#### 3.0 mm Round White LED Lamp

<ul> <li>Produced with steel leadframe</li> <li>Supplied with standard leads (SL)</li> <li>Supplied with lead stand off (SO)</li> <li>Water clear epoxy</li> <li>Products bin coded for hue and intensity</li> <li>Class II ESD Rating</li> </ul>				Features	<ul> <li>Long life – 75K hours 50% lumen maintenance (see sheet 4)</li> <li>High brightness – 5000 mcd typical</li> <li>High Efficiency 44 lm/w</li> <li>Weather resistant package design</li> <li>Suitable for outdoor displays and signs</li> <li>Ideal for traffic signal and VMS applications</li> </ul>					sheet 4)
LED Part Number	Imber Emitting Colour	Leads	Die Material	Chromaticity Coordinates		Forward Voltage V <sub>F</sub>		Luminous Intensity $I_V$		Viewing $\angle$
				x	У	typical	max	min	typical	201⁄2
FUL-R334WWCSL	White	Std	InGaN/SiC	0.31	0.31	3.20	3.80	2500	5000	34
FUL-R334WWCSO	White	Stand off	InGaN/SiC	0.31	0.31	3.20	3.80	2500	5000	34
Units				Tvr	pical		/	n	 hcd	deg
	<ul> <li>Supplied with stan</li> <li>Supplied with lead</li> <li>Water clear epoxy</li> <li>Products bin code</li> <li>Class II ESD Ratir</li> </ul> ptical Characteris LED Part Number FUL-R334WWCSL	<ul> <li>Supplied with standard leads</li> <li>Supplied with lead stand off</li> <li>Water clear epoxy</li> <li>Products bin coded for hue a</li> <li>Class II ESD Rating</li> </ul> ptical Characteristics I <sub>F</sub> LED Part Number       Emitting         FUL-R334WWCSL       White         FUL-R334WWCSO       White         FUL-R334WWCSO       White	<ul> <li>Supplied with standard leads (SL)</li> <li>Supplied with lead stand off (SO)</li> <li>Water clear epoxy</li> <li>Products bin coded for hue and intensi</li> <li>Class II ESD Rating</li> </ul> ptical Characteristics I <sub>F</sub> = 20 m/ LED Part Number Emitting Colour Leads FUL-R334WWCSL White Std FUL-R334WWCSO White Stand off FUL-R334WWCSO White Stand off I I I I I I I I I I I I I I I I I I I	<ul> <li>Supplied with standard leads (SL)</li> <li>Supplied with lead stand off (SO)</li> <li>Water clear epoxy</li> <li>Products bin coded for hue and intensity</li> <li>Class II ESD Rating</li> </ul> ptical Characteristics I <sub>F</sub> = 20 mA T <sub>a</sub> = 2 LED Part Number Emitting Colour Leads Die Material FUL-R334WWCSL White Std InGaN/SiC FUL-R334WWCSO White Stand off InGaN/SiC FUL-R334WWCSO White InGaN/SiC In the stand off InGaN/SiC Interval InGAN/SiC	<ul> <li>Supplied with standard leads (SL)</li> <li>Supplied with lead stand off (SO)</li> <li>Water clear epoxy</li> <li>Products bin coded for hue and intensity</li> <li>Class II ESD Rating</li> <li>Class II ESD Rating</li> </ul> ptical Characteristics I <sub>F</sub> = 20 mA T <sub>a</sub> = 25° C LED Part Number Emitting Colour Leads Die Material Katerial Kateri	<ul> <li>Supplied with standard leads (SL)</li> <li>Supplied with lead stand off (SO)</li> <li>Water clear epoxy</li> <li>Products bin coded for hue and intensity</li> <li>Class II ESD Rating</li> <li>Suitable for the leads of t</li></ul>	• Supplied with standard leads (SL) • Supplied with lead stand off (SO) • Water clear epoxy • Products bin coded for hue and intensity • Class II ESD Rating • Dical Characteristics $I_F = 20 \text{ mA}$ $T_a = 25^{\circ} \text{ C}$ • UED Part Number Emitting Colour Leads Die Material Chromaticity Coordinates Forward V × y typical FUL-R334WWCSL White Std InGaN/SiC 0.31 0.31 3.20 • FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 3.20 • FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 3.20 • Colour InGaN/SiC 0.31 0.31 0.31 3.20 • Colour InGaN/SiC 0.31 0.31 0.31 0.31 • Colour InGaN/SiC 0.31 0.31 0.31 0.31 • Colour InGaN/SiC 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31	• Supplied with standard leads (SL) • Supplied with lead stand off (SO) • Water clear epoxy • Products bin coded for hue and intensity • Class II ESD Rating • Class II ESD Rating • Ideal for traffic signal and VMS • Udeal for traffic sign	• Supplied with standard leads (SL) • Supplied with lead stand off (SO) • Water clear epoxy • Products bin coded for hue and intensity • Class II ESD Rating ptical Characteristics $I_F = 20 \text{ mA}$ $T_a = 25^{\circ} \text{ C}$ LED Part Number $Emitting Colour Leads Die Material X y typical max min FUL-R334WWCSL White Std InGaN/SiC 0.31 0.31 3.20 3.80 2500 FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 3.20 3.80 2500FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 3.20 3.80 2500FUL-R334WWCSO$ White Stand off InGaN/SiC 0.31 0.31 3.20 3.80 2500 FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 3.20 3.80 2500 FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 3.20 3.80 2500 FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 0.31 3.20 3.80 2500 FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 0.31 3.20 3.80 2500 FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 0.31 3.20 3.80 2500 FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 0.31 3.20 3.80 2500 FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 0.31 3.20 3.80 2500 FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 0.31 3.20 3.80 2500 FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 0.31 3.20 3.80 2500 FUL-R334WWCSO White Stand off InGaN/SiC 0.31 0.31 0.31 0.31 0.31 0.31 0.31 0.31	<ul> <li>Supplied with standard leads (SL)</li> <li>Supplied with lead stand off (SO)</li> <li>Water clear epoxy</li> <li>Products bin coded for hue and intensity</li> <li>Class II ESD Rating</li> </ul> Ptical Characteristics I <sub>F</sub> = 20 mA T <sub>a</sub> = 25° C LED Part Number Emitting Colour Leads Material Chromaticity Coordinates Forward Voltage V <sub>F</sub> Luminous Intensity I <sub>V</sub> Katerial Katerial Suitable for outdoor displays and signs Ideal for traffic signal and VMS applications Visitable for outdoor displays and signs Ideal for traffic signal and VMS applications Visitable for outdoor displays and signs Ideal for traffic signal and VMS applications Visitable for outdoor displays and signs Ideal for traffic signal and VMS applications 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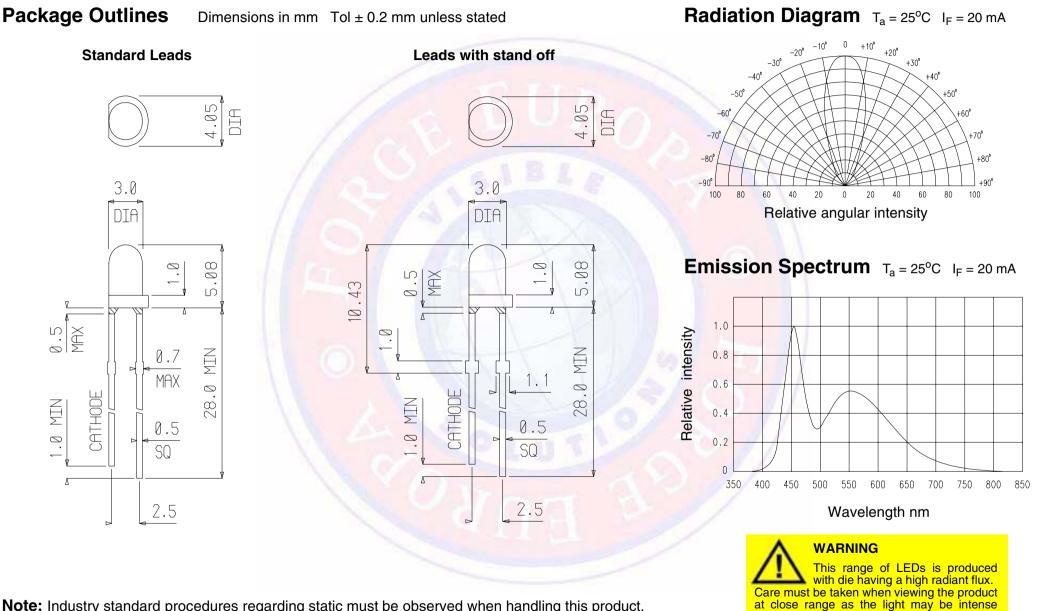
#### Maximum Ratings T<sub>a</sub> = 25° C (Derate above 25° C)

Characteristic	Condition	Symbol	Rating	Units
Pulse Forward Current	$t \le 0.1 ms, D = 1/10$	I <sub>FP</sub>	100	mA
DC Forward Current		١ <sub>F</sub>	30	mA
Reverse Voltage	I <sub>R</sub> = 5 μA	V <sub>R</sub>	5	V
Power Dissipation		PD	114	mW
Operating Temperature		T <sub>opr</sub>	- 30 to + 85	°C
Storage Temperature		T <sub>stg</sub>	- 40 to + 100	°C
Lead soldering temperature	3 mm from body - max 10 s	Τ <sub>s</sub>	260	°C

The maximum forward current for LEDs (I<sub>F</sub> max) is determined by the thermal resistance between the LED p-n junction and the ambient environment (èja). Since thermal resistance is strongly application dependant, designers should take care to observe design limits. It is critical to maintain both IF max and èja within design limits in order to optimise LED performance in terms of colour and intensity change as a factor of time. Thermal derating characteristics for temperatures above  $T_a = 25^{\circ}C$  are available upon request.

It is the responsibility of the customer to verify the suitability of the product for the application.

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**Note:** Industry standard procedures regarding static must be observed when handling this product.

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Data Sheet FUL-R334WWCSX Issue 01 12-10-06 Sheet 2 of 4

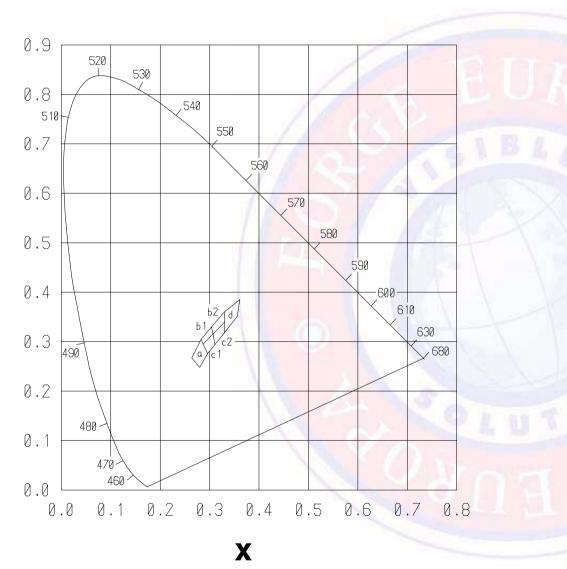
enough to cause damage to the human eye.

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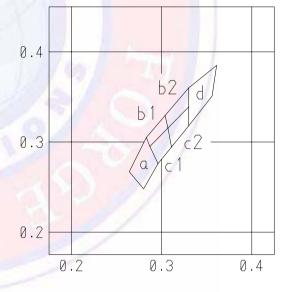
#### **Chromaticity Ranking**

Measurement Tolerance x and y  $\pm 0.01$ 





a X	Х	0.264	0.280	0.296	0.283
u Y		0.267	0.248	0.276	0.305
b1 X	0.283	0.304	0.307	0.287	
Y		0.305	0.329	0.315	0.295
b2	Х	0.304	0.330	0.330	0.307
5L	Y	0.329	0.360	0.339	0.315
c1	Х	0.287	0.307	0.311	0.296
	Y	0.295	0.315	0.294	0.276
c2	Х	0.307	0.330	0.330	0.311
02	Y	0.315	0.339	0.318	0.294
d	Х	0.330	0.330	0.356	0.361
, ,	Y	0.360	0.318	0.351	0.385



**Ranking Codes** 

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