

Philips Lumileds Lighting Company

370 W. Trimble Road, San Jose, California 95131 USA

Power Light Source LUXEON® Flash LXCL-PWF4

3/8/07

Introduction

LUXEON® Flash is a family of ultra-compact light sources specifically designed and tested for use as a camera flash in space-constrained, portable digital imaging applications. The LUXEON® Flash products are based on proven LUXEON® technology and provide the highest levels of light output available for a solid state light source. The uniquely bright source density characteristics of the LUXEON® Flash products will provide greater amounts of light where needed, enabling higher resolution pictures to be taken in lower level ambient light environments at greater distances. Camera cell phones, digital still cameras and PDAs can all incorporate LUXEON® Flash into sleek designs while maintaining high levels of light output.



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Features

- Highest brightness LED flash
- Rated to 1.5A pulse current
- Very small emitter size
- 0.6mm source height enables thinnest flash designs
- Uniform color of light
- Enables Premier Imaging Solution for 3m flash in smallest form-factor
- Superior ESD protection
- Pb Free / RoHS compliant
- MSL (Moisture sensitivity level) Class 1 rating (indefinite shelf life)*



Typical Applications

- Camera-phones
- Digital still cameras
- PDAs

* Per IPC/JEDEC J-STD-20 MSL Classifications

Ordering Information

Product Number	LXCL-PWF4
Description	LUXEON® Flash PWF4
Package Quantity	5,000 and 10,000



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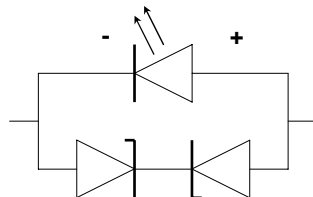
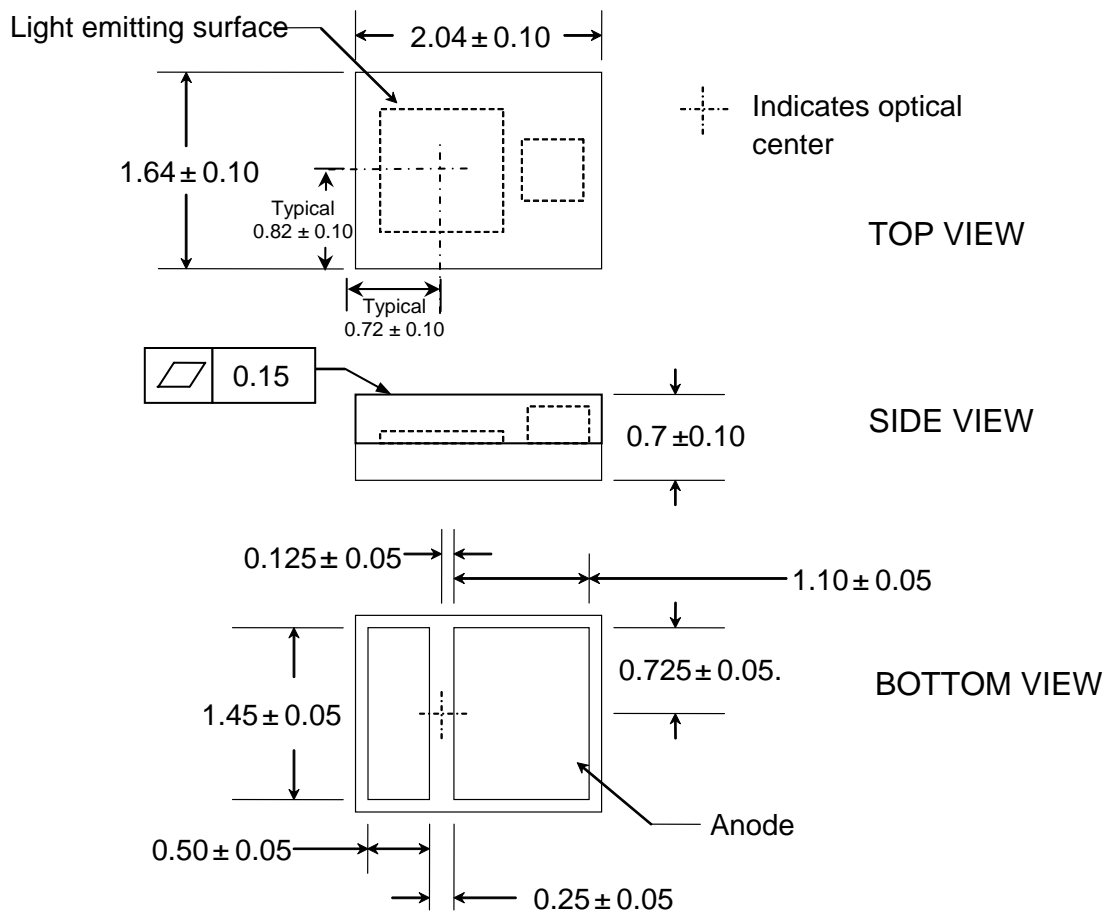
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LUXEON® Flash PWF4 Mechanical Dimensions [All units in mm]



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Figure 1 Spectral Power Distribution

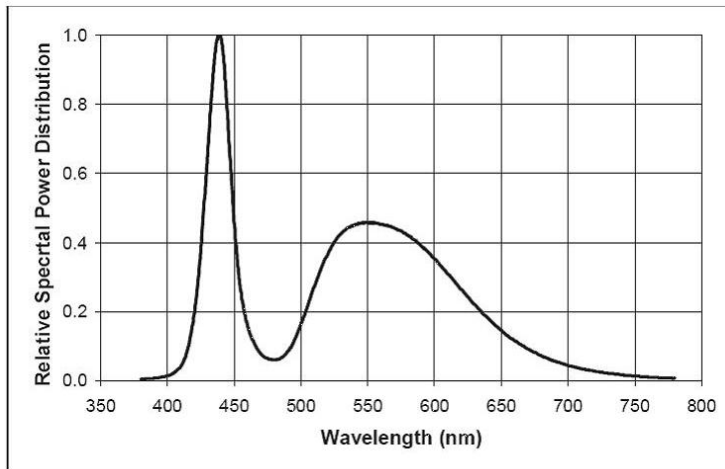
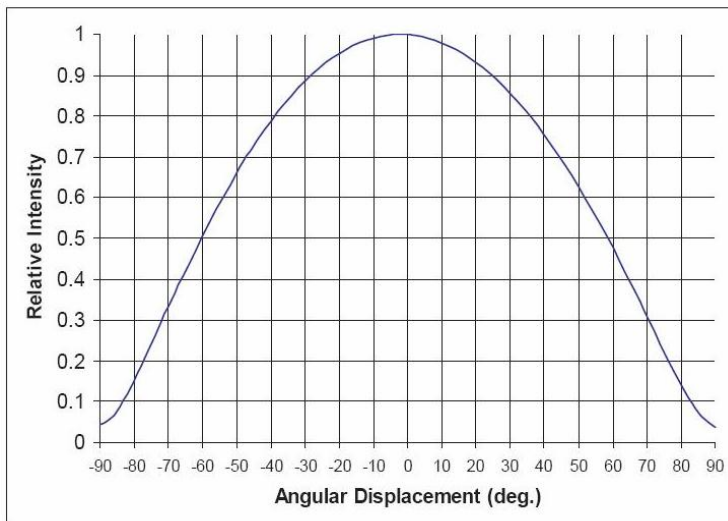


Figure 2 Typical Intensity Distribution



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Table 1 Electrical and Optical Characteristics (If = 1000mA and Ta=25°C)

Parameter	Min	Typ	Max	Units
Luminous Flux (Tol. ±10%)	90	145		lm
Forward Voltage (Tol. ±0.06V)	2.8	3.6	4.6	V
Color Temperature	4100	5500	9000	K
Dynamic Resistance		0.2		Ω
Temp Coefficient of Forward Voltage		-3.0		mV/°C
Thermal Resistance, Junction to Case		13		°C/W
Laser Safety Classification (500ms / 10% DF / 1A Pulse)			1M	Per IEC60825-1
Laser Safety Classification (500mA DC)			2	Per IEC60825-1

Notes:

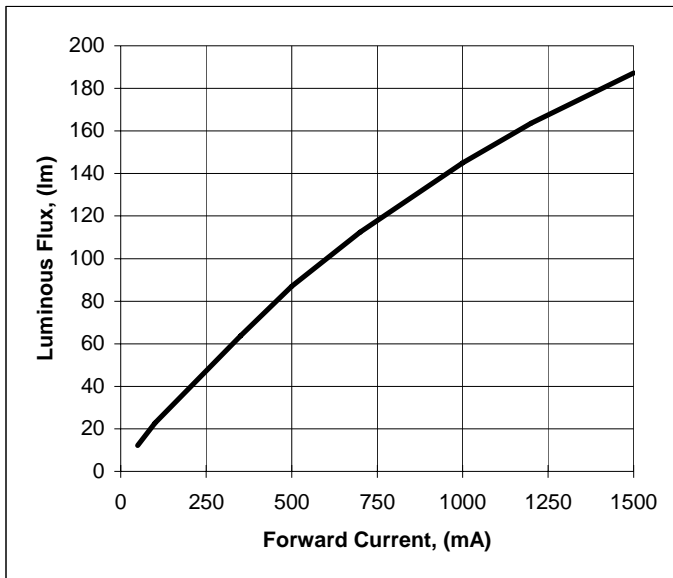
1. Philips Lumileds maintains a tester tolerance of ±10% on flux measurements.
2. Philips Lumileds maintains a tolerance of ±0.06V on forward voltage measurements.
3. Philips Lumileds maintains a tester tolerance of ±5% on CCT measurements
4. Dynamic resistance is the inverse of the slope in linear forward voltage curve and is measured at If = 1000mA. See Figure 4.



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Figure 3 Typical Luminous Flux (lm) vs. Forward Current



Notes:

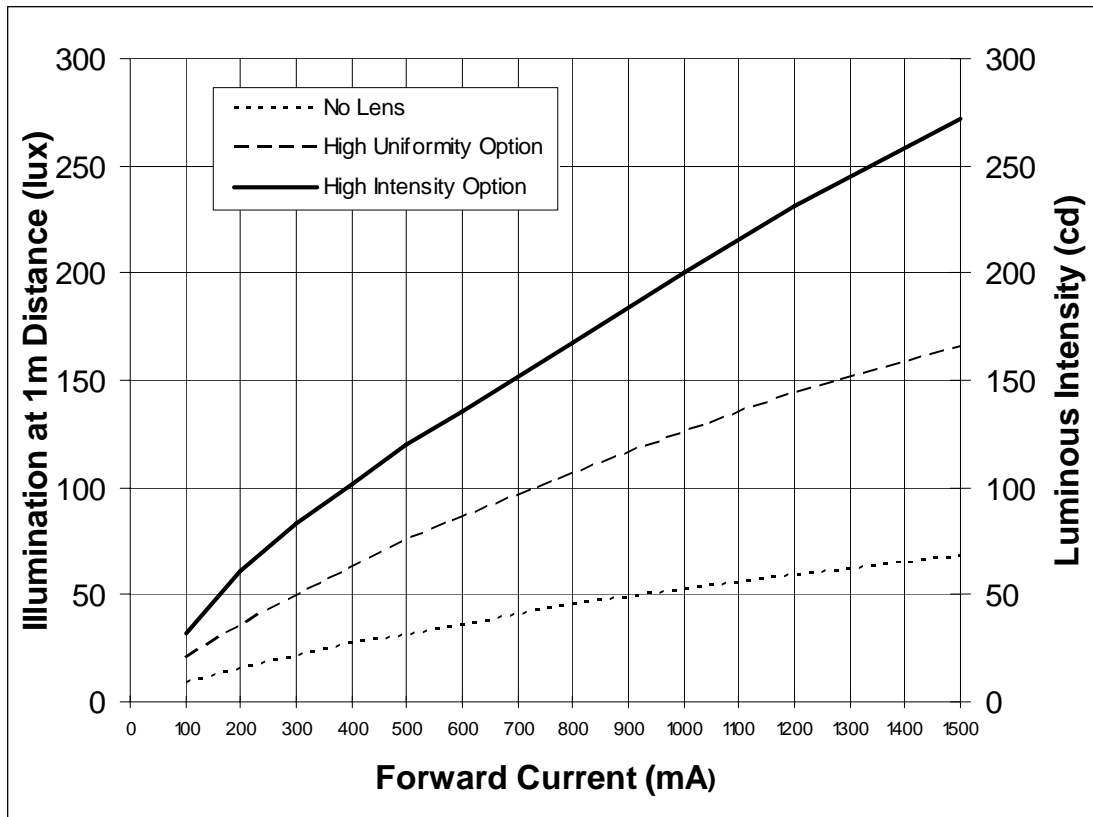
1. All values assume a junction temperature T_j of 25 °C
2. For flash modes, it is recommended that the drive current be as high as possible (up to 1500mA) for optimal results



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Figure 4: Typical Axial Intensity (cd) and Illuminance (lux) vs. Forward Current



Notes:

1. All values assume a junction temperature T_j of 25 °C
2. For flash modes, it is recommended that the drive current be as high as possible (up to 1500mA) for optimal results



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Figure 5: Typical Forward Current vs. Forward Voltage, $T_a = 25^\circ\text{C}$

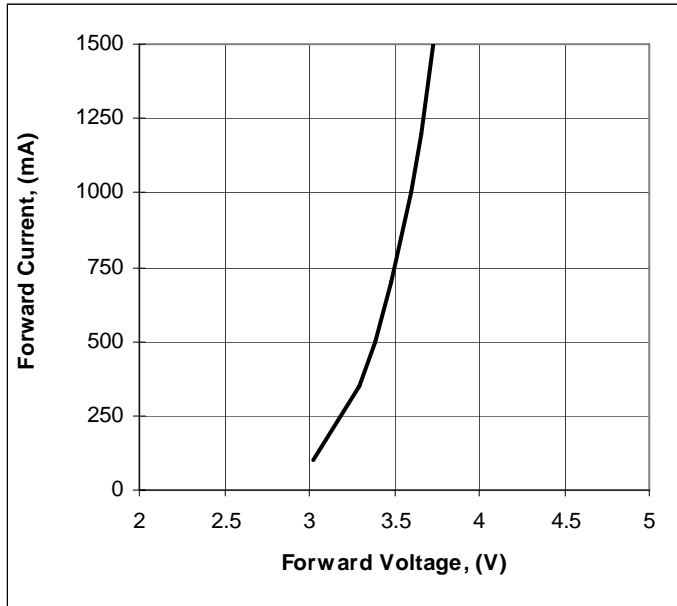


Table 2 Absolute Maximum Ratings

Parameter	Value	Units
Max DC Operating Current	500	mA
Peak Pulse Forward Current ¹	1500	mA
ESD (JEDEC 3b)	8	kV
LED Case Temperature	85	°C
Storage Temperature	-40 to +120	°C
Max Reflow Soldering Temperature	260 for 40 sec. max	°C
Operating Temperature	-40 to +85	°C
Moisture Sensitivity Level (MSL) ²	1 (unlimited production floor life)	-

Notes:

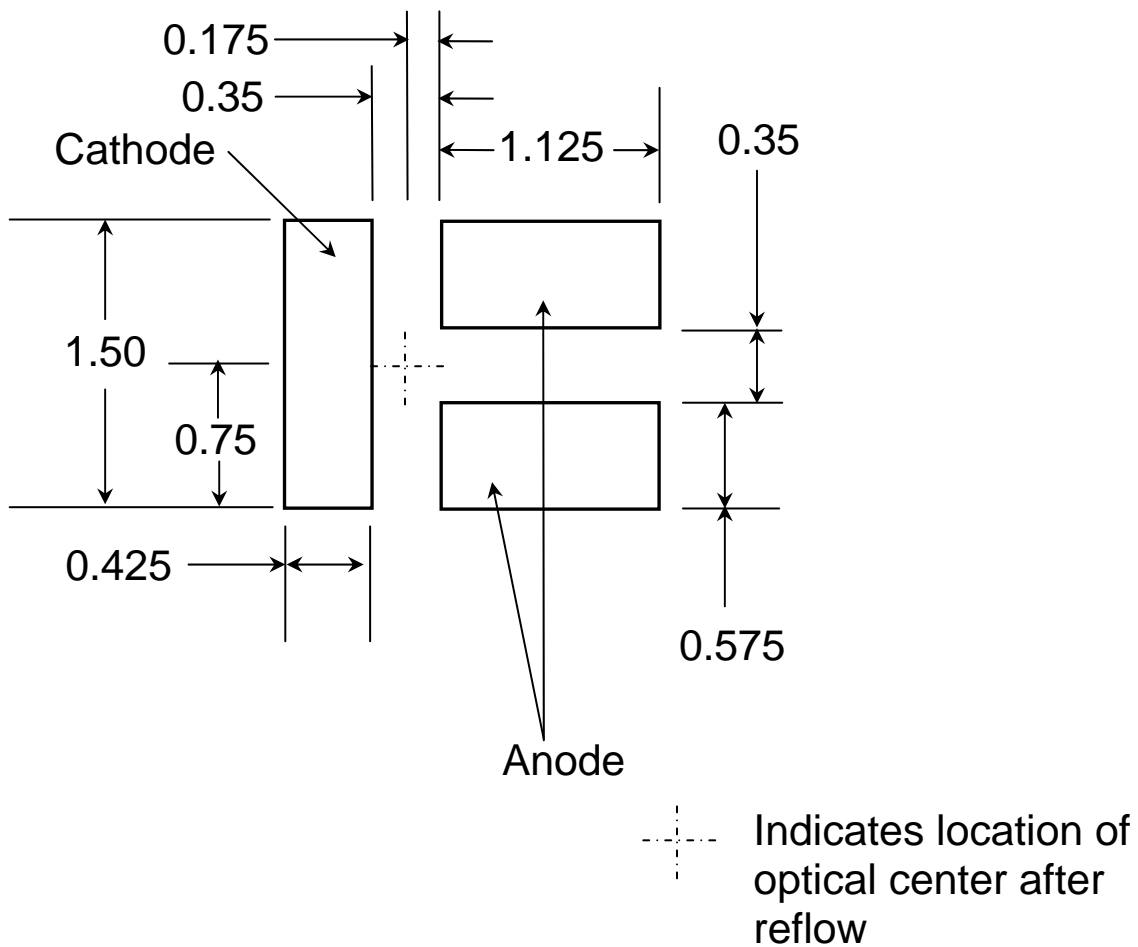
1. Peak pulse current applies to pulse time of 500ms and a maximum duty factor of 10%.
2. Per IPC/JEDEC J-STD-20 MSL
3. LEDs are not designed to be driven in reverse bias.
4. Stresses in excess of the absolute maximum ratings can cause damage to the emitter. Maximum Rating limits apply to each parameter in isolation, all parameters having values within the Current Derating Curves. It should not be assumed that maximum ratings of more than one parameter can be applied to the product at the same time. Exposures to the absolute maximum ratings for extended periods can adversely affect device reliability.



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Figure 6: Recommended Solder Pad Design for Surface Mount Application



Notes:

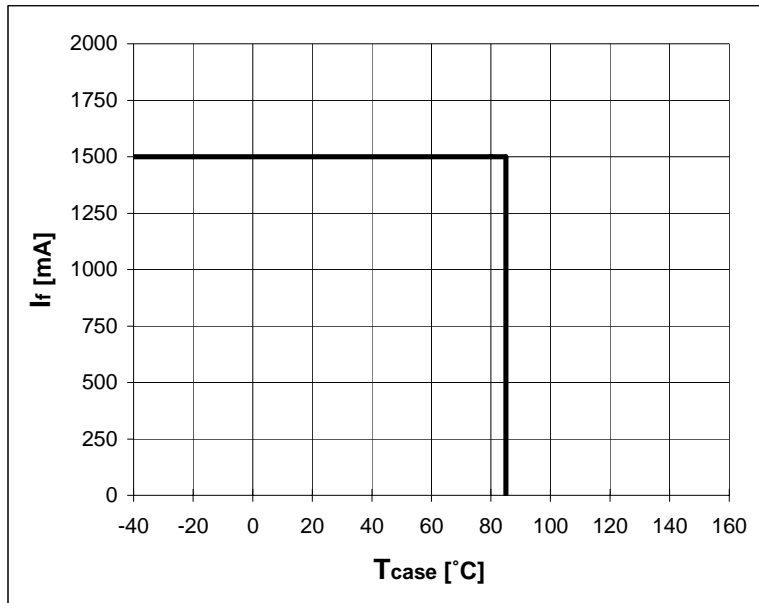
1. All dimensions are in mm
2. Tolerance ± 0.05 mm
3. Shown is recommended pad geometry only. Customer pcb design shall include adequate thermal heat sink design & thermal analysis.



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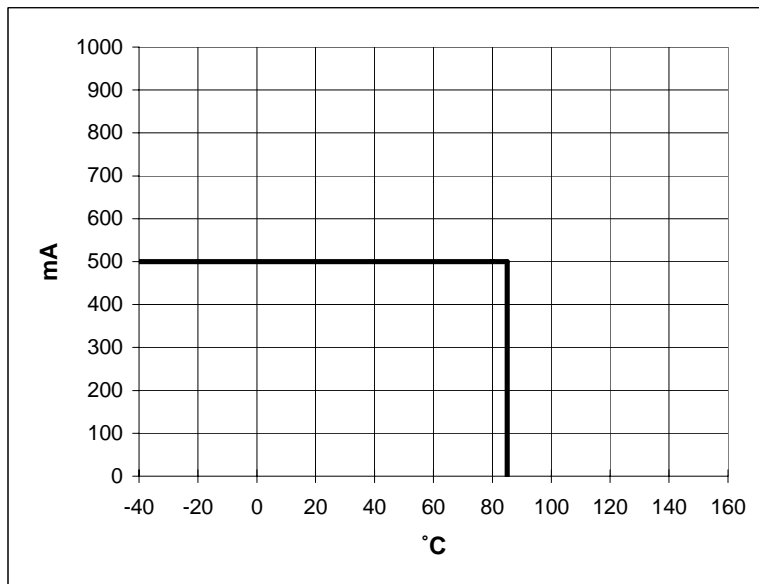
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Figure 7: Max Pulse Current vs. LED Case Temperature



Note: In pulse mode case temperature denotes temperature just before the LED is being energized (to).

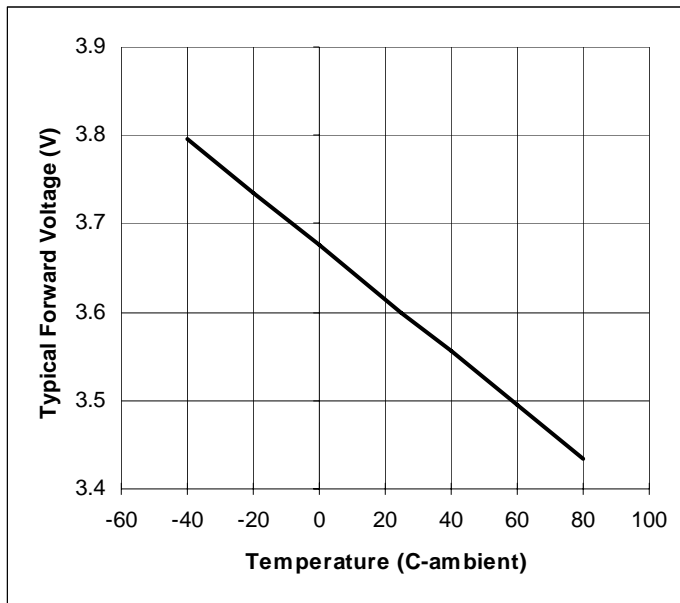
Figure 8: Max DC Forward Current vs. LED Case Temperature



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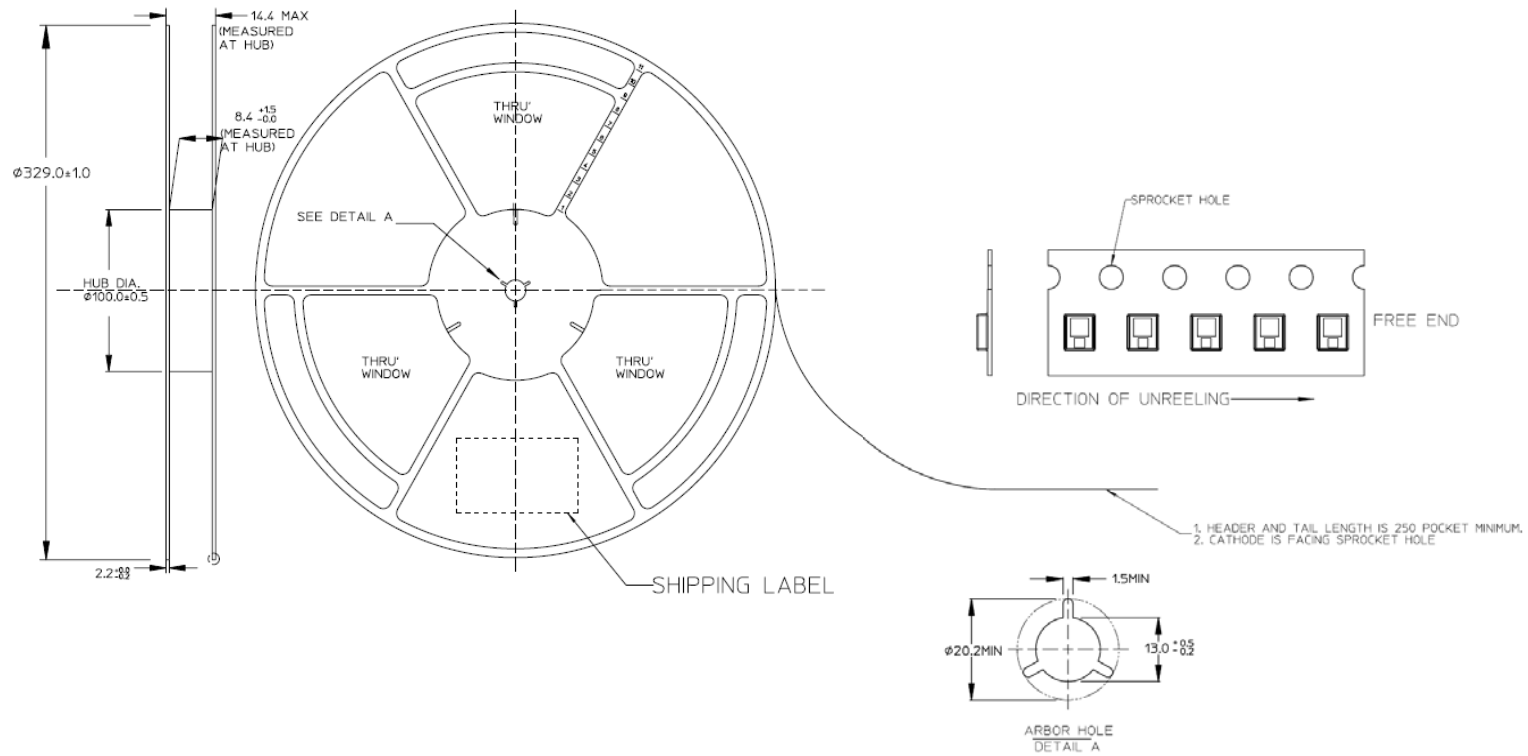
Figure 9 Typical Change in Voltage vs. Change in Temperature



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Figure 10: Tape and Reel Packaging



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Figure 11: Tape Dimensions

