Approval Sheet

MODEL NAME	**SMD LED**
PART NUMBER	**MSL-3228WEDT**
CUSTOMER NAME	
CUSTOMER P/NO.	
APPROVED DATE	

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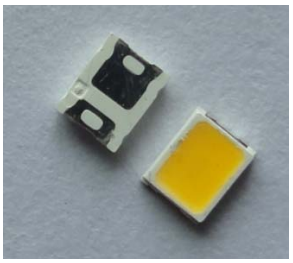


3.5*2.8 TOP LED
White Light
Ultra Bright LED

Lead (Pb) Free Product - RoHS Compliant
MSL-3228WEDT

Features

- **package:** white PLCC-2 package, colored diffused resin
- **feature of the device:** extremely wide viewing angle; long life time due to enhanced resin material
- **color coordinates:** x = 0.305, y = 0.31 acc. to CIE 1931 (white)
- **typ. color temperature:**6000 K
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** InGaN
- **grouping parameter:** luminous intensity, color coordinates
- **assembly methods:** suitable for all SMT assembly methods
- **soldering methods:** IR reflow soldering and TTW soldering
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 8 mm tape with 3000/reel, ø180 mm
- **ESD-withstand voltage:** ESD sensitive device

Applications

- outdoor displays
- backlighting (LCD, switches, keys, displays, illuminated advertising)
- interior and exterior automotive lighting
- substitution of micro incandescent lamps, reading lamps
- emergency lighting
- signal and symbol luminaire
- marker lights (e.g. steps, exit ways, etc.)

Ordering Information

Type	Color of Emission	Luminous Intensity (I_F=60mA)	
		Min I_V (lm)	Typ I_V (lm)
DBL-3228WEDT	White	20	22

Maximum Ratings

Parameter	Symbol	Values	Unit
Operating temperature range	T_{op}	– 40 … + 100	°C
Storage temperature range	T_{stg}	– 40 … + 100	°C
Junction temperature	T_j	120	°C
Forward current *(TA=25°C)*	I_F	60	mA
Surge current *t ≤ 10 µs, D = 0.005, TA=25°C*	I_F	250	mA
Reverse voltage *(I_R = 10uA,TA=25°C)*	V_R	5	V

Power consumption *(TA=25°C)*	P_{tot}	70	mW
Thermal resistance solder point	R_{th-js}	80	°C /W

Characteristics*(T_A = 25 °C)*

Parameter		Symbol	Values	Unit
Chromaticity coordinate x *(I_F = 60mA)*		x	**0.305**	-
Chromaticity coordinate y *(I_F = 60mA)*		y	**0.31**	-
Viewing angle at 50 % Φ_V	(typ.)	2φ	120	deg.
Forward voltage *(I_F = 60mA)*	(min.)	V_F	2.8	V
	(typ.)	V_F	3.2	V
	(max.)	V_F	3.5	V
Reverse current *(V_R=5V)*	(max.)	I_R	10	uA

Brightness Groups*(I_F=60mA)*

Brightness Groups	MIN	MAX
B2	**18**	**20**
C2	**20**	22
D2	22	24

Chromaticity Coordinate Groups*(I_F=60mA)*

Group	x1	y1	x2	y2	x3	y3	x4	y4
E1	0.3006	0.2968	0.3049	0.3046	0.2994	0.3142	0.2949	0.3057
E2	0.3049	0.3046	0.3091	0.3123	0.304	0.3226	0.2994	0.3142
YA1	0.3091	0.3123	0.3134	0.3201	0.3085	0.3311	0.304	0.3226
YA2	0.3134	0.3201	0.3177	0.3279	0.313	0.3395	0.3085	0.3311
M1	0.3177	0.3279	0.3219	0.3356	0.3175	0.348	0.313	0.3395
M2	0.3219	0.3356	0.3262	0.3434	0.3221	0.3564	0.3175	0.348
M3	0.3262	0.3434	0.3304	0.3511	0.3266	0.3649	0.3221	0.3564
M4	0.3304	0.3511	0.3347	0.3589	0.3311	0.3733	0.3266	0.3649

Group Name on Label

Example: C2- M1

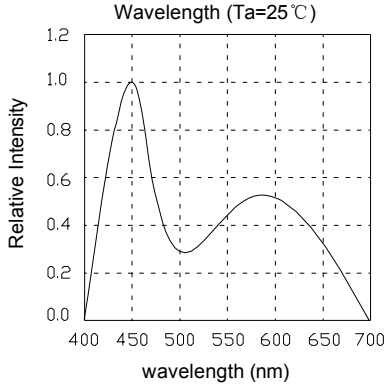
Brightness Group	Cie(x,y)
C2	M1

Note: No packing unit/tape ever contains more than one group for each selection.

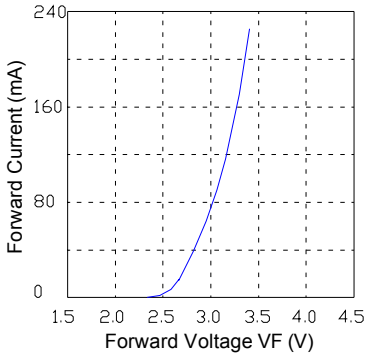
Typical optical characteristics curves

Spectral Distribution

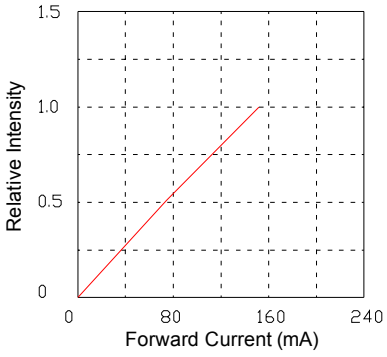
Relative Intensity VS. Wavelength (Ta=25℃)



Forward Voltage VS. Forward Current (Ta=25℃)

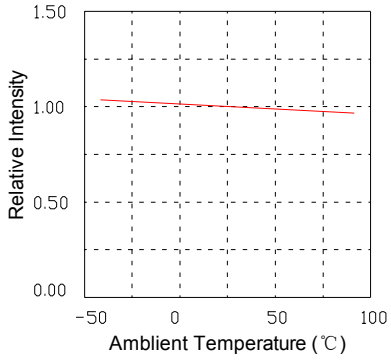


Relative Intensity VS. Forward Current (Ta=25℃)

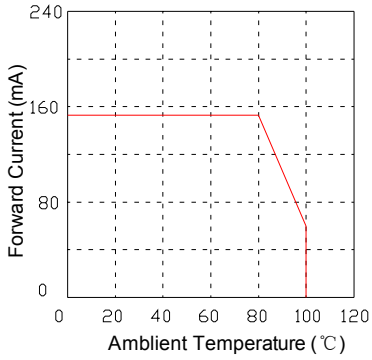


Derating

Relative Intensity VS. Amblient Temperature



Amblient Temperature VS. Maxinum Forward Current



Forward Current VS. Chromaticity (Ta=25℃)

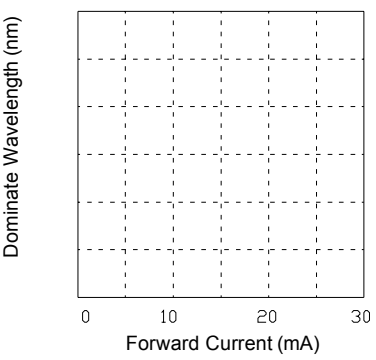
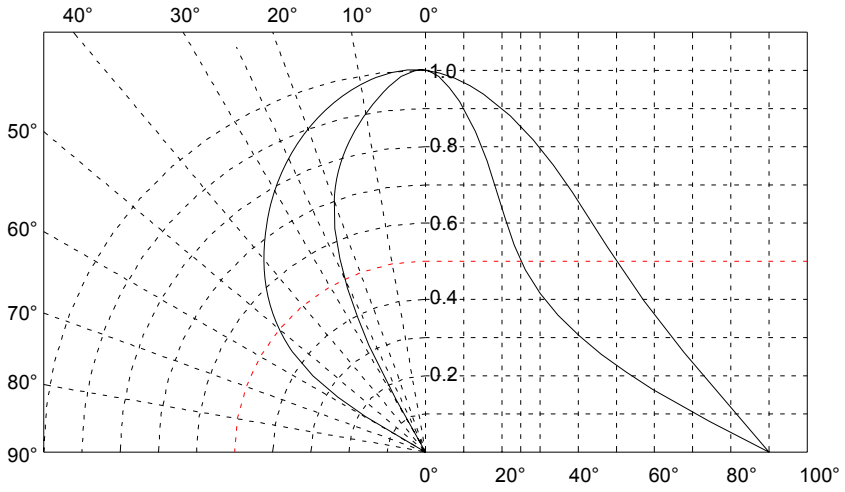
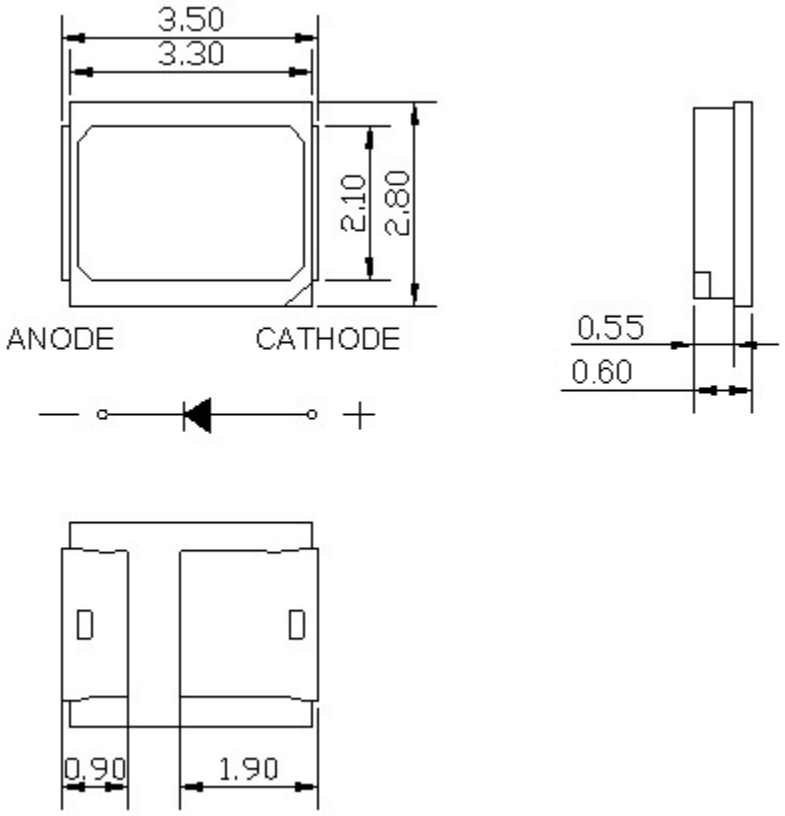


Diagram characteristics of radiation

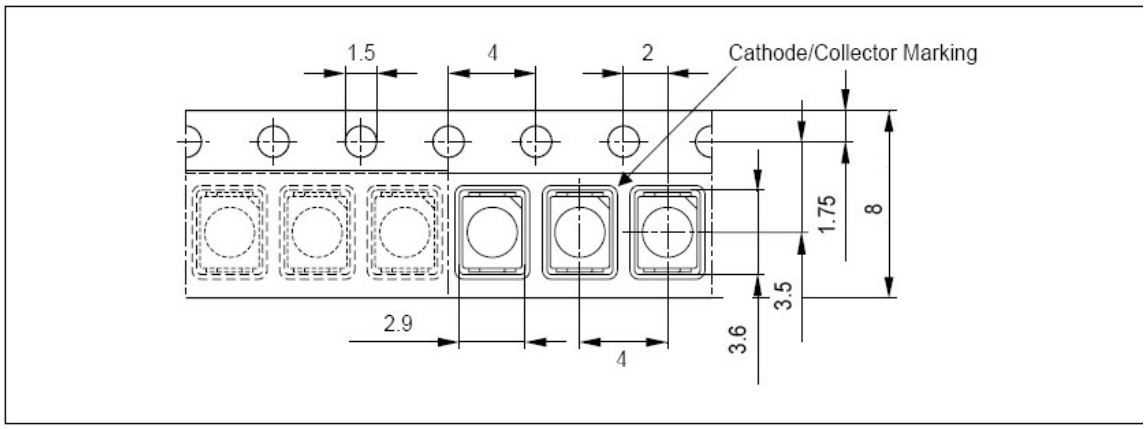


Package Outlines（±0.1mm）



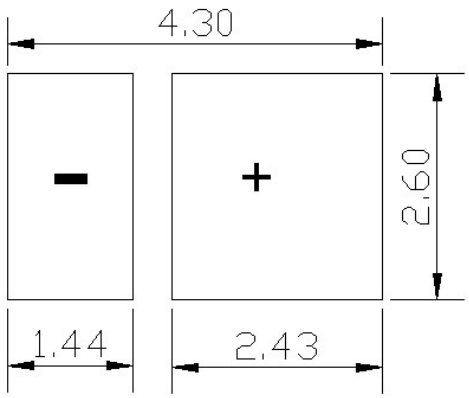
Method of Taping / Polarity and Orientation

Packing unit 2000/reel, ø180 mm



Recommended Solder Pad

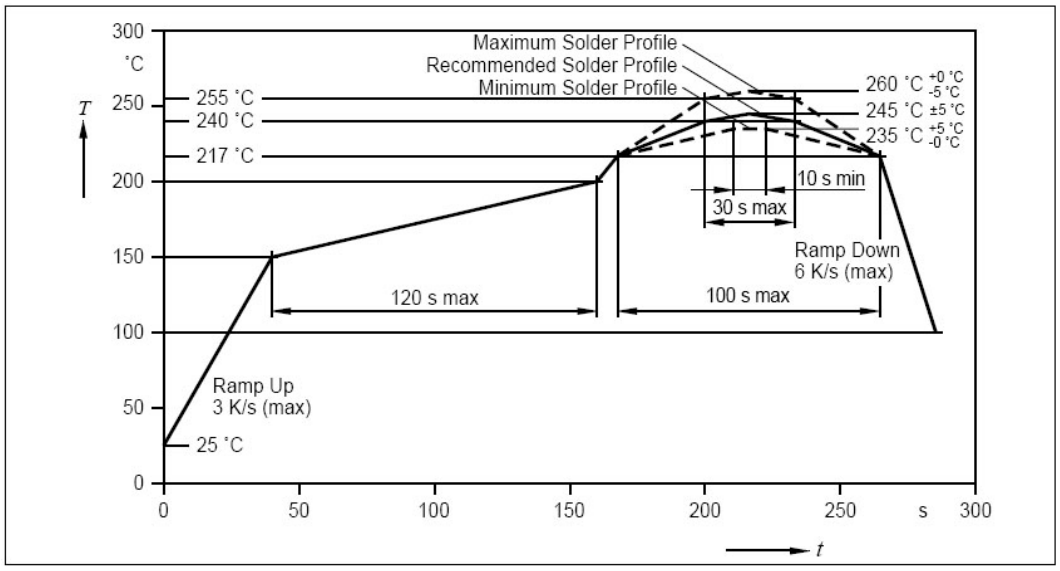
IR Reflow Soldering



UNIT:mm

Soldering Conditions Preconditioning acc. to JEDEC Level 2

IR Reflow Soldering Profile for lead free soldering (acc. to J-STD-020B)



Caution

1. Recommended storage condition: At 20℃~30℃ and relative humidity 70% RH max.
2. After this bag is opened, devices that will be applied to infrared reflow, vapor-phase reflow, or equivalent soldering process must be:
   a. Completed within 24hours.
   b. Stored at less than 30% RH.
3. Devices require baking before mounting, if: 2a or 2b is not met.
4. If baking is required, devices must be baked under blow conditions: 12hours at 75℃±3℃.