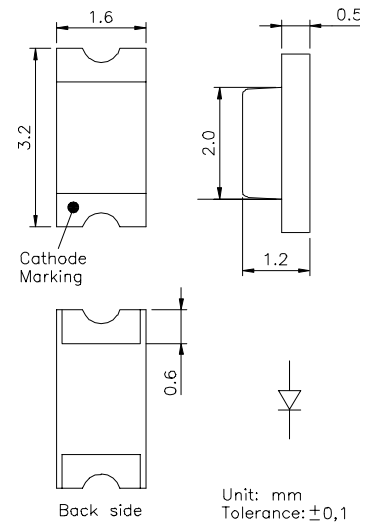


White LEDs

SMD LED **Series 150**

Features

- Size 1206 - 3,2(L) x 1,6(W) x 1,9(H) mm
- Circuit substrate-glass laminated epoxy
- Soldering pads: gold plated, all soldering methods applicable
- Taped in 8 mm blister tape, cathode marking to transporting perforation
- all components are sorted into luminous intensity classes



Electro-optical Characteristics

Type	Emitting Color	I _F [mA]	V _F [V]		Color Coordinates	I _V [mcd]	
			typ.	max.		min.	typ.
OLS-150UW	white	20	3.5	4.5	0.32/0.33	60	120
OLS-150MW	white	20	3.5	4.5	0.32/0.33	120	250

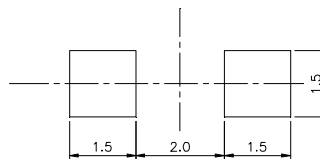
Absolute Maximum Ratings

P _{D max} [mW]	I _{F max} [mA]	I _{FP} [mA] tp ≤ 100 μs τ = 1:10	V _R [V] @ I _R = 100 μA	T _{OP} [°C]	T _{ST} [°C]
90	20	100	5	-40...+85	-55...+85

Soldering Conditions

Wave soldering: 2 min/160°C, 10s/235°C
 Reflow soldering: 2 min/160°C, 5s/230°C
 Manual soldering: max power of iron 25W/1s/300°C

Recommended Soldering Patterns [mm]

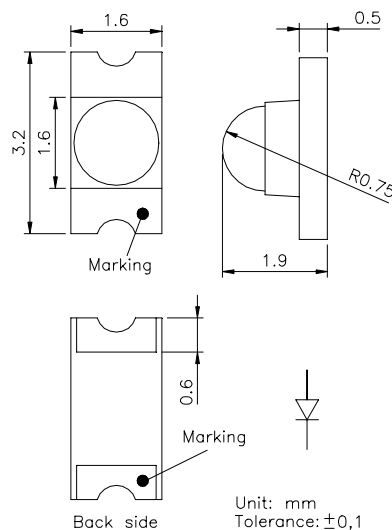


SMD LED with Lens Series 330

mountable from bottom of the surface of P.C.B.

Features

- Size 1206 - 3,2(L) x 1,6(W) x 1,9(H) mm
- Directive Characteristic 40 °
- Soldering pads: gold plated, all soldering methods applicable
- Taped in 8 mm blister tape, cathode marking to transporting perforation
- Thinner total height can be obtained by means of fitting lens portion into the cutout provided on the P.C.B.
- all components are sorted into luminous intensity classes



Electro-optical Characteristics

Type	Emitting Color	I _F [mA]	V _F [V]		Color Coordinates	I _V [mcd]	
			typ.	max.		min.	typ.
OLS-330UW	white	20	3.9	4.5	0.32/0.33	160	350
OLS-330MW	white	20	3.9	4.5	0.32/0.33	200	420

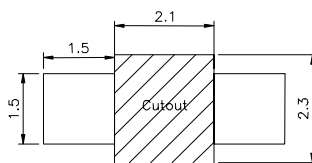
Absolute Maximum Ratings

P _{D max} [mW]	I _{F max} [mA]	I _{FP} [mA] tp ≤ 100 μs τ = 1:10	V _R [V] @ I _R = 100 μA	T _{OP} [°C]	T _{ST} [°C]
90	20	100	5	-40...+85	-55...+85

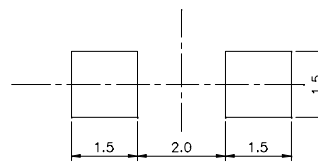
Soldering Conditions

- Wave soldering: 2 min/160°C, 10s/235°C
- Reflow soldering: 2 min/160°C, 5s/230°C
- Manual soldering: max power of iron 25W/1s/300°C

Recommended Soldering Patterns [mm]



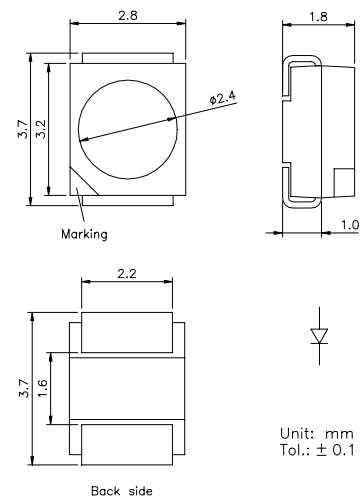
Type 330 mountable from bottom



Type 331 mountable on top

SMD LED**Series 3228****Features**

- PLCC2 package
- Soldering pads: gold plated, all soldering methods applicable
- Taped in 8 mm blister tape, cathode marking to transporting perforation
- all components are sorted into luminous intensity classes

**Electro-optical Characteristics**

Type	Emitting Color	I_F [mA]	V_F [V]		Color Coordinates	I_V [mcd]	
			typ.	max.		min.	typ.
SPL-3228UW	white	20	3.9	4.5	0.32/0.33	90	180
SPL-3228MW	white	20	3.9	4.5	0.32/0.33	120	320

Absolute Maximum Ratings

$P_{D\ max}$ [mW]	$I_{F\ max}$ [mA]	I_{FP} [mA] $t_p \leq 100\ \mu s$ $\tau = 1:10$	V_R [V] @ $I_R = 100\ \mu A$	T_{OP} [°C]	T_{ST} [°C]
150	30	100	5	-40...+85	-55...+85

Soldering Conditions

Wave soldering: 2 min/160°C, 10s/235°C
 Reflow soldering: 2 min/160°C, 5s/230°C
 Manual soldering: max power of iron 25W/1s/300°C

Recommended Soldering Patterns [mm]