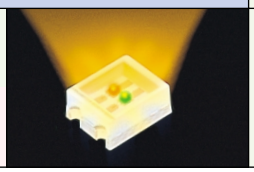
Dual-Color Type Chip LEDs with reflector

SML-020 Series

Package Size (mm)	Part No.		Green	Red
			GaP	GaAlAs on GaAs
			570nm	660nm
3225 (1210) 3.0×2.5 t=1.3	SML-020MLT		○	○

■ Absolute Maximum Ratings (Ta=25℃)

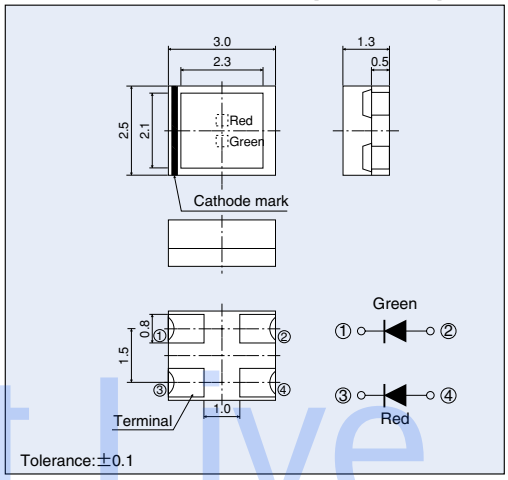
Part No.	Emitting color	Power dissipation P_D (mW)	Forward current I_F (mA)	Peak forward current ＊I_{FP} (mA)	Reverse voltage V_R (V)	Operating temperature T_{opr} (°C)	Stotage temperature T_{stg} (°C)
SML-020MLT	Green	60	25	60	4	-30 to +85	-40 to +85
	Red		30	75			

＊I_{FP} measured under duty ≦1/ 5,pulse width ≦1ms.

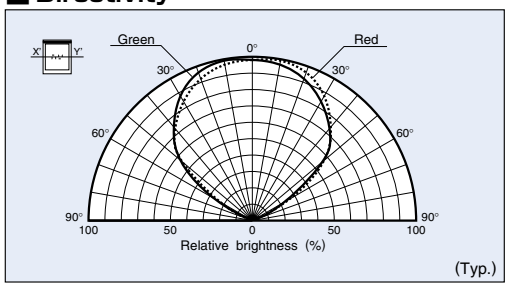
■ Electrical Optical Characteristics (Ta=25℃)

Part No.	Resin Color	Forward voltage V_F		Reverse current I_R		Light wavelength Peak λp	Light wavelength Half-wave Δλ		Brightness Iv		
		Typ. (V)	I_F (mA)	Max. (μA)	V_R (V)	Typ. (nm)	Typ. (nm)	I_F (mA)	Min. (mcd)	Typ. (mcd)	I_F (mA)
SML-020MLT	Transparent Clear	2.2	20	100	4	570	40	20	9.0	20	20
		1.75				660	25			16	

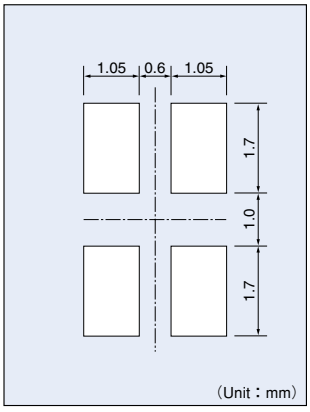
■ External Dimensions (Unit : mm)



■ Directivity



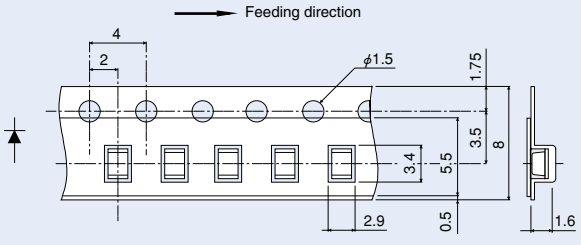
■ Recommemded Pad Layout



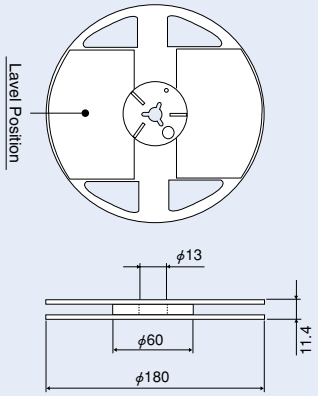
The recommended thickness of the screen mask for soldering is between 100 and 200μm. The hole size of the screen mask should be same as the recommended land pattern or smaller.

■ Packaging Spacifications (Unit : mm)

Tape Spacifications : T86 〈2,500pcs／reel〉

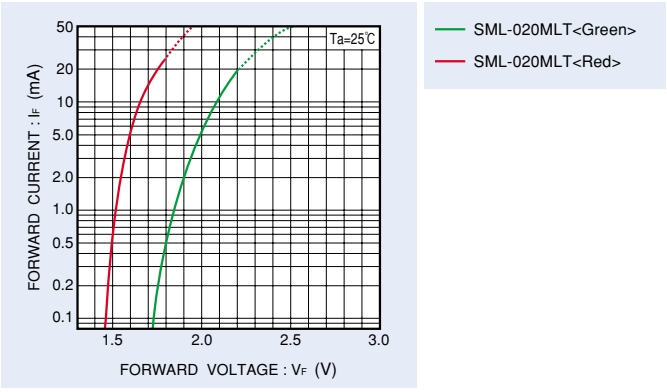


Reel Spacifications

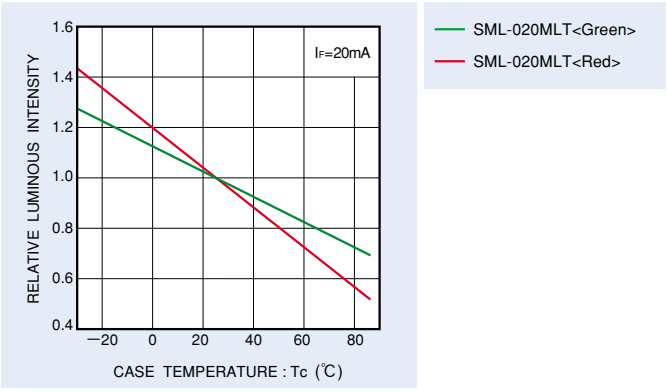


Electrical Characteristic Curves

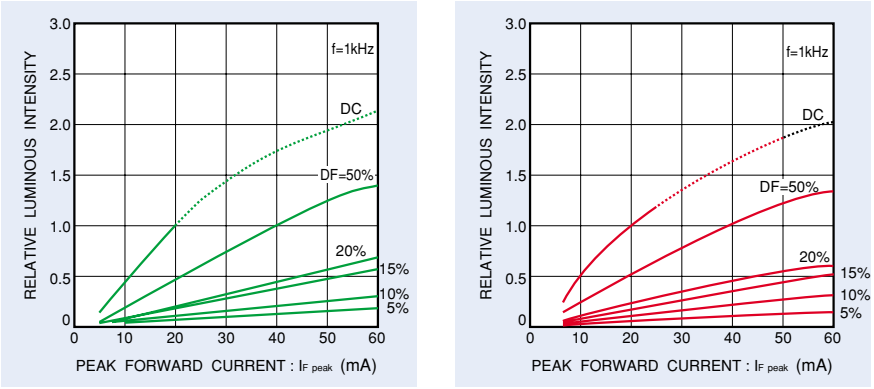
Forward Current - Forward Voltage



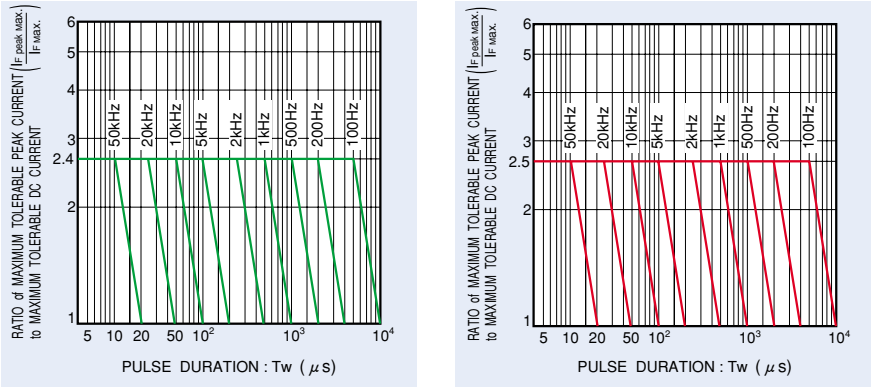
Relative Luminous Intensity - Case Temperature



Relative Luminous Intensity - Forward Current



Ratio of Maximum Tolerable Peak Current - Pulse Duration



Derating

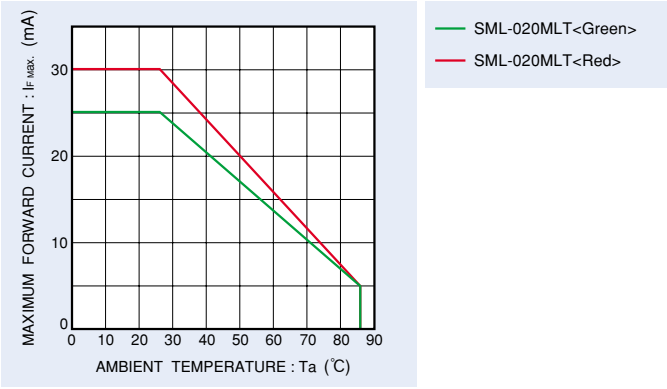


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Table of luminosity rankings

Product name	Rank code	Product name	Rank code	Product name	Rank code
SLA-360JT*1	XG, XH, XJ, XK	SLR-325VC	L, M, N, P	SLR-56YY	K, L, M, N
SLA-360LT*1	XC, XD, XE, XF	SLR-322VR	K, L, M, N	SLV-312DC	F, G, H, J
SLA-360MT*1	XD, XE, XF, XG	SLR-322DC	L, M, N, P	SLV-312MC	H, J, K, L
SLA-370JT*1	XJ, XK, XL, XM	SLR-332DU	K, L, M, N	SLV-312VC	F, G, H, J
SLA-370LT*1	XE, XF, XG, XH	SLR-332MC	L, M, N, P	SLV-312YC	F, G, H, J
SLA-370MT*1	XE, XF, XG, XH	SLR-332MG	L, M, N, P	SML-010JT*1	N, P, Q, R
SLA-560JT*1	XJ, XK, XL, XM	SLR-332VC	K, L, M, N	SML-010LT*1	L, M, N, P
SLA-560LT*1	XE, XF, XG, XH	SLR-332VR	K, L, M, N	SML-010VT*1	J, K, L, M
SLA-560MT*1	XE, XF, XG, XH	SLR-332YC	K, L, M, N	SML-010DT*1	K, L, M, N
SLA-570JT*1	XL, XM, XN, XP	SLR-332YY	J, K, L, M	SML-010YT*1	J, K, L, M
SLA-570LT*1	XG, XH, XJ, XK	SLR-342DC	M, N, P, Q	SML-010MT*1	L, M, N, P
SLA-570MT*1	XJ, XK, XL, XM	SLR-342DU	L, M, N, P	SML-010PT*1	J, K, L, M
SLA-580JT*1	XL, XM, XN, XP	SLR-342MC	M, N, P, Q	SML-020MLT*1,*2	PN,PM,NN,NM,MN,MM
SLA-580LT*1	XJ, XK, XL, XM	SLR-342MG	L, M, N, P	SML-020MVT*1,*2	PL,PK,NL,NK,ML,MK
SLA-580MT*1	XJ, XK, XL, XM	SLR-342VC	M, N, P, Q	SML-210JT*1	N, P, Q, R
SLB-24MG	F, G, H, J	SLR-342VR	L, M, N, P	SML-210LT*1	K, L, M, N
SLB-24YY	D, E, F, G	SLR-342YC	L, M, N, P	SML-210VT*1	H, J, K, L
SLB-24VR	D, E, F, G	SLR-342YY	K, L, M, N	SML-210DT*1	J, K, L, M
SLB-24DU	D, E, F, G	SLR-40MC	M, N, P, Q	SML-210YT*1	J, K, L, M
SLB-25MG	E, F, G, H	SLR-40MG	L, M, N, P	SML-210MT*1	K, L, M, N
SLB-25YY	E, F, G, H	SLR-40YC	L, M, N, P	SML-210PT*1	H, J, K, L
SLB-25DU	E, F, G, H	SLR-40YY	J, K, L, M	SML-211UT*4	G, H, J, K
SLB-25VR	E, F, G, H	SLR-40DC	L, M, N, P	SML-211DT*4	G, H, J, K
SLC-22DU	F, G, H, J	SLR-40DU	K, L, M, N	SML-211YT*4	F, G, H, J
SLC-22MG	G, H, J, K	SLR-40VC	L, M, N, P	SML-310JT*1	N, P, Q, R
SLC-22VR	G, H, J, K	SLR-40VR	K, L, M, N	SML-310LT*1	K, L, M, N
SLC-22YY	G, H, J, K	SLR-505MC	M, N, P, Q	SML-310VT*1	H, J, K, L
SLR-322DC	L, M, N, P	SLR-505MG	L, M, N, P	SML-310DT*1	J, K, L, M
SLR-322DU	J, K, L, M	SLR-505VC	L, M, N, P	SML-310YT*1	J, K, L, M
SLR-322MC	M, N, P, Q	SLR-505VR	J, K, L, M	SML-310MT*1	K, L, M, N
SLR-322MG	K, L, M, N	SLR-520MC	L, M, N, P	SML-310PT*1	H, J, K, L
SLR-322VC	L, M, N, P	SLR-520MG	L, M, N, P	SML-311UT*4	G, H, J, K
SLR-322VR	K, L, M, N	SLR-520VC	L, M, N, P	SML-311DT*4	G, H, J, K
SLR-322YC	K, L, M, N	SLR-520VR	K, L, M, N	SML-311YT*4	F, G, H, J
SLR-322YY	K, L, M, N	SLR-56DC	M, N, P, Q	SML-510MW*1	K, L, M, N
SLR-325MC	M, N, P, Q	SLR-56DU	K, L, M, N	SPB-25MVW*3	E, F, G, H
SLR-325MG	L, M, N, P	SLR-56MC	N, P, Q, R	SPR-39MVW*3	K, L, M, N
SLR-325YC	L, M, N, P	SLR-56MG	L, M, N, P	SPR-54MVW*3	K, L, M, N
SLR-325YY	J, K, L, M	SLR-56VC	M, N, P, Q	SPR-325MVW*3	L, M, N, P
SLR-325DC	L, M, N, P	SLR-56VR	K, L, M, N	SPR-505MVW*3	L, M, N, P
SLR-325DU	K, L, M, N	SLR-56YC	M, N, P, Q		

*1 Measured at IF = 20mA

*2 The former is the intensity rank at short wavelength (green), and the latter is the intensity rank at long wavelength (red).

*3 Intensity rank at short wavelength(green).

*4 IF = 2mA at time of intensity ranking.

*5 Rankings may change due to improvements in emitters. Check the data sheet for a product before using it.

Luminous intensity rankings

(Units : mcd)

Rank code	Range
D	0.22～0.45
E	0.36～0.71
F	0.56～1.1
G	0.90～1.8
H	1.4～2.8
J	2.2～4.5
K	3.6～7.1
L	5.6～11
M	9.0～18
N	14～28
P	22～45
Q	36～71
R	56～110
S	90～180
T	140～280
U	220～450
V	360～710

(Units : mcd)

Rank code	Range
XA	9.0～16.5
XB	13.5～24.0
XC	20.0～36.0
XD	30.0～52.0
XE	42.0～75.0
XF	61.0～110
XG	90～165
XH	135～240
XJ	200～360
XK	300～520
XL	420～750
XM	610～1100
XN	900～1650
XP	1350～2400

●For more information about rankings, contact your ROHM representative.

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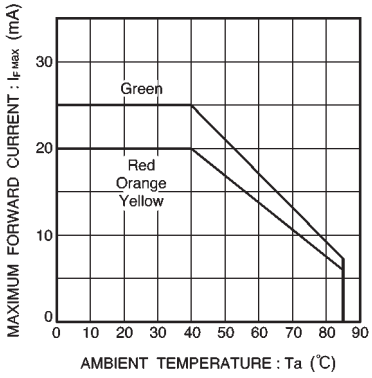


Fig. 3 Maximum forward current vs. ambient temperature

Determine the pulse drive conditions as follows.

1. Decide what repetition frequency (f) and duty factor (DF) will be used.
2. Determine the maximum tolerable peak current ratio from Figure 2.

$$\frac{I_F \text{ peak Max.}}{I_F \text{ Max.}}$$

3. Determine the maximum forward current from Figure 3.

For example, when Ta = 40°C or above, the maximum forward current (I_F Max.) decreases.

4. Calculate the maximum tolerable peak current (I_F peak Max.).

Example

If f = 1 kHz, DF = 10%, and Ta = 40°C, the maximum tolerable peak current ratio from Figure 2 is 3.0 for red, orange and yellow, and 2.4 for green.

The maximum forward current I_F Max. at Ta = 40°C is 20 mA for red, orange and yellow, and 25 mA for green.

Therefore, the maximum tolerable peak current under these conditions is as follows :

●Red, orange and yellow .. 20 mA × 3.0 = 60 mA

●Green ..... 25 mA × 2.4 = 60 mA

For the repetition frequency, we recommend 1 kHz or above.

(7) Decrease of rated current

The maximum rated forward current of LED lamps will vary depending on the ambient operating temperature. (Refer to Figure 3)

(8) Variation of luminous intensity depending on ambient temperature

ROHM LED lights have a temperature coefficient of approximately –1% for red and orange, and – 0.5% for yellow and green. (Refer to the luminous intensity vs. case temperature characteristics for each LED type.)

●Storage precautions

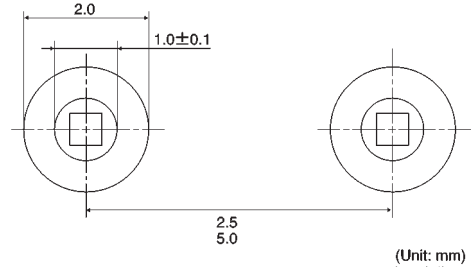
Storage in a dry box is best. However, if this is not possible we recommend the following conditions :

Temperature : 5 to 30°C

Humidity : 60%RH max.

●Recommended PCB

We recommend the following hole diameters. Note, however, that these may vary depending on the board material, degree of integration, and wiring.



(Unit: mm)
Lead diameter: 0.4mm
0.5mm

●LED lamp product names

The product names of ROHM LED lamps and chip LEDs are coded as follows :