

# Two-color chip LEDs with reflectors

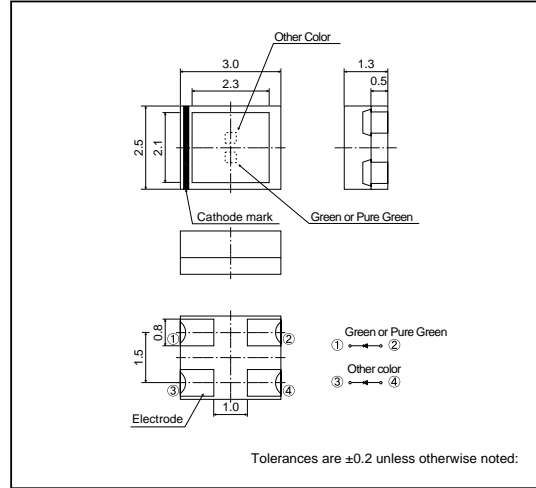
## SML-020 Series

The SML-020 series are two-color, high luminance chip LEDs with reflectors. Two-color chips are built into a single package. These LEDs are compact and leadless to allow a high mounting density.

**●Features**

- 1) Reflectors are used to achieve a high luminance.
- 2) Two-color emission, rectangular and leadless (3×2.5 mm).
- 3) Can be mounted by automatic mounting.
- 4) Available on tape

**●External dimensions (Units : mm)**



**●Selection guide**

Emitting color Lens	Red Green	Orange Green	Yellow Green	Orange Pure Green
	SML-020MVT SML-020MLT	SML-020MDT	SML-020MYT	SML-020PDT

**●Absolute maximum ratings (Ta=25°C)**

Parameter	Symbol	Limits					Unit
		MLT	MVT	MDT	MYT	PDT	
Power dissipation	P <sub>D</sub>	60	←	←	←	←	mW/chip
Forward current	I <sub>F</sub> Other Color	30	25	←	←	←	mA
	I <sub>F</sub> Green	25					
Peak forward current	I <sub>FP</sub> Other Color	75	60	←	←	←	mA*
	I <sub>FP</sub> Green	60					
Reverse voltage	V <sub>R</sub>	4	←	←	←	←	V
Operating temperature	T <sub>opr</sub>	-30~+85	←	←	←	←	°C
Storage temperature	T <sub>stg</sub>	-40~+85	←	←	←	←	°C

\* Pulse width 1ms Duty 1 / 5

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●Electrical and optical characteristics (Ta=25°C)

Type	Parameter	Color	Forward voltage			Reverse current			Luminous intensity			Peak wavelength		Spectral line half width				
			V <sub>F</sub> (V)		I <sub>R</sub> (μA)	I <sub>R</sub> (μA)	V <sub>R</sub> (V)	I <sub>v</sub> (mcd)		I <sub>p</sub> (nm)	I <sub>p</sub> (nm)	Δλ (nm)	Δλ (nm)					
			Typ.	Max.				Cond. I <sub>F</sub> (mA)	Max.					Min.	Typ.	Cond. I <sub>F</sub> (mA)	Typ.	Cond. I <sub>F</sub> (mA)
SML-020MVT	V	Red	2.0	2.8	20	100	4	20	20	20	650	20	40	20				
	M	Green	2.2	2.8											3.6	6.3	570	40
SML-020MLT	L	Red	1.75	2.5											9.0	16	660	25
	M	Green	2.2	2.8											9.0	20	570	40
SML-020MDT	D	Orange	2.0	2.8											5.6	10	610	40
	M	Green	2.2	2.8											9.0	20	570	40
SML-020MYT	Y	Yellow	2.1	2.8											3.6	6.3	585	40
	M	Green	2.2	2.8											9.0	20	570	40
SML-020PDT	D	Orange	2.0	2.8											5.6	10	610	40
	P	Pure Green	2.2	2.8											2.2	4.0	555	40

●Directional pattern

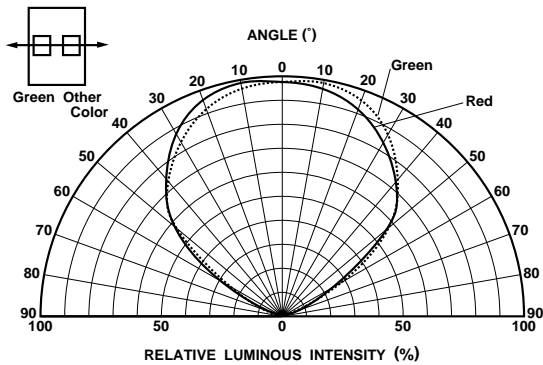


Fig. 1 Directional pattern (1)

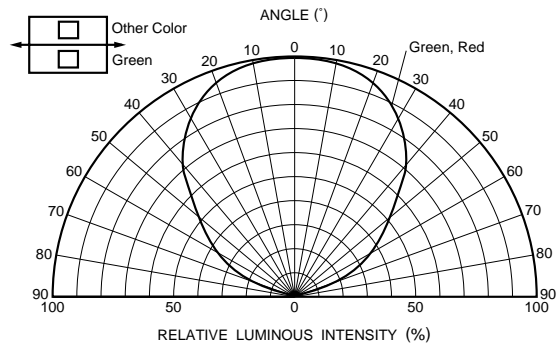


Fig. 2 Directional pattern (2)

●Electrical characteristics1 (SML-020MVT)

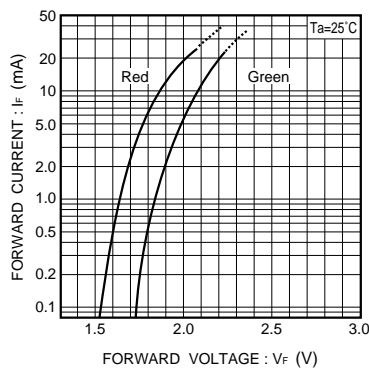


Fig. 3 Forward current vs. forward voltage

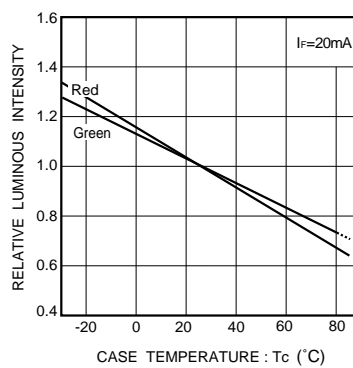


Fig. 4 Luminous intensity vs. case temperature

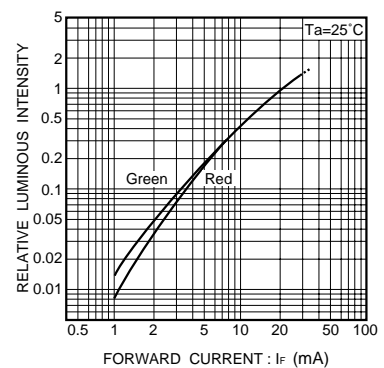


Fig. 5 Luminous intensity vs. forward current

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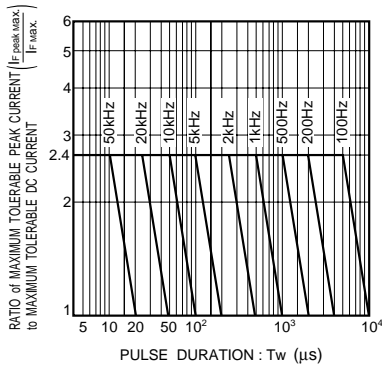


Fig. 6 Maximum tolerable peak current vs. pulse duration

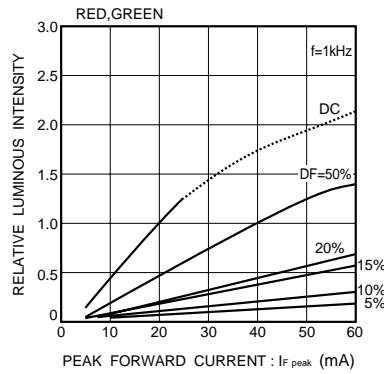


Fig. 7 Luminous intensity vs. peak forward current

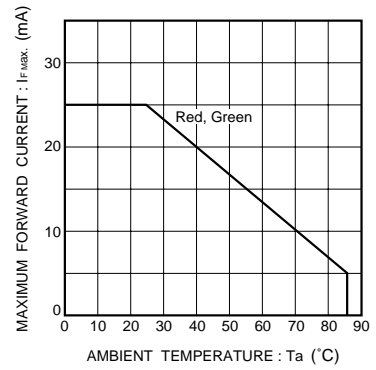


Fig. 8 Maximum forward current vs. ambient temperature

●Electrical characteristics2 (SML-020MLT)

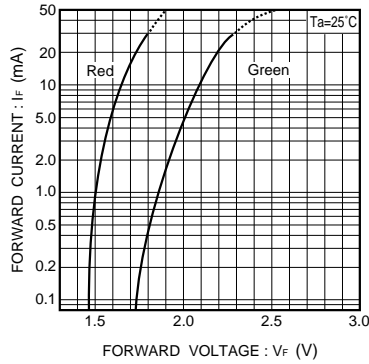


Fig. 9 Forward current vs. forward voltage

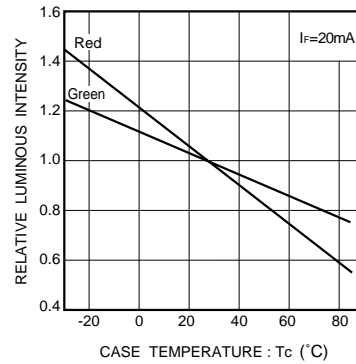


Fig. 10 Luminous intensity vs. case temperature

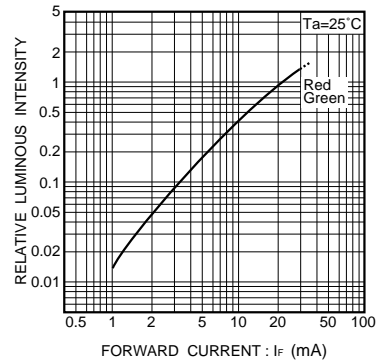


Fig. 11 Luminous intensity vs. forward current

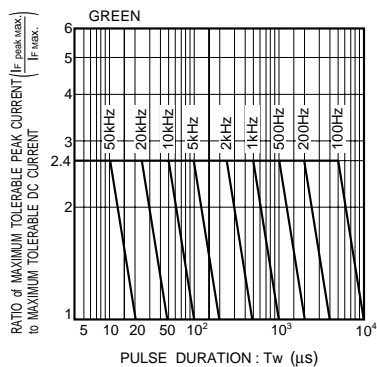


Fig. 12 Maximum tolerable peak current vs. pulse duration

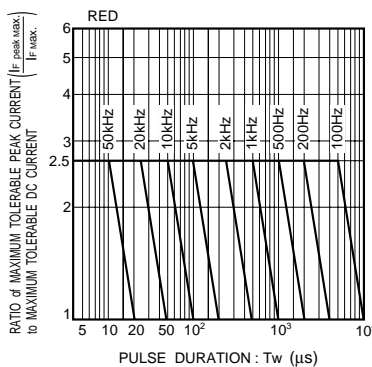


Fig. 13 Maximum tolerable peak current vs. pulse duration

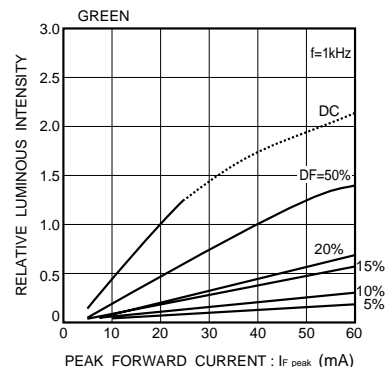


Fig. 14 Luminous intensity vs. peak forward current

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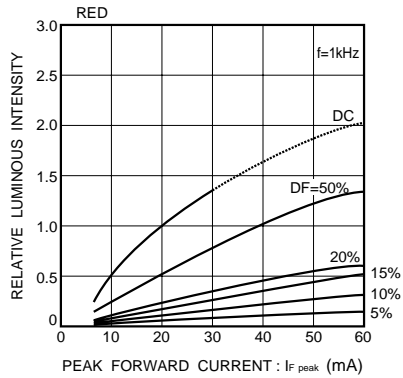


Fig. 15 Luminous intensity vs. peak forward current

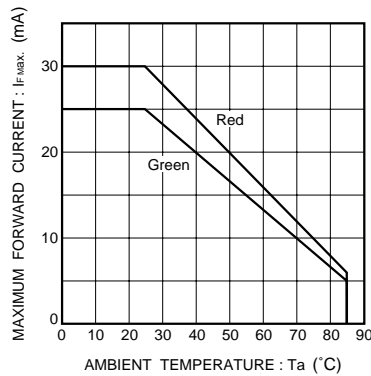


Fig. 16 Maximum forward current vs. ambient temperature

●Electrical characteristics3 (SML-020MDT)

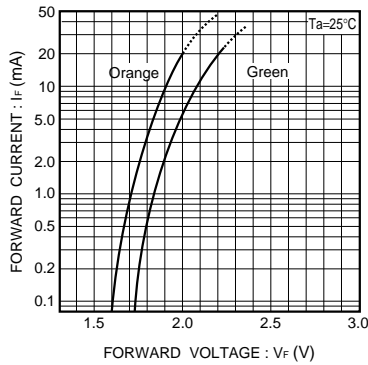


Fig. 17 Forward current vs. forward voltage

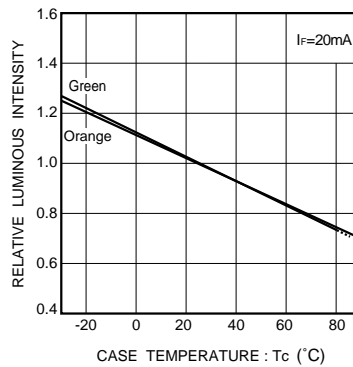


Fig. 18 Luminous intensity vs. case temperature

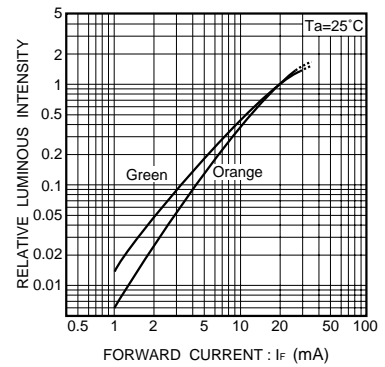


Fig. 19 Luminous intensity vs. forward current

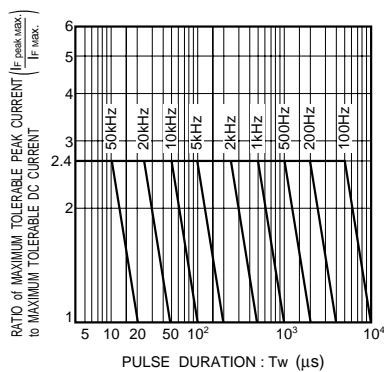


Fig. 20 Maximum tolerable peak current vs. pulse duration

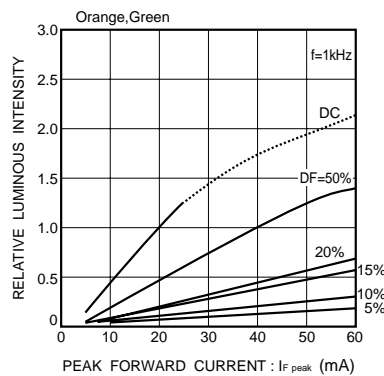


Fig. 21 Luminous intensity vs. peak forward current

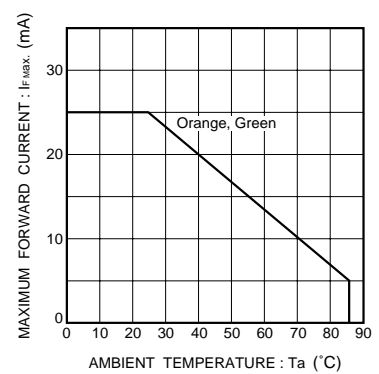


Fig. 22 Maximum forward current vs. ambient temperature

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●Electrical characteristics4 (SML-020MYT)

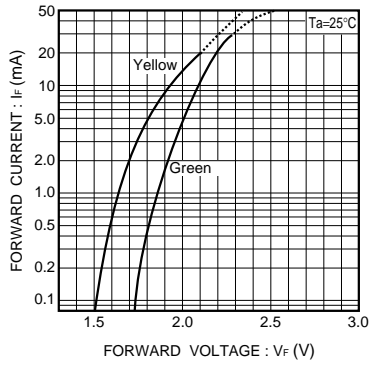


Fig. 23 Forward current vs. forward voltage

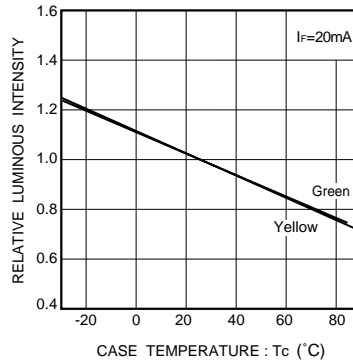


Fig. 24 Luminous intensity vs. case temperature

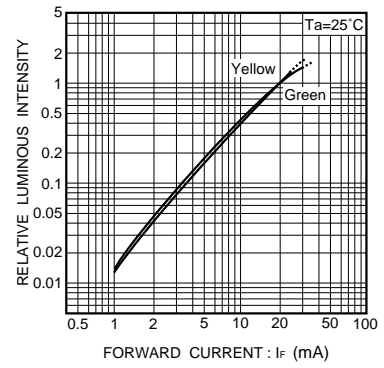


Fig. 25 Luminous intensity vs. forward current

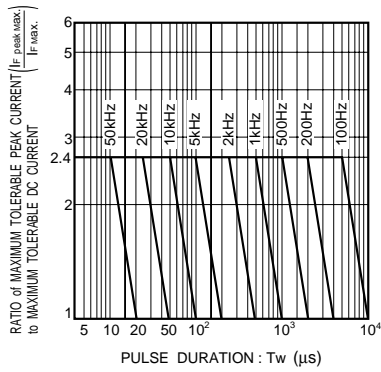


Fig. 26 Maximum tolerable peak current vs. pulse duration

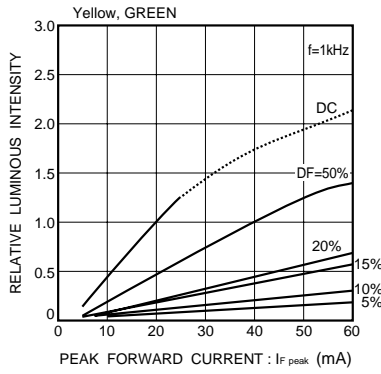


Fig. 27 Luminous intensity vs. peak forward current

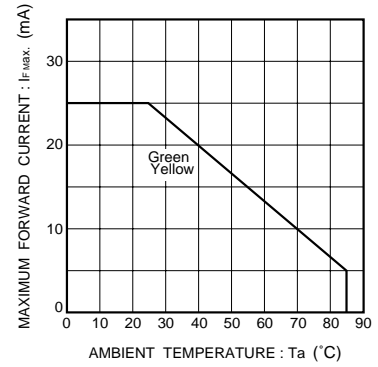


Fig. 28 Maximum forward current vs. ambient temperature

●Electrical characteristics5 (SML-020PDT)

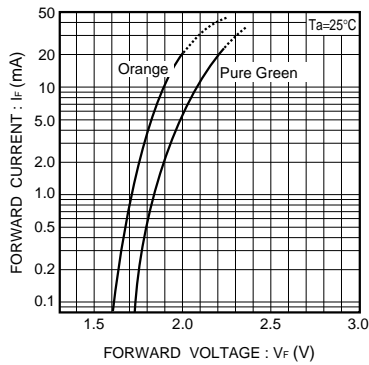


Fig. 29 Forward current vs. forward voltage

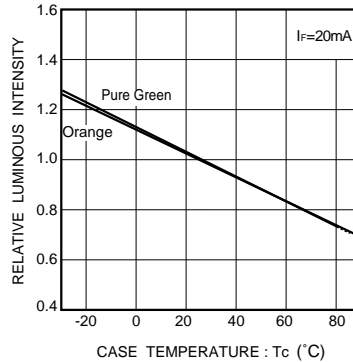


Fig. 30 Luminous intensity vs. case temperature

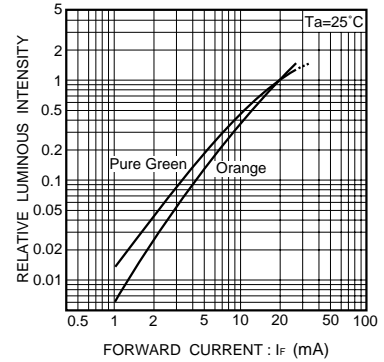


Fig. 31 Luminous intensity vs. forward current

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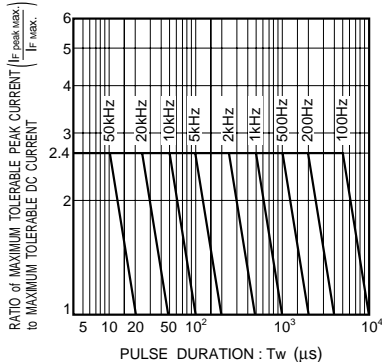


Fig. 32 Maximum tolerable peak current vs. pulse duration

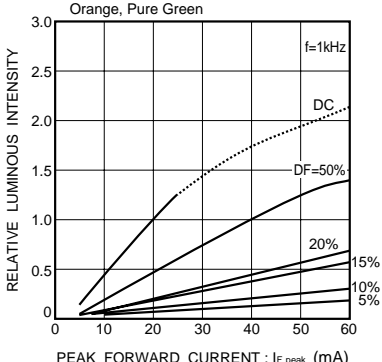


Fig. 33 Luminous intensity vs. peak forward current

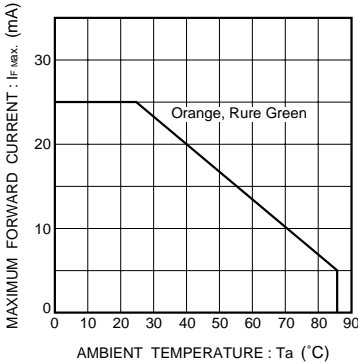


Fig. 34 Maximum forward current vs. ambient temperature