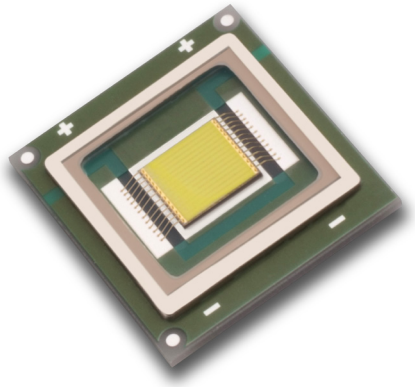
SBT-90 LEDs



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Introduction:

This document describes the binning and labeling nomenclature for SBT-90 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 wave length 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.

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Table of Products

Products	Ordering Part Number	Description
SBT-90-W65S	SBT-90-W65S-F71-XX123	White Big Chip LED™ SBT-90 surface mount device consisting of a 9 mm^2 LED on a ceramic subtrate, tray pack
SBT-90-WDLS	SBT-90-WDLS-F71-XX123	
SBR-90-W65S	SBR-90-W65S-R71-XX123	SBR-90 evaluation module consisting of a SBT-90 surface mount device mounted on an aluminum star-board
SBR-90-WDLS	SBR-90-WDLS-R71-XX123	

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SBT-90 Shipping and Labeling Nomenclature

All SBT-90 products are packaged and labeled with their respective bin as outlined in the following pages. Each package or reel will only contain one bin. The part number designation is as follows:

ABC	—	123	—	D45E	—	F67	—	GH	—	I8
Product Family		Chip Area		Color		Package Configuration		Flux Bin		Chromaticity Bin

Product Family	**A** - Package type: "S" denotes surface mount **B** - Lens type: "B" denotes window (no lens) **C** - Chip quantity: "T" denotes single chip, and "R" denotes prototyping board
Chip Area	**1 2 3** - Total LED chip area (mm^2) x 10: "90" denotes $9mm^2$
Color	**D** - Color: "W" denotes white **4 5** - Color temperature: "65" denotes 6500K **E** - Color rendering: "S" (standard) denotes a typical CRI of 70
Package Config.	**F 6 7** - Package configuration (for internal use)
Flux Bin	**G H** - Flux bin
Chromaticity Bin	**I 8** - Chromaticity bin

Example:
The part number SBT-90-W65S-F71-MA-G4 refers to a 6500K standard CRI white, SBT-90 emitter, with a minimum flux range from 1,380 to 1,485 lumens and a chromaticity value within the box defined by the four points (0.313, 0.338), (0.321, 0.348), (0.322, 0.336), (0.312, 0.328).

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SBT-90 Bin Kit Ordering Nomenclature

All SBT-90 White 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 5 E	—	F 6 7	—	G H 8 9 0
Product Family		Chip Area		Color		Package Configuration		Bin Kit

Product Family	**A** - Package type: "S" denotes surface mount **B** - Lens type: "B" denotes window (no lens) **C** - Chip quantity: "T" denotes single chip, and "R" denotes prototyping board
Chip Area	**1 2 3** - Total LED chip area (mm^2) x 10: "90" denotes $9mm^2$
Color	**D** - Color: "W" denotes white **4 5** - Color temperature: "65" denotes 6500K **E** - Color rendering: "S" (standard) denotes a typical CRI of 70
Package Config.	**F 6 7** - Package configuration (for internal use)
Bin Kit	**G H** - Flux bin **8 9 0** - Chromaticity bin kit code

Example:

The ordering part number SBT-90-W65S-F71-MA101 refers to a 6500K standard CRI white, SBT-90 emitter, with a minimum flux value of 1,380 lumens and falling in the F4, F3, G4, G3, EF, and DG chromaticity bins.

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SBT-90 White Binning Structure

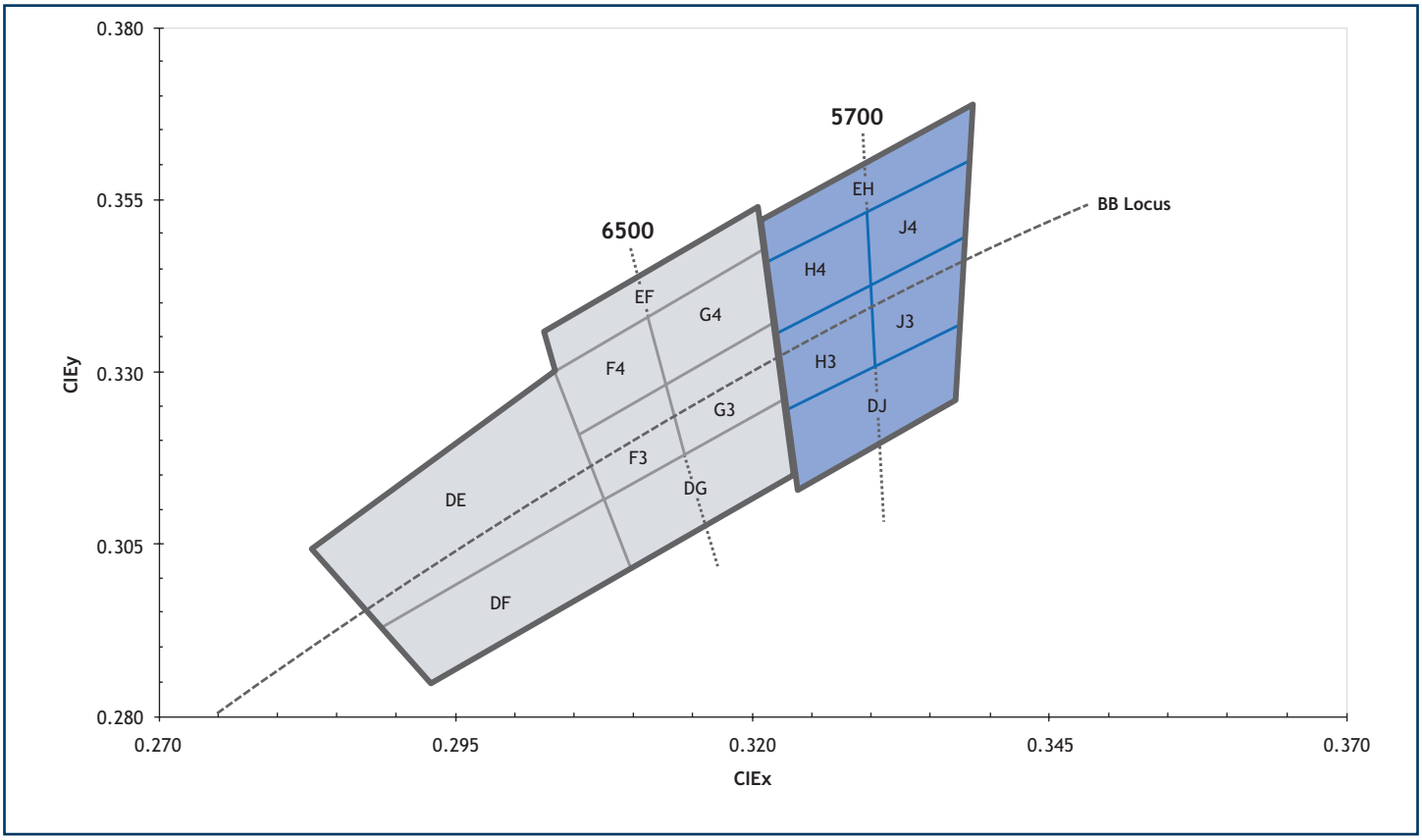
SBT-90 LEDs are tested for luminous flux and chromaticity at a drive current of 9.0 A (1.0 A/mm^2) and placed into one of the following luminous flux (FF) and chromaticity (WW) bins:

Color	Flux Bin (FF)	Minumum Flux (lm) @ 9.0A	Maximum Flux (lm) @ 9.0A
W65S 6500K, Standard CRI (typ. 70)	LB	1,290	1,380
	MA	1,380	1,485
	MB	1,485	1,590

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

Chromaticity Bins

Luminus' Standard Chromaticity Bins: 1931 CIE Curve



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

6500K Chromaticity Bins		
Bin Code (WW)	CIEx	CIEy
DG	0.307	0.311
	0.322	0.326
	0.323	0.316
	0.309	0.302
F3*	0.305	0.321
	0.313	0.329
	0.315	0.319
	0.307	0.311
F4*	0.303	0.330
	0.312	0.339
	0.313	0.329
	0.305	0.321
G3*	0.313	0.329
	0.321	0.337
	0.322	0.326
	0.315	0.319
G4*	0.312	0.339
	0.321	0.348
	0.321	0.337
	0.313	0.329
EF	0.302	0.335
	0.320	0.354
	0.321	0.348
	0.303	0.330
DE	0.283	0.304
	0.303	0.330
	0.307	0.311
	0.289	0.293
DF	0.289	0.293
	0.307	0.311
	0.309	0.302
	0.293	0.285

5700K Chromaticity Bins		
Bin Code (WW)	CIEx	CIEy
DJ	0.322	0.324
	0.337	0.337
	0.336	0.326
	0.323	0.314
H3*	0.321	0.335
	0.329	0.342
	0.329	0.331
	0.322	0.324
H4*	0.321	0.346
	0.329	0.354
	0.329	0.342
	0.321	0.335
J3*	0.329	0.342
	0.337	0.349
	0.337	0.337
	0.330	0.331
J4*	0.329	0.354
	0.338	0.362
	0.337	0.349
	0.329	0.342
EH	0.320	0.352
	0.338	0.368
	0.338	0.362
	0.321	0.346

*Sub-bins within ANSI defined quadrangles per ANSI C78.377-2008

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SBT-90 and SBR-90 Bin Kit Order Codes

The following tables describe the bin kit ordering codes for the SBT-90 and SBR-90. The flux and chromaticity bins included in the bin kit. Each kit specifies a minimum flux and the listed 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 chromaticity bins. For information on ordering bin kits not listed below, please contact Luminus or an official distributor.

SBT-90 and SBR-90 Bin Kit Order Codes

Color	Luminous Flux		Chromaticity Bins	Kit Number
	Bin Kit Flux Code	Min. Flux		
White W65S 6500K, Standard CRI (typ. 70)	LB	1,290	F4, F3, G4, G3, EF, DG, DE, DF	LB100
			F4, F3, G4, G3, EF, DG	LB101
			F4, F3, G4, G3	LB102
	MA	1,380	F4, F3, G4, G3, EF, DG, DE, DF	MA100
			F4, F3, G4, G3, EF, DG	MA101
			F4, F3, G4, G3	MA102
	MB	1,485	F4, F3, G4, G3, EF, DG, DE, DF	MB100
			F4, F3, G4, G3, EF, DG	MB101
			F4, F3, G4, G3	MB102
White WDLS 6500K & 5700K Standard CRI (typ. 70)	LB	1,290	F4, F3, G4, G3, EF, DG, DE, DF H4, H3, J4, J3, EH, DJ	LB150
	MA	1,380	F4, F3, G4, G3, EF, DG, DE, DF H4, H3, J4, J3, EH, DJ	MA150
	MB	1,485	F4, F3, G4, G3, EF, DG, DE, DF H4, H3, J4, J3, EH, DJ	MB150

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