Lighting Design Manufacturing Service

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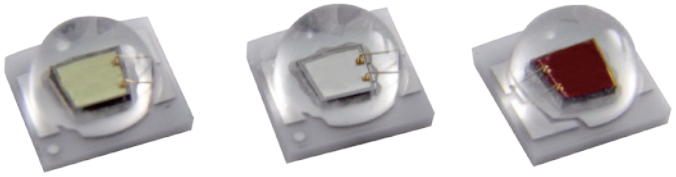
Federal Series

Federal 3535 3 Series Single Color Datasheet



Features :

- Small emitter size High mount technology
- Superior ESD protection
- Level 1 on JEDEC moisture sensitivity

Typical Applications :

- Portable camera-phone
- Digital compact camera
- Personal digital assistant
- Caution light

version : 2

Lighting Design Manufacturing Service

Table of Cotents

General Information

Introduction

Federal 3535 is a surface mount, compact, high brightness LED that is built for various illumination needs. The small physical dimension can free customers from any constrains or limitations in these fields of applications. Furthermore, the reflow-solderable nature of Federal 3535 provides an easy path towards the optimum thermal management to achieve a promising reliability. In conclusion, Federal 3535 offers you an extraordinary LED experience.

Product Nomenclature

The following table describes the available color, power, and lens type. For more flux and forward voltage information, please consult the Bin Group document.

Table 1 . Federal 3535 Nomenclature

EF	E	x	-	1	B	E	3
X1	X2	X3		X4	X5	X6	X7

X1 LED Item		X2 Module		X3 Emitting Color		X4 Current		X5 Dimension	
Code	Type	Code	Type	Code	Type	Code	Type	Code	Type
EF	Federal	E	Emitter	R	Red	1	350mA	B	3.45x3.45mm
		S	Star	T	True Green				
				B	Blue				

X6 Housing Item		X7 Serial Number	
Code	Type	Code	Type
E	E-type	-	-

Mechanical Dimensions

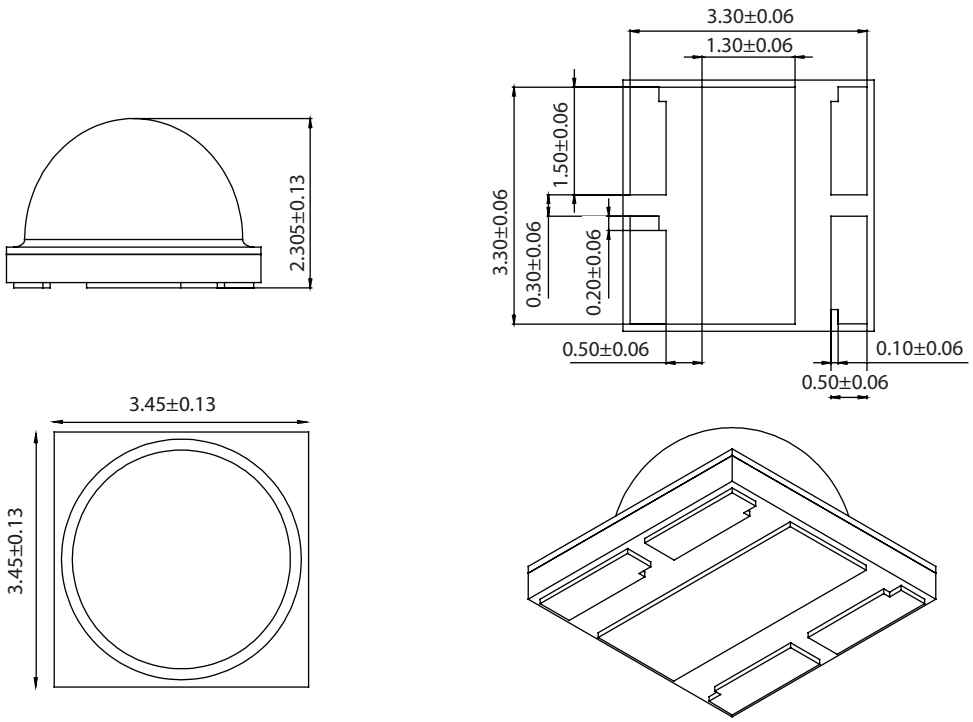


Figure 1. Federal 3535 3 series single color Dimension

Notes:
1. All dimensions are measured in mm.
2. Drawings are not to scale.

Star PCB Type Dimension

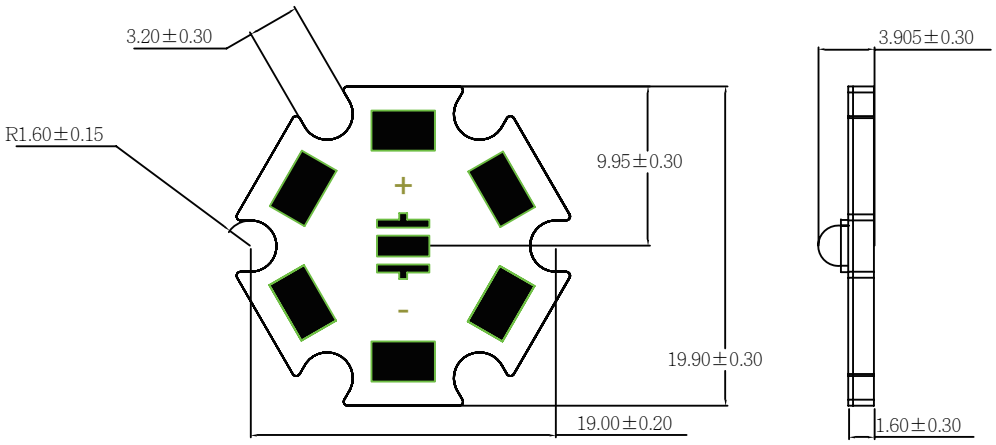
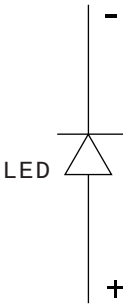


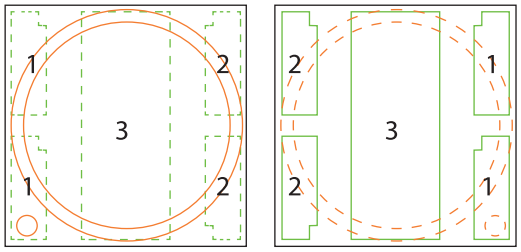
Figure 2. Federal 3535 Single Color sereis Star PCB type Dimension

Notes:
1. All dimensions are measured in mm.
2. Drawings are not to scale.

Circuit



PCB Layout



PAD	FUNCTION (Red, Green, Blue)
1	ANODE
2	CATHODE
3	THERMAL

Figure 3. Federal 3535 3 series single color circuit and pcb layout

Note:
The thermal pad is electrically isolated from anode and cathode.

Solder Pad

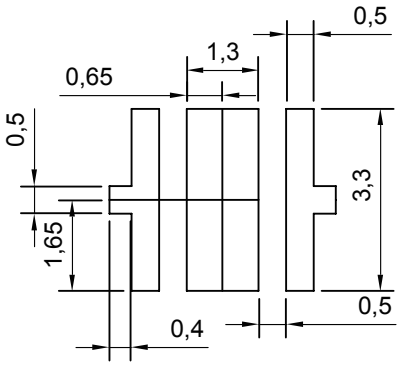


Figure 4. Federal 3535 3 series single color solder pad

Absolute Maximum Ratings

The following tables describe flux of Federal 3535 3 series single color under various current and different color.

Table 2. Federal 3535 3 series single color absolute maximum ratings

Parameter	Symbol	Value	Units
DC Forward Current[1]	I_F	350	mA
Peak Pulsed Current; (tp≤100μs, Duty cycle=0.25)	I_{pulse}	500/700[5]	mA
Transient Surge Voltage	V_{TS}	8	V
Reverse Voltage[2]	V_r	Note 2	V
LED Junction Temperature[3]	T_J	150 / 125[4]	°C
Operating Temperature	T_{opr}	-40 ~ +80	°C
Storage Temperature	T_{stg}	-40 ~ +120	°C
ESD Sensitivity	V_B	2,000	V
Allowable Reflow Cycles	n/a	3	cycles
Soldering Temperate	T_{sol}	260	°C

Notes:
1. Maximum forward current for 1W is 350mA.
2. LEDs are not designed to drive in reverse bias.
3. Proper current derating must be observed to maintain junction temperature below the maximum.
4. The maximum junction temperature for Red is 125°C.
5. The maximum peak pulsed current for Red is 500 mA.

Luminous Flux Characteristic

The following tables describe flux of Federal 3535 3 series single color under various current and different color.

Table 3. Luminous Flux Characteristics, I_F=350mA and Thermal =25˚C

Power Consumption	Part Name	Color	Min Luminous Flux (lm)		
			Group	350mA	700mA
1W	EFER-1BE3	Red	Q	30.3	57.6
		Red	R	39.4	74.9
	EFET-1BE3	True Green	T	66.5	106.4
	EFEB-1BE3	Blue	M	13.8	23.9
		Blue	N	17.9	31

Notes:
1. The luminous flux performance is guaranteed within published operating conditions.
2. Flux is measured with accuracy of ±10%.

Characteristics

Optical Characteristics

Table 4. Optical characteristics, T_J=25°C at 350mA

Part Name	Color	CCT/Wavelength (nm)			Viewing Angle (Degree)
		Min.	Typ.	Max.	
EFER-1BE3	Red	620	--	630	140
EFET-1BE3	True Green	520	--	535	120
EFEB-1BE3	Blue	455	--	470	130

Note:
Edison maintains a tolerance of ±5% on wavelength measurement.

Electrical Characteristics

Table 5. Electrical characteristics at T_J=25˚C

Power Consumption	Part Name	Color	V_F (V)			Forward Current I_F (mA)	Thermal Resistance (°C/W)
			Min.	Typ.	Max.		
1W	EFER-1BE3	Red	2.0	--	2.8	350	15
1W	EFET-1BE3	True Green	3.0	--	4.0	350	15
1W	EFEB-1BE3	Blue	3.0	--	4.0	350	15

Note:
Edison maintains a tolerance of 0.06V on forward voltage measurement.

JEDEC Moisture Sensitivity

Table 6. JEDEC Moisture Sensitivity

Level	Floor Life		Soak Requirements	
	Time	Conditions	Standard	
			Time (hours)	Conditions
1	unlimited	≤30˚C / 85% RH	168+5/-0	85˚C / 85% RH

Characteristic Curve

Spectrum

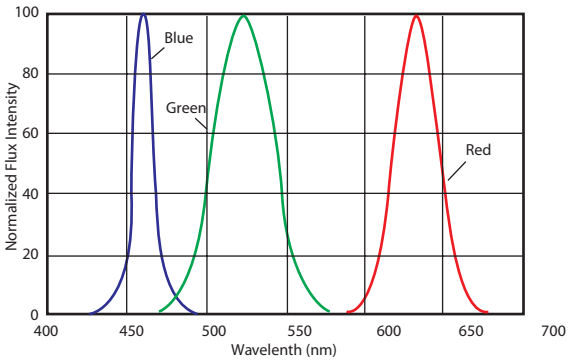


Figure 4. Color Spectrum for EFEx-1Cex at T_J=25 °C

Luminous Flux & Junction Temperature

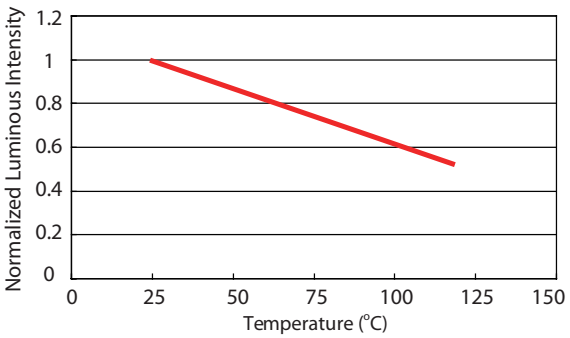


Figure 5. Color Spectrum for Red series at T_J = 25°C.

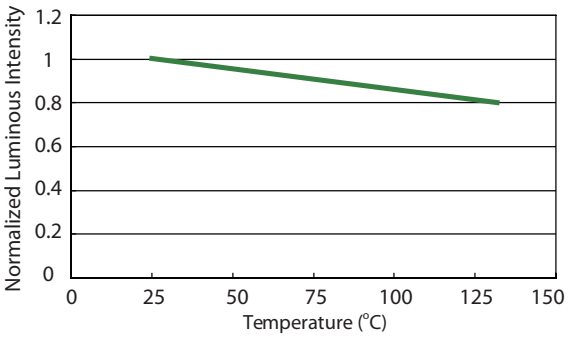


Figure 6. Color Spectrum for Green series at T_J = 25°C.

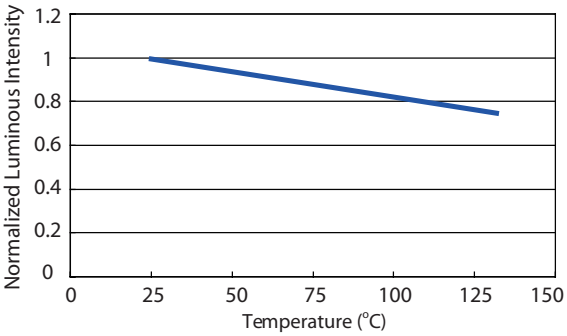


Figure 7. Color Spectrum for Blue series at T_J = 25°C.

Radiation Diagram

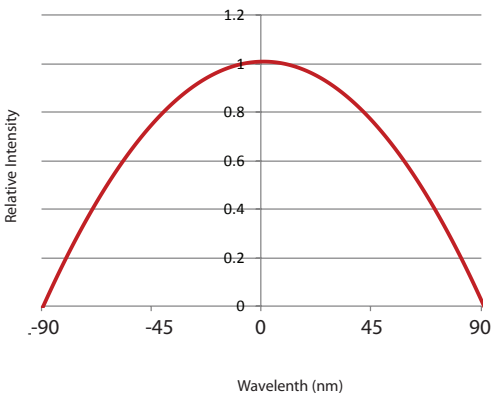


Figure 8. Radiation diagram for Red

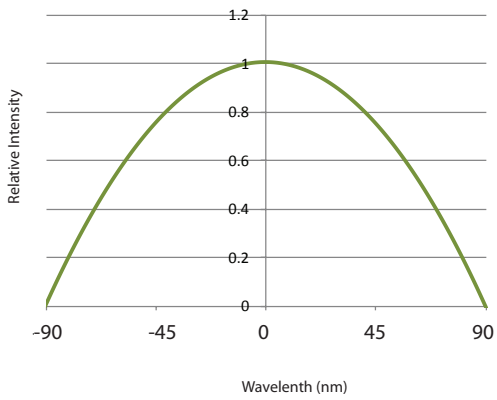


Figure 9. Radiation diagram for Ture Green

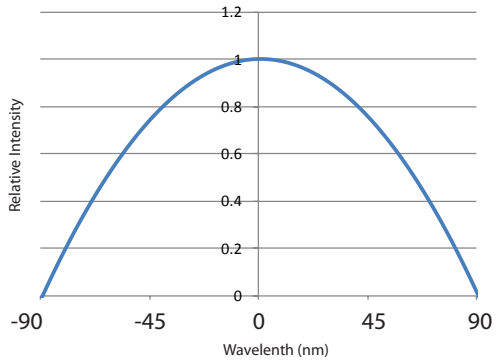


Figure 10. Radiation diagram for Blue

Forward Voltage & Forward Current

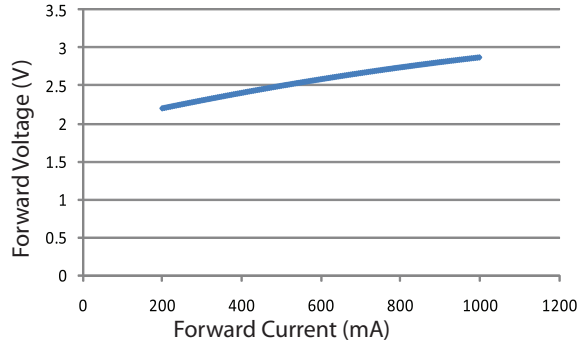


Figure 11. Forward voltage vs. forward current for Red ,at T_J = 25°C.

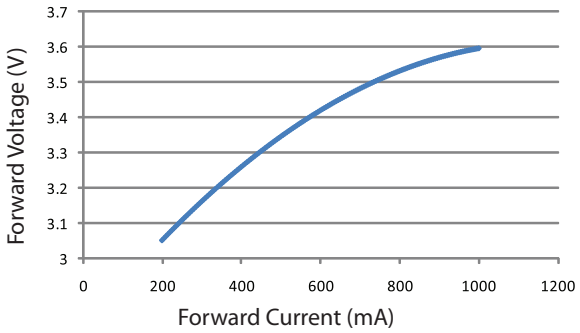


Figure 12. Forward voltage vs. forward current for Blue ,at T_J =25°C.

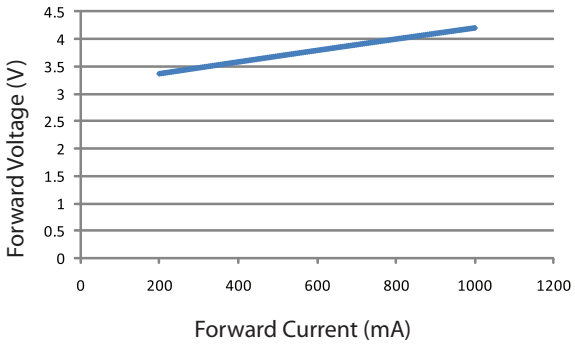


Figure 13. Forward voltage vs. forward current for True Green ,atT_J =25°C.

Luminous Flux & Forward Current

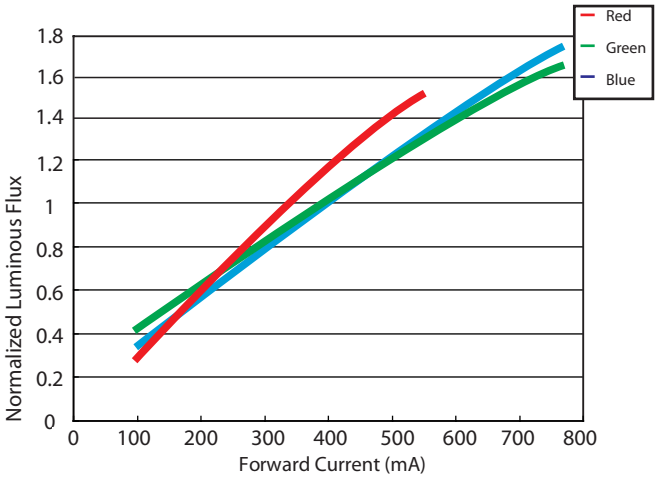


Figure 14. Relative luminous flux vs. forward current for Red ,Blue ,and Green ,at T_J =25°C.

CCT/Wavelength & Forward Current

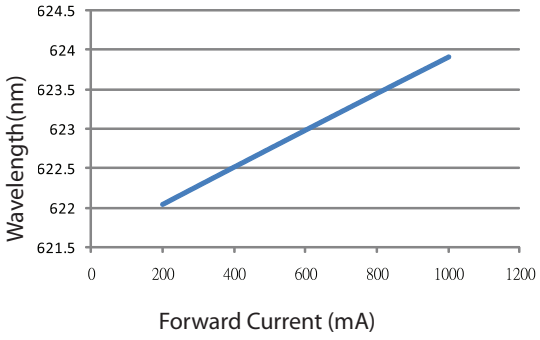


Figure 15. Wavelength length vs. forward current for Red at T_J=25°C.

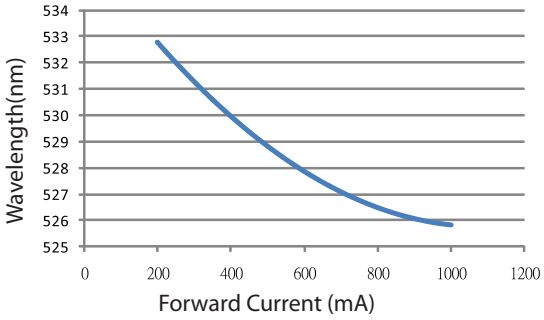


Figure 16. Wavelength length vs. forward current for True Green at T_J=25°C.

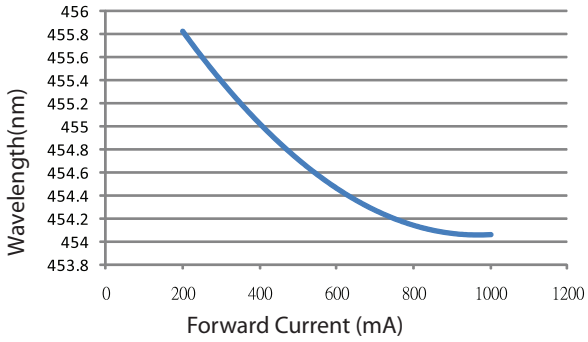


Figure 17. Wavelength length vs. forward current for Blue at T_J=25°C.

Product Packaging Information

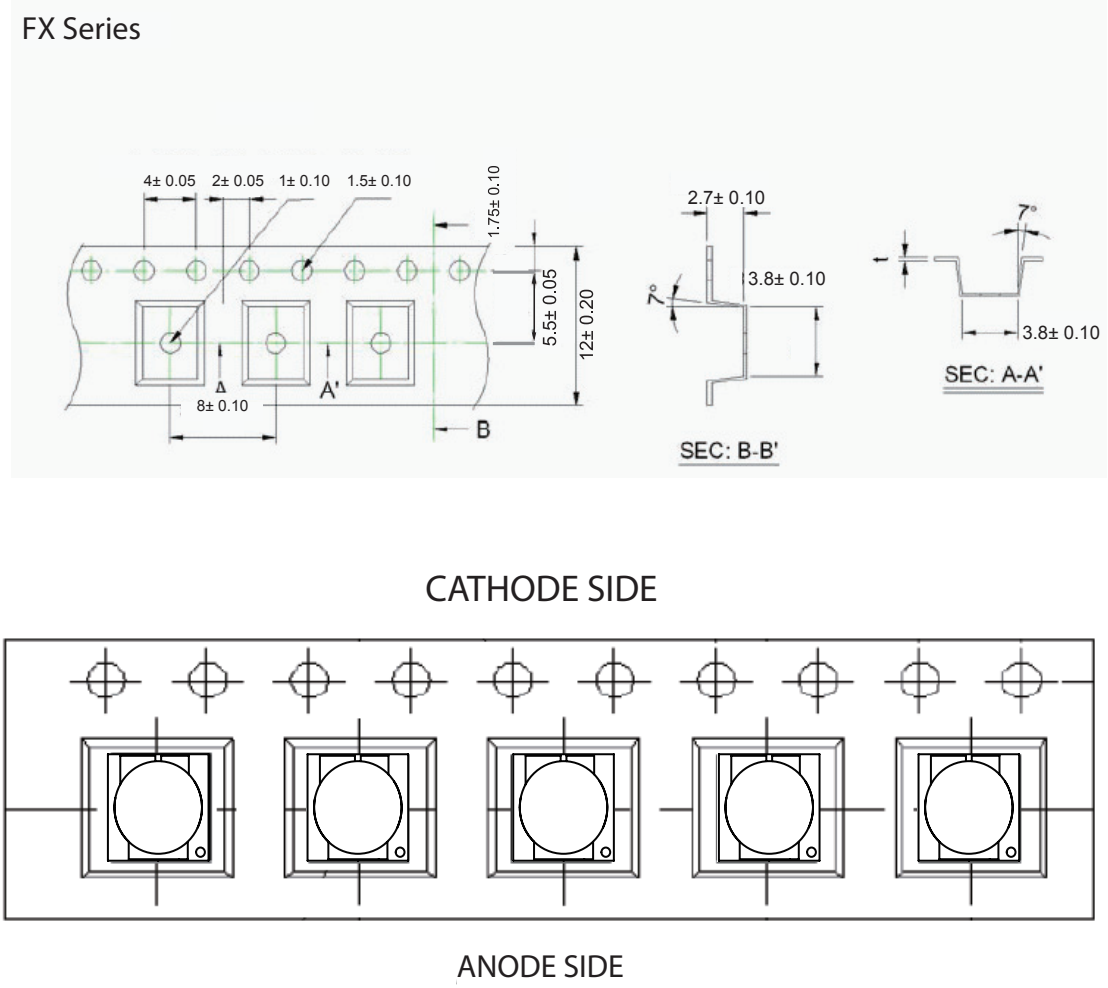


Figure 18. Federal 3535 Reel Dimensions.

Table 7. Federal 3535 quantity and dimension of product package

Item	Quantity	Total	Dimensions(mm)
Reel	500pcs	500pcs	R-178
Box	4 Reels	2,000pcs	240*235*67
Carton	5 boxes	10,000pcs	353*354*256
Starting with 50pcs empty,and 50pcs empty at the last			

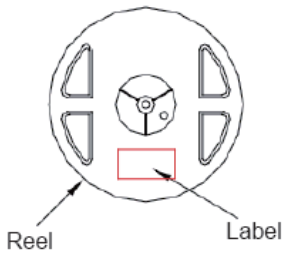


Figure 19. Taping reel dimensions

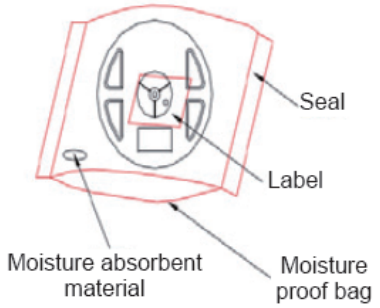


Figure 20. Federal 3535 Package

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Revision History

Table 8. Revision history of Federal 3535 3 single color datasheet

Version	Description	Release Date
1	Established a datasheet	2012/01/10
2	Remove Amber Data	2012/03/21

About Edison Opto

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at www.edison-opto.com

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