

Top View with Sunset Orange LED

Features

- PLCC-4 compatible package.
- Compatible with automatic placement equipment.
- Class 1 ESD sensitive.
- RoHS



M3228

Applications

- Automotive interior lighting
- Indoor and outdoor displays
- Backlighting (LCD, displays, switches, office equipment)
- Indicator
- General use

Device Selection Guide

Part No.	Chip		Lens Color
	Material	Emitted Color	
TSRJ-JQ3228-9ZKKW	AlInGaP	Sunset Orange	Water Clear

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Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	VR	5	V
Average Forward Current (1)	IF	70	mA
Peak Forward Current (Duty Ratio=1/10, Pulse Width=0.1ms)	IFP	200	mA
Power Dissipation	Pd	192.5	mW
Operating Temperature	Topr	-40 ~ +100	°C
Storage Temperature	Tstg	-40 ~ +100	°C
Junction Temperature	Tj	125	°C
Soldering Temperature	Tsol	260 for 5 seconds	°C

Notes 1: Design of heat dissipation should be considered.

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Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I_v	1400	1800	2240	mcd	IF=50mA
Viewing Angle	$2\theta_{1/2}$	-----	120	-----	deg	
Dominant Wavelength	λ_d	610	615	621	nm	
Spectrum Radiation Bandwidth	$\Delta\lambda$	-----	25	-----	nm	
Forward Voltage	V_F	1.85	2.10	2.75	V	
Reverse Current	I_R	-----	-----	10	μA	VR=5V

Notes: Tolerance of Luminous Intensity: $\pm 15\%$

Tolerance of Dominant wavelength: $\pm 1.0\text{nm}$

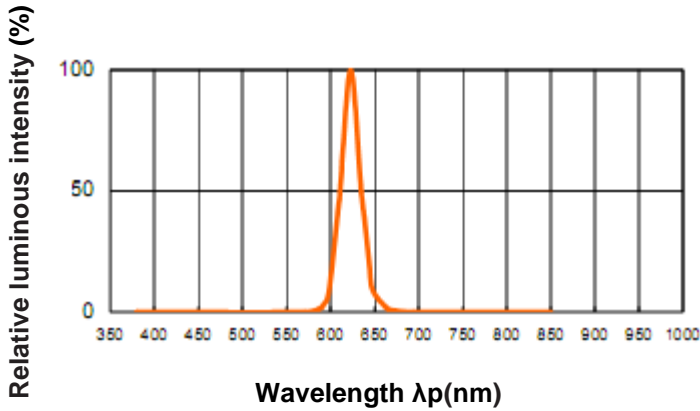
Tolerance of Forward Voltage: $\pm 0.05\text{V}$

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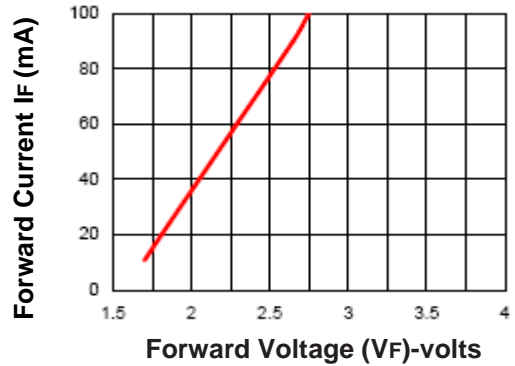
TSRJ-JQ3228-9ZKKW

Typical Electro-Optical Characteristics Curves (Ta=25°C)

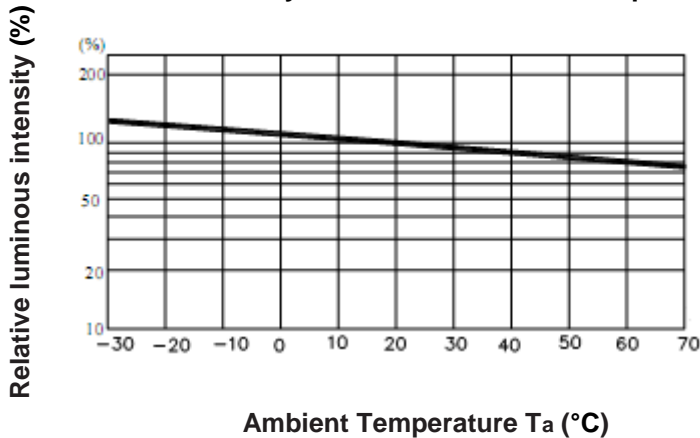
Spectrum Distribution



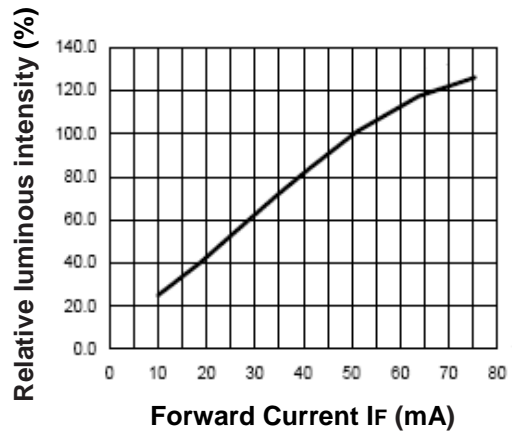
Forward Current vs. Forward Voltage



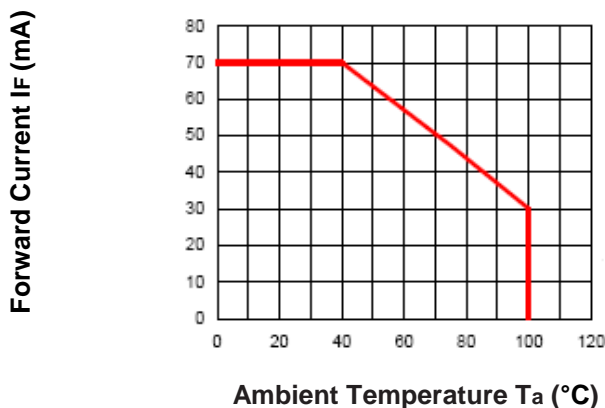
Luminous Intensity at 20mA vs. Ambient Temperature



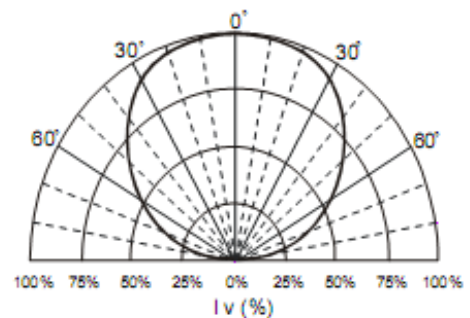
Luminous Intensity vs. Forward Current



Forward Current Derating Curve



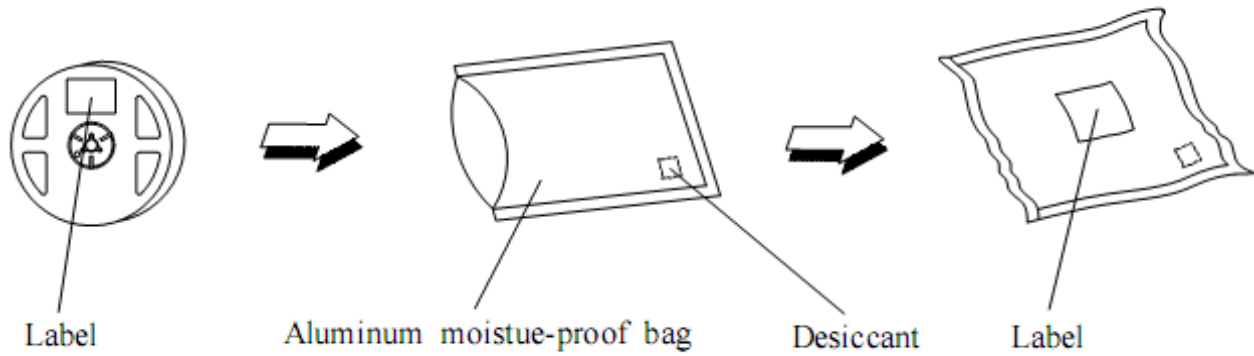
Radiation Diagram



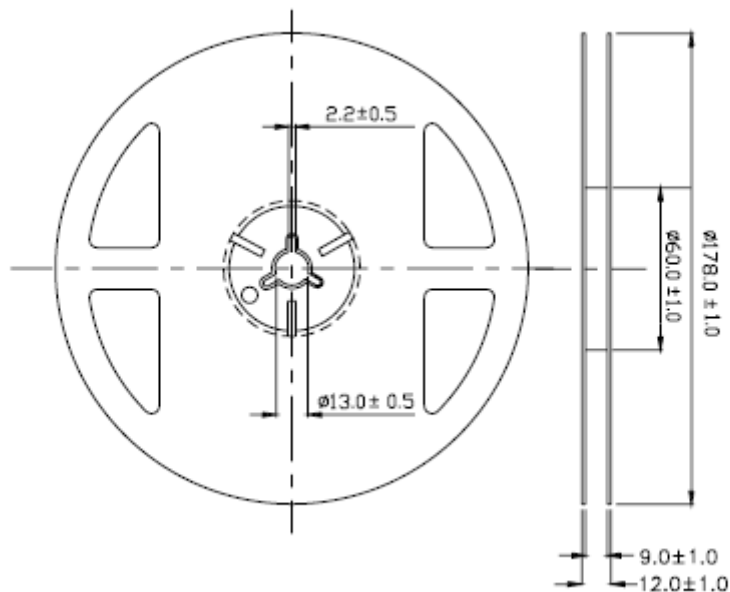
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Moisture Resistant Packaging



Reel Dimensions (Unit=mm):



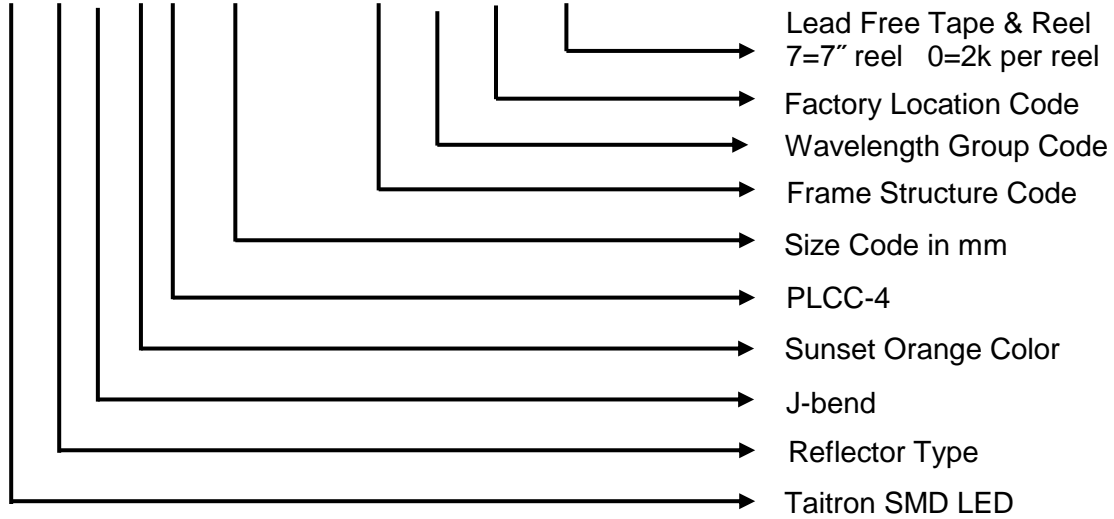
Note: The tolerances unless mentioned is ± 0.1 mm.

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Ordering Information

TS R J-J Q 3228 - 9ZKK W -88 -TR70



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Rank Combinations

Bin Range of Dominant Wavelength

Group	Bin Code	Min	Max	Unit	Condition
W	P4	610	615	nm	IF=50mA
	P5	615	621		

Bin Range of Luminous Intensity

Bin Code	Min	Max	Unit	Condition
5W	1400	1800	mcd	IF=50mA
4X	1800	2240		

Bin Range of Forward Voltage

Bin Code	Min	Max	Unit	Condition
3	1.85	2.15	V	IF=50mA
4	2.15	2.45		
5	2.45	2.75		

Notes: Tolerance of Luminous Intensity: $\pm 15\%$

Tolerance of Dominant wavelength: $\pm 1.0\text{nm}$

Tolerance of Forward Voltage: $\pm 0.05\text{V}$

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