		3500	5,418	145.0		SPHWWAHDNI25YZU3N1
		4000	5,535	148.1		SPHWWAHDNI25YZT3N2
	90	5000	5,561	148.8		SPHWWAHDNI25YZR3N2
		5700	5,588	149.5		SPHWWAHDNI25YZQ3N3
		6500	5,528	147.9		SPHWWAHDNI25YZP3N2
		2700	4,283	114.6		SPHWWAHDNI27YZW3M0
 LC060D	80	3000	4,525	121.1	1,080	SPHWWAHDNI27YZV3M2
		3500	4,640	124.2		SPHWWAHDNI27YZU3M4
		4000	4,742	126.9		SPHWWAHDNI27YZT3M5
		2700	7,302	130.0		SPHWWAHDNL251ZW3P9
		3000	7,694	137.0		SPHWWAHDNL251ZV3Q3
		3500	7,937	141.3		SPHWWAHDNL251ZU3Q5
	70	4000	8,102	144.3		SPHWWAHDNL251ZT3Q6
		5000	8,142	145.0		SPHWWAHDNL251ZR3Q7
		5700	8,182	145.7		SPHWWAHDNL251ZQ3Q7
		6500	8,097	144.2		SPHWWAHDNL271ZP3Q6
 LC080D	80	2700	7,568	131.0	1,620	TBD
		3000	7,817	135.3		TBD
		3500	7,934	137.3		TBD
		4000	7,950	137.6		TBD
		2700	10,642	126.3		SPHWWAHDNM251ZW3T1
		3000	11,230	133.3		SPHWWAHDNM251ZV3T6
	70	3500	11,576	137.4		SPHWWAHDNM251ZU3T9
		4000	11,820	140.3		SPHWWAHDNM251ZT3U2
		5000	11,886	141.1		SPHWWAHDNM251ZR3U2
		5700	12,643	150.1		SPHWWAHDNM251ZQ3V0

※ LC060D / LC080D MP: June 2016

