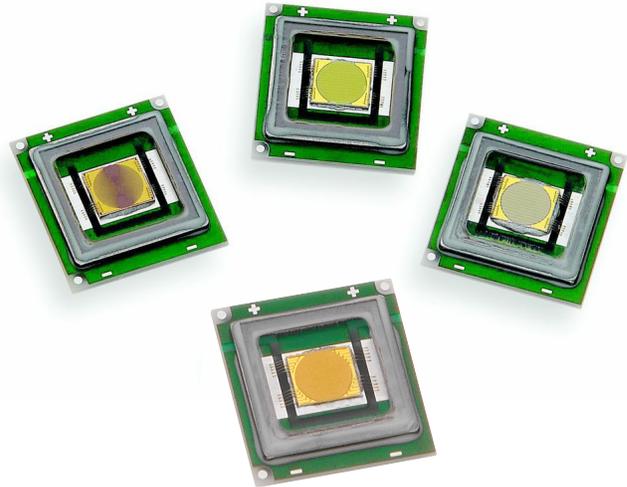


# SBT-70 LEDs



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## Introduction:

This document describes the binning and labeling nomenclature for SBT-70 Big Chip LED™ product as well as the orderable bin kits for each part.

With each build of parts, there is a distribution of performance in both flux and wavelength or chromaticity. In order to guarantee specific performance for customers, each device is measured and subsequently grouped into flux and wavelength or chromaticity bins. Each individual package or reel of parts contains only one combination of flux and wavelength or chromaticity bin. Furthermore, bins are combined into orderable bin kits comprising of a selection of flux and wavelength or chromaticity bins to ease the ordering process.

**Table of Products**

Products	Ordering Part Number	Description
SBT-70-WCS	SBT-70-WCS-F75-xx123	Big Chip LED™ SBT-70 surface mount device consisting of a 7.0 mm <sup>2</sup> LED on ceramic substrate
SBT-70-WDH	SBT-70-WDH-F75-xx123	
SBT-70-WTH	SBT-70-WTH-F75-xx123	
SBT-70-R	SBT-70-R-F75-xx123	
SBT-70-G	SBT-70-G-F75-xx123	
SBT-70-B	SBT-70-B-F75-xx123	
SBR-70-WCS	SBR-70-WCS-R75-xx123	SBR-70 evaluation module consisting of a SBT-70 surface mount device mounted on an aluminum star board
SBR-70-WDH	SBR-70-WDH-R75-xx123	
SBR-70-WTH	SBR-70-WTH-R75-xx123	
SBR-70-R	SBR-70-R-R75-xx123	
SBR-70-G	SBR-70-G-R75-xx123	
SBR-70-B	SBR-70-B-R75-xx123	

### SBT-70 Shipping and Labeling Nomenclature

All SBT-70 products are packaged and labeled with their respective bin as outlined in the following pages. Each package will only contain one bin. The part number designation is as follows:

**A B C — 1 2 3 — D 4 E — F 5 6 — G H — I 7**

Product Family	Chip Area	Color	Package Configuration	Flux Bin	Chromaticity Bin/ Wavelength
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<b>Product Family</b>	A - Package type: "S" denotes surface mount B - Lens type: "B" denotes window (no lens) C - Chip quantity: "T" denotes single chip				
<b>Chip Area</b>	1 2 3 - Total LED chip area (mm <sup>2</sup> ) x 10: "70" denotes 7.0mm <sup>2</sup>				
<b>Color</b>	D - Color: "W" denotes white 4 - Color temperature: "C" denotes cool white, "D" denotes daylight white, "T" denotes tungsten white E - Color rendering: "S" (standard) and "H" (high) denote typical CRI of 70 and 92 respectively				
<b>Package Config.</b>	F 5 6 - Package configuration (for internal use)				
<b>Flux Bin</b>	G H - Flux bin				
<b>Chromaticity Bin/ Wavelength</b>	I 7 - Wavelength / Chromaticity bin				

**Example:**

The part label SBT-70-WDH-F75-LA-D2 refers to a daylight high CRI white, SBT-70 emitter, with a flux range from 1,200 to 1,290 lumens and a chromaticity value within the box defined by the four points (0.328, 0.334), (0.328, 0.341), (0.337, 0.348), (0.336, 0.340).

### SBT-70 Bin Kit Ordering Nomenclature

All SBT-70 products are sold in sets of flux and chromaticity bins called bin kits. Each bin kit specifies a minimum flux bin and a specific selection of chromaticity bins. The ordering part number designation is as follows:

**A B C — 1 2 3 — D 4 E — F 5 6 — G H 7 8 9**

Product Family	Chip Area	Color	Package Configuration	Bin Kit Code
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<b>Product Family</b>	A - Package type: "S" denotes surface mount B - Lens type: "B" denotes window (no lens) C - Chip quantity: "T" denotes single chip
<b>Chip Area</b>	1 2 3 - Total LED chip area (mm <sup>2</sup> ) x 10: "70" denotes 7.0 mm <sup>2</sup>
<b>Color</b>	D - Color: "W" denotes white, "R" denotes red, "G" denotes green, and "B" denotes blue 4 - Color temperature: "C" denotes cool white, "D" denotes daylight white, "T" denotes tungsten white; not applicable to monochromatic parts E - Color rendering: "S" (standard) and "H" (high) denote typical CRI of 75 and 92 respectively; no applicable to monochromatic parts.
<b>Package Config.</b>	F 5 6 - Package configuration (for internal use)
<b>Bin Kit Code</b>	G H - Flux bin 7 8 9 - Wavelength/ Chromaticity bin kit code

**Example:**

The ordering part number SBT-70-WDH-F75-LA220 refers to a daylight high CRI white, SBT-70 emitter, with a minimum flux value of 1,200 lumens and falling in the D1, D2, D1H, D2H, D1L and D2L chromaticity bins.

### SBT-70 White Binning Structure

SBT-70 white LEDs are tested for luminous flux and chromaticity at a drive current of 10.5 A (1.5 A/mm<sup>2</sup>) and placed into one of the following luminous flux (FF) and chromaticity (WW) bins:

**Flux Bins**

Color	Flux Bin (FF)	Minimum Flux (lm) at 10.5A	Maximum Flux (lm) at 10.5A
WCS Cool White Standard CRI (typ. 75)	NB	1,710	1,830
	PA	1,830	1,965
	PB	1,965	2,100
WDH Daylight White Standard CRI (typ. 92)	KA	1,040	1,120
	KB	1,120	1,200
	LA	1,200	1,290
WTH Tungsten White High CRI (typ. 92)	HB	840	900
	JA	900	970
	JB	970	1,040

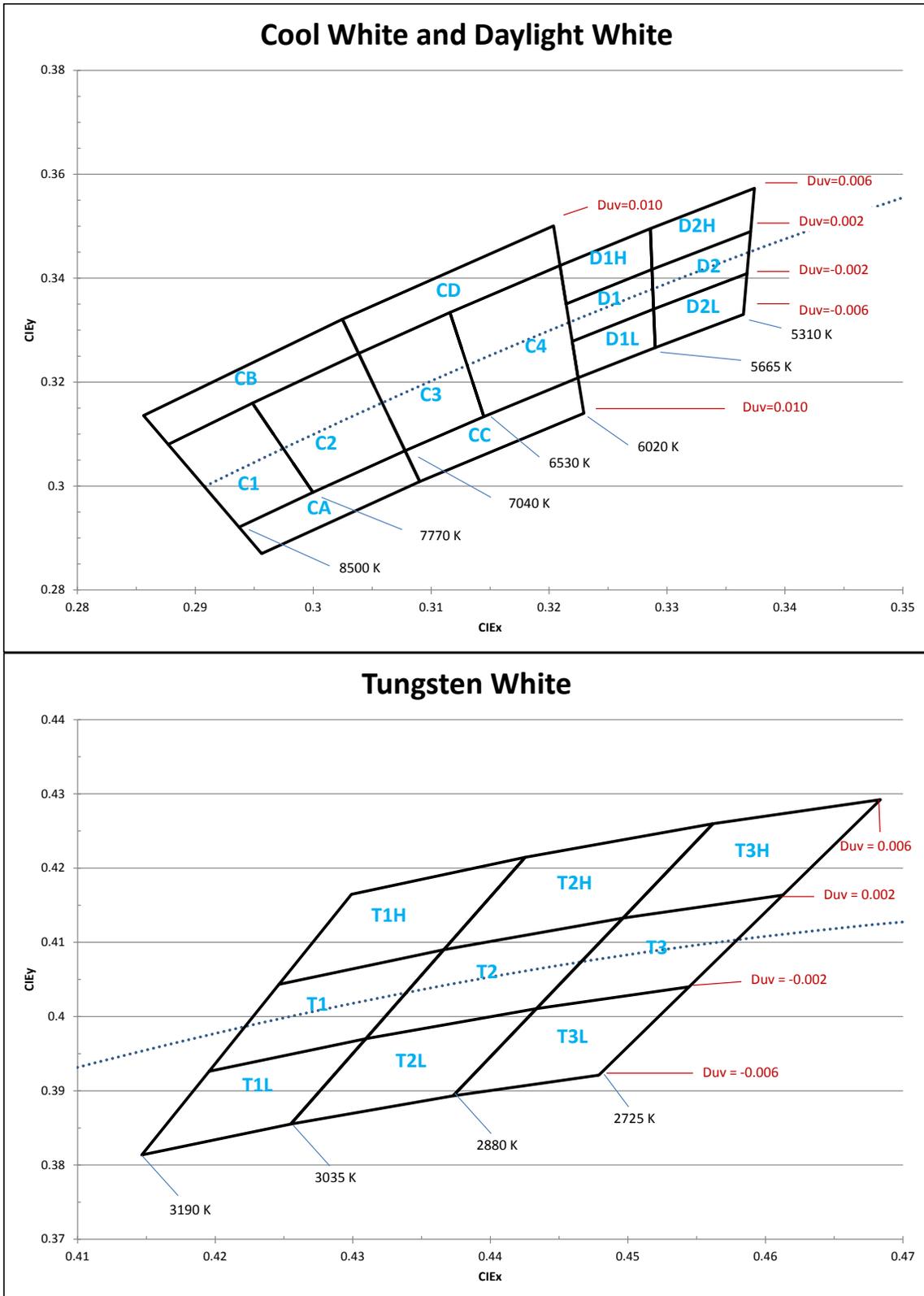
\*Note: Luminus maintains a +/- 6% tolerance on flux measurements.

Luminus maintains a +/- 2 tolerance on CRI measurements.



**Chromaticity Bins**

Chromaticity Bins: 1931 CIE Curve



**SBT-70 White Chromaticity Bins**

The following tables describe the four chromaticity points that bound each chromaticity bin. Chromaticity bins are grouped together based on the color temperature.

Cool White Chromaticity Bins		
Bin Code(WW)	CIEx	CIey
C1	0.293	0.292
	0.299	0.298
	0.294	0.315
	0.287	0.307
C2	0.299	0.298
	0.307	0.306
	0.303	0.325
	0.294	0.315
C3	0.307	0.306
	0.314	0.313
	0.311	0.333
	0.303	0.325
C4	0.314	0.313
	0.322	0.32
	0.32	0.342
	0.311	0.333

Cool White Chromaticity Bins		
Bin Code(WW)	CIEx	CIey
CA	0.293	0.292
	0.295	0.287
	0.309	0.300
	0.307	0.306
CB	0.287	0.307
	0.285	0.313
	0.302	0.332
	0.303	0.325
CC	0.307	0.306
	0.309	0.300
	0.322	0.313
	0.322	0.320
CD	0.303	0.325
	0.302	0.332
	0.320	0.350
	0.320	0.342

**SBT-70 White Chromaticity Bins**

The following tables describe the four chromaticity points that bound each chromaticity bin. Chromaticity bins are grouped together based on the color temperature.

Daylight Chromaticity Bins		
Bin Code(WW)	CIE <sub>x</sub>	CIE <sub>y</sub>
D1	0.321	0.327
	0.321	0.335
	0.328	0.341
	0.328	0.334
D2	0.328	0.334
	0.328	0.341
	0.337	0.348
	0.336	0.340
D1H	0.321	0.335
	0.320	0.342
	0.328	0.349
	0.328	0.341
D2H	0.328	0.341
	0.328	0.349
	0.337	0.357
	0.337	0.348
D1L	0.321	0.327
	0.322	0.320
	0.328	0.326
	0.328	0.334
D2L	0.328	0.334
	0.328	0.326
	0.336	0.333
	0.336	0.340

Tungsten White Chromaticity Bins		
Bin Code(WW)	CIE <sub>x</sub>	CIE <sub>y</sub>
T1	0.419	0.392
	0.424	0.404
	0.436	0.409
	0.430	0.397
T2	0.430	0.397
	0.436	0.409
	0.449	0.413
	0.443	0.401
T3	0.443	0.401
	0.449	0.413
	0.461	0.416
	0.454	0.404
T1H	0.424	0.404
	0.429	0.416
	0.442	0.421
	0.436	0.409
T2H	0.436	0.409
	0.442	0.421
	0.456	0.425
	0.449	0.413
T3H	0.449	0.413
	0.456	0.425
	0.468	0.429
	0.461	0.416
T1L	0.419	0.392
	0.414	0.381
	0.425	0.385
	0.430	0.397
T2L	0.430	0.397
	0.425	0.385
	0.437	0.389
	0.443	0.401
T3L	0.443	0.401
	0.437	0.389
	0.447	0.392
	0.454	0.404

**SBT-70 R, G, B Binning Structure (T<sub>j</sub>= 25°C)**

SBT-70 monochromatic LEDs are tested for luminous flux and dominant wavelength at a 10.5 A (1.5 A/mm<sup>2</sup>) drive current and placed into one of the following flux and wavelength bins. The binning structure is universally applied across each monochromatic color.

Color	Luminous Flux Bin (FF)	Minimum Flux	Maximum Flux
Red	BK	600	770
	BM	770	970
Green	CJ	1200	1500
	CK	1500	2000
Blue	DJ	250	350
	DK	350	450

\*Note: Luminus maintains a +/- 6% tolerance on flux measurements.

Color	Wavelength Bin (FF)	Minimum Wavelength @ 10.5A	Maximum Wavelength @ 10.5A
Red	R3	615	619
	R4	619	623
	R5	623	627
Green	G4	520	525
	G5	525	530
	G6	530	535
	G7	535	540
Blue	B4	450	455
	B5	455	460
	B6	460	465
	B7	465	470

**SBT-70 Bin Kit Order Codes**

The following tables describe the bin kit ordering codes for the SBT-70. The flux and wave length or chromaticity bins included in the bin kit. Each kit specifies a minimum flux and the listed wave length or chromaticity bins. A maximum flux is not specified. Within each kit, Luminus may ship any part meeting or exceeding the minimum flux specification. Shipments will always meet the listed wave length or chromaticity bins. For information on ordering bin kits not listed below, please contact Luminus or an official distributor.

**SBT-70 and SBR-70 Bin Kit Order Codes**

Color	Luminous Flux		Chromaticity Bins	Kit Number
	Bin Kit Flux Code	Min. Flux		
WCS Cool white, Standard CRI (typ. 70)	NB	1,710	C1, C2, C3, C4, CA, CB, CC, CD	NB120
			C1, C2, C3, C4,	NB121
			C3, C4,	NB122
			C1, C2,	NB123
	PA	1,830	C1, C2, C3, C4, CA, CB, CC, CD	PA120
			C1, C2, C3, C4,	PA121
			C3, C4,	PA122
			C1, C2,	PA123
	PB	1,965	C1, C2, C3, C4, CA, CB, CC, CD	PB120
			C1, C2, C3, C4,	PB121
			C3, C4,	PB122
			C1, C2,	PB123

**SBT-70 and SBR-70 Bin Kit Order Codes**

Color	Luminous Flux		Chromaticity Bins	Kit Number
	Bin Kit Flux Code	Min. Flux		
WDH Daylight white, High CRI (typ. 92)	KA	1,040	D1, D2, D1H, D2H, D1L, D2L	KA220
	KB	1,120	D1, D2, D1H, D2H, D1L, D2L	KB220
	LA	1,200	D1, D2, D1H, D2H, D1L, D2L	LA220
WTH Tungsten white, High CRI (typ. 92)	HB	840	T1, T2, T3, T1H, T2H, T3H, T1L, T2L, T3L	HB720
			T1, T2, T1H, T2H, T1L, T2L	HB721
	JA	900	T1, T2, T3, T1H, T2H, T3H, T1L, T2L, T3L	JA720
			T1, T2, T1H, T2H, T1L, T2L	JA721
	JB	970	T1, T2, T3, T1H, T2H, T3H, T1L, T2L, T3L	JB720
			T1, T2, T1H, T2H, T1L, T2L	JB721

**SBT-70 and SBR-70 Bin Kit Order Codes**

Color	Luminous Flux		Wavelength Bins	Kit Number
	Bin Kit Flux Code	Min. Flux		
Red	HK	600	R3, R4, R5	HG100
			R4	HG101
	HM	770	R3, R4, R5	HH100
			R4	HH101
Green	JJ	640	G4, G5, G6, G7	JF200
			G4, G5	JF201
			G6, G7	JF202
	JK	775	G4, G5, G6, G7	JG200
			G4, G5	JG201
			G6, G7	JG202
Blue	KJ	90	B4, B5, B6, B7	KE300
			B5, B6	KE301
	KK	120	B4, B5, B6, B7	KF300
			B5, B6	KF301

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