



**Middle Power R, G, B LED:0.5W**

**KMTR-0814**

**FEATURES**

**High Flux per LED**

**Long lifespan (up to 100K hours)**

**Lambertian / Collimated Radiation Pattern**

**More efficiency than incandescent lamps / most halogen lamps**

**Low voltage DC operated**

**Cool beam , safe touched**

**Instant light (less than 100ns)**

**NO UV**

**Superior ESD protection**

**Soldering methods: IR reflow soldering / and hand soldering**



**Applications**

**•Indoor and outdoor displays (e.g. traffic lights; writing lights)**

**•LED chips can be controlled separately to display various colors including white color**

**•Full color displays, RGB-Lighting**

**•Backlighting (LCD, switches, keys, illuminated advertising, general lighting)**



**Maximum Ratings**

Parameter	Symbol	Value			Unit
		Red	Pure Green	Blue	
Operating Temperature Range	$T_{op}$	- 40 ... + 100			°C
Storage Temperature Range	$T_{stg}$	- 40 ... + 100			°C
Junction Temperature	$T_j$	115	125	125	°C
Forward current ( $T_A=25^{\circ}C$ )	$I_F$	120	200	200	mA
Surge Current $t \leq 10 \mu s, D = 0.005,$ $T_A=25^{\circ}C$	$I_F$	150	250	250	mA
Reverse Voltage ( $T_A=25^{\circ}C$ )	VR	5			V
Power Consumption ( $T_A=25^{\circ}C$ )	$P_{tot}$	0.42	0.7	0.7	W
Thermal Resistance Soldering Point	$R_{th-js}$	5			K/W



**Characteristics( $T_A = 25^\circ\text{C}$ )**

Parameter		Symbol	Value			Unit
			Red	Pure Green	Blue	
Wavelength At Peak Emission	(typ.)	$\lambda_{\text{peak}}$	632	520	465	nm
	$I_{F(\text{red})} = 120\text{mA} / I_{F(\text{pure green and blue})} = 200\text{mA}$					
Dominant Wavelength	$I_{F(\text{red})} = 120\text{mA} / I_{F(\text{pure green and blue})} = 200\text{mA}$	$\lambda_{\text{dom}}$	$625 \pm 3$	$528 \pm 9$	$470 \pm 6$	nm
Spectral Bandwidth at 50 % $\Phi_{\text{rel max}}$	(typ.)	$\Delta\lambda$	18	33	25	nm
	$I_{F(\text{red})} = 120\text{mA} / I_{F(\text{pure green and blue})} = 200\text{mA}$					
50% Power Angle	(typ.)	$2\theta_{1/2}$	120	120	120	deg.
Forward voltage $I_{F(\text{red})} = 120\text{mA} / I_{F(\text{pure green and blue})} = 200\text{mA}$	(min.)	$V_F$	1.9	2.79	2.79	V
	(typ.)	$V_F$	2.2	3.55	3.55	V
	(max.)	$V_F$	3.1	3.99	3.99	V
Reverse current( $V_R=5V$ )	(max.)	$I_R$	50			$\mu\text{A}$
Temperature coefficient of $\lambda_{\text{peak}}$ $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$ $I_{F(\text{red})} = 120\text{mA} / I_{F(\text{pure green and blue})} = 200\text{mA}$	(typ.)	$TC_{\lambda_{\text{peak}}}$	0.13	0.05	0.05	nm/K
Temperature coefficient of $\lambda_{\text{dom}}$ $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$ $I_{F(\text{red})} = 120\text{mA} / I_{F(\text{pure green and blue})} = 200\text{mA}$	(typ.)	$TC_{\lambda_{\text{dom}}}$	0.03	0.04	0.04	nm/K
Temperature coefficient of $V_F$ $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$ $I_{F(\text{red})} = 120\text{mA} / I_{F(\text{pure green and blue})} = 200\text{mA}$	(typ.)	$TC_{V_F}$	-2	-2	-2	mV/K

Individual groups on page 5



**Ordering Information**

Part No.	Color of Emission	Luminous Flux(Lm)		
		Red ( $I_f=120mA$ )	Pure Green ( $I_f=200mA$ )	Blue ( $I_f=200mA$ )
KMTR-0814	Red	13-20		
	Pure Green		20-40	
	Blue			5-10

Floating Bins

Red( $I_f=120mA$ )		
E=9...12(lm)		
	F=12...16(lm)	
		G=16...21(lm)

Floating Bins

Pure Green( $I_f=200mA$ )		
H=19...25(lm)		
	I=25...33(lm)	
		J=33... 43(lm)

Floating Bins

Blue( $I_f=200mA$ )		
A=4.5...6(lm)		
	B=6...8(lm)	
		C=8...10.4(lm)

**Wavelength Groups (Dominant Wavelength)**

Group	Red		Unit
	min	max	
1	622	627	nm

Group	Pure Green		Unit
	min	max	
3	520	525	nm
4	525	530	nm
5	530	535	nm

Group	Blue		Unit
	min	max	
3	463	468	nm
4	466	471	nm
5	468	473	nm



Group Name on Label

Example: E-1+H-3+A-3

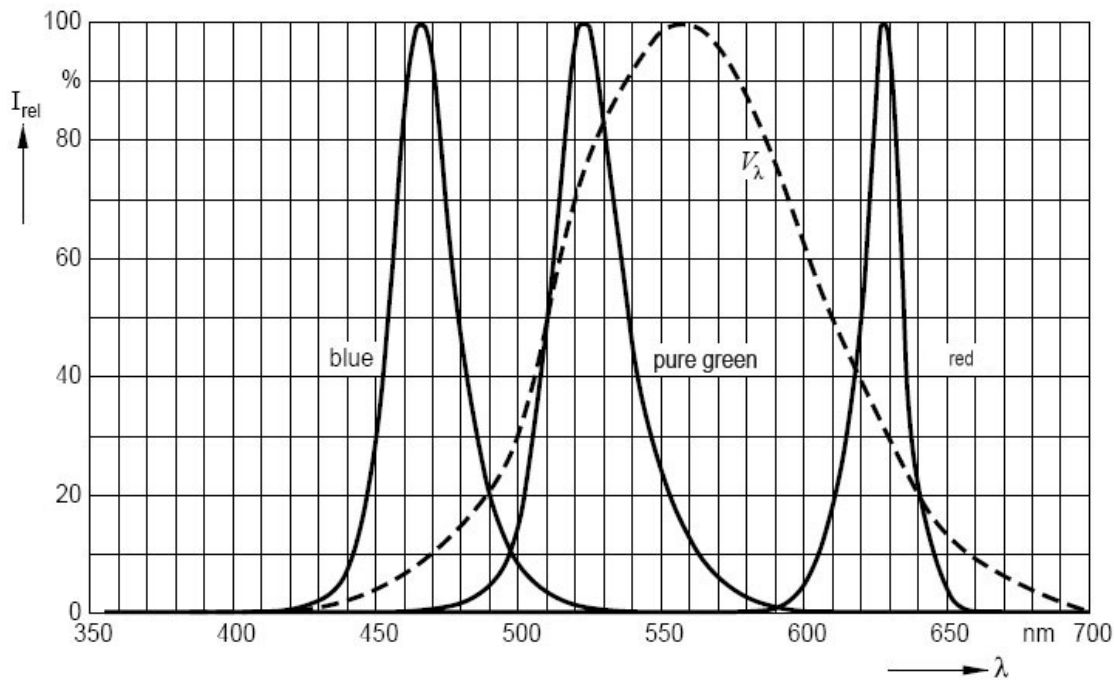
Brightness Group (red)	Wavelength (no grouping) (red)	Brightness Group (pure green)	Wavelength (pure green)	Brightness Group (blue)	Wavelength (blue)
E	1	H	3	A	3

Note: No packing unit / tape ever contains more than one brightness group per color.

**Relative Spectral Emission**

$V(\lambda)$  = Standard eye response curve

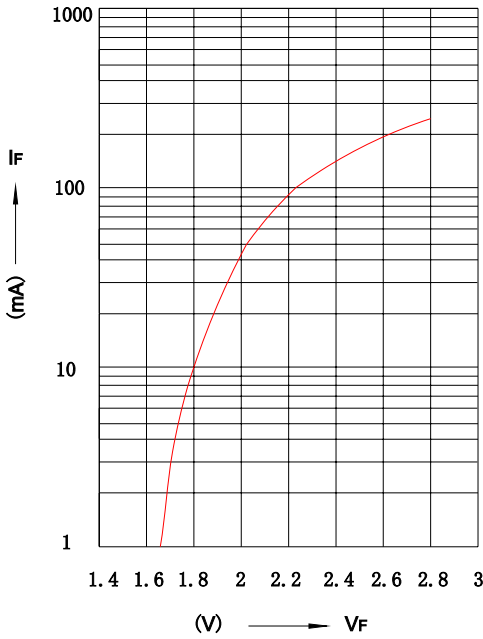
$\Phi_{rel} = f(\lambda)$ ;  $T_A = 25\text{ }^\circ\text{C}$ ;  $I_{F(\text{red})} = 120\text{mA}$  /  $I_{F(\text{pure green and blue})} = 200\text{mA}$





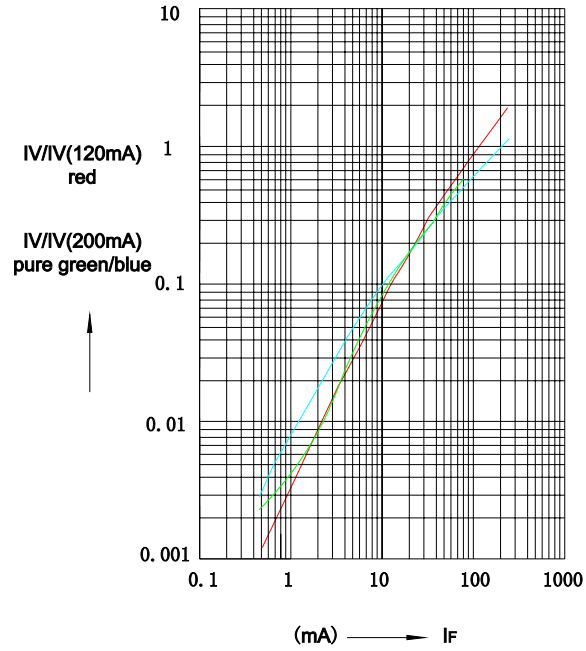
Forward Current

$T_A = 25\text{ }^\circ\text{C}$  (red)



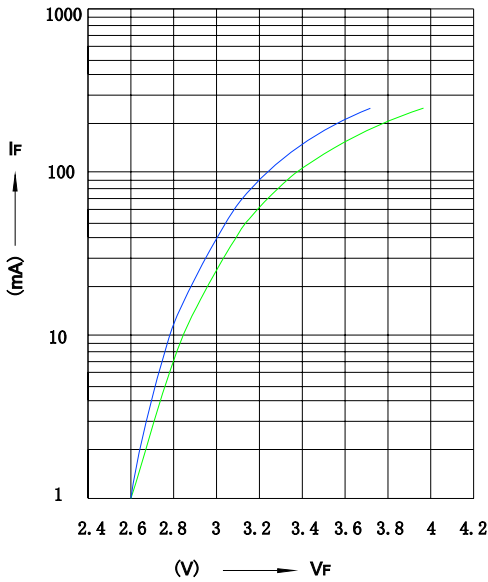
Relative Luminous Intensity

$T_A = 25\text{ }^\circ\text{C}$



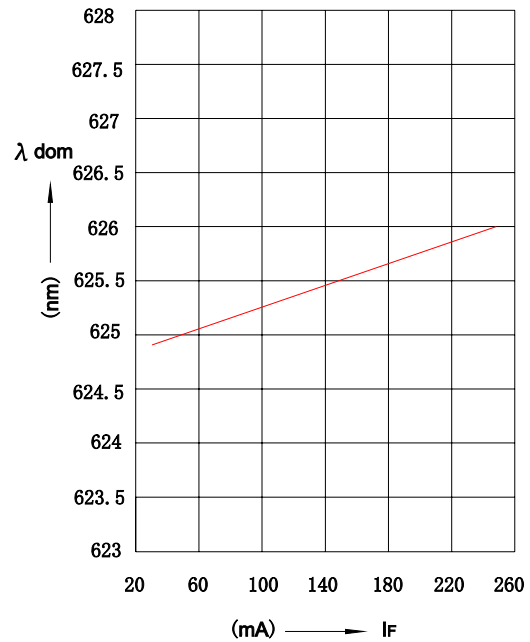
Forward Current

$T_A = 25\text{ }^\circ\text{C}$  (pure green/blue)



Dominant Wavelength

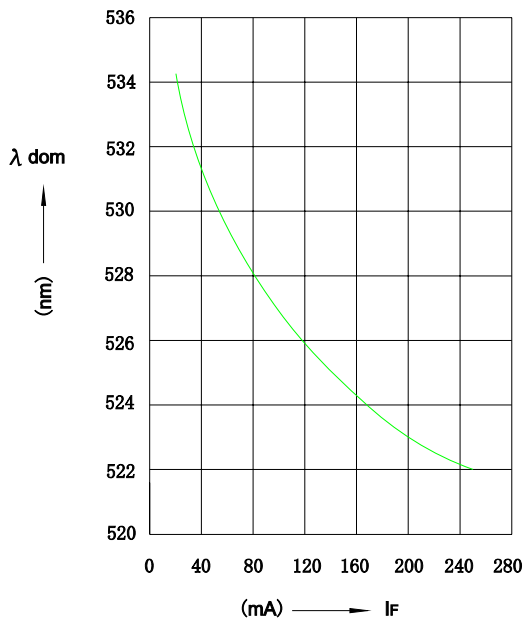
$T_A = 25\text{ }^\circ\text{C}$  (red)





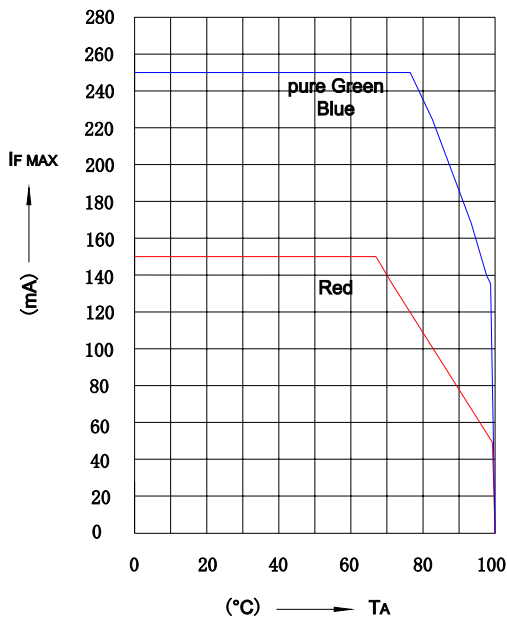
**Dominant Wavelength**

$\lambda_{dom} = f(I_F); T_A = 25\text{ }^\circ\text{C}$  (pure green)



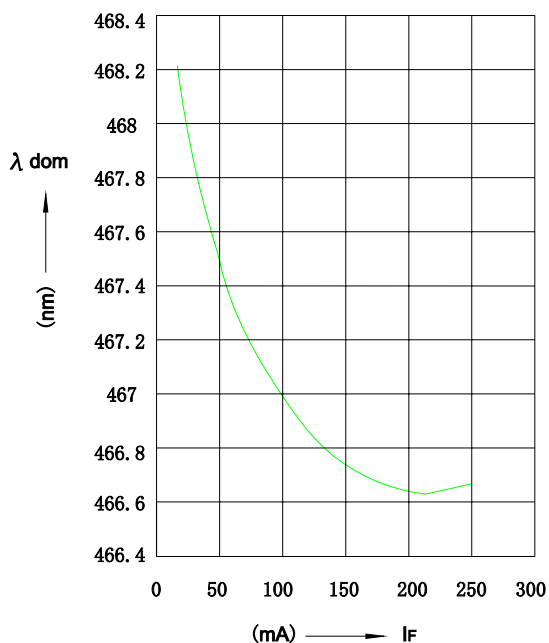
**Max. Permissible Forward Current**

$I_F = f(T); R_{(hot\ sink-ambient)}=15\text{K/W}$  ( $R_{JA}=20$ )



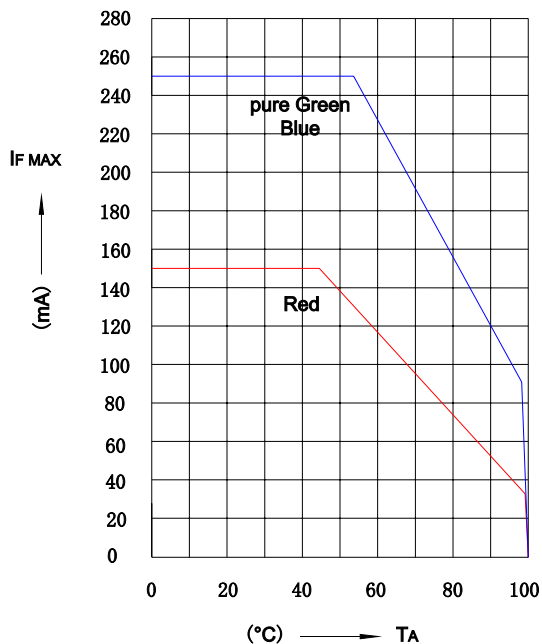
**Dominant Wavelength,**

$T_A = 25\text{ }^\circ\text{C}$  (blue)



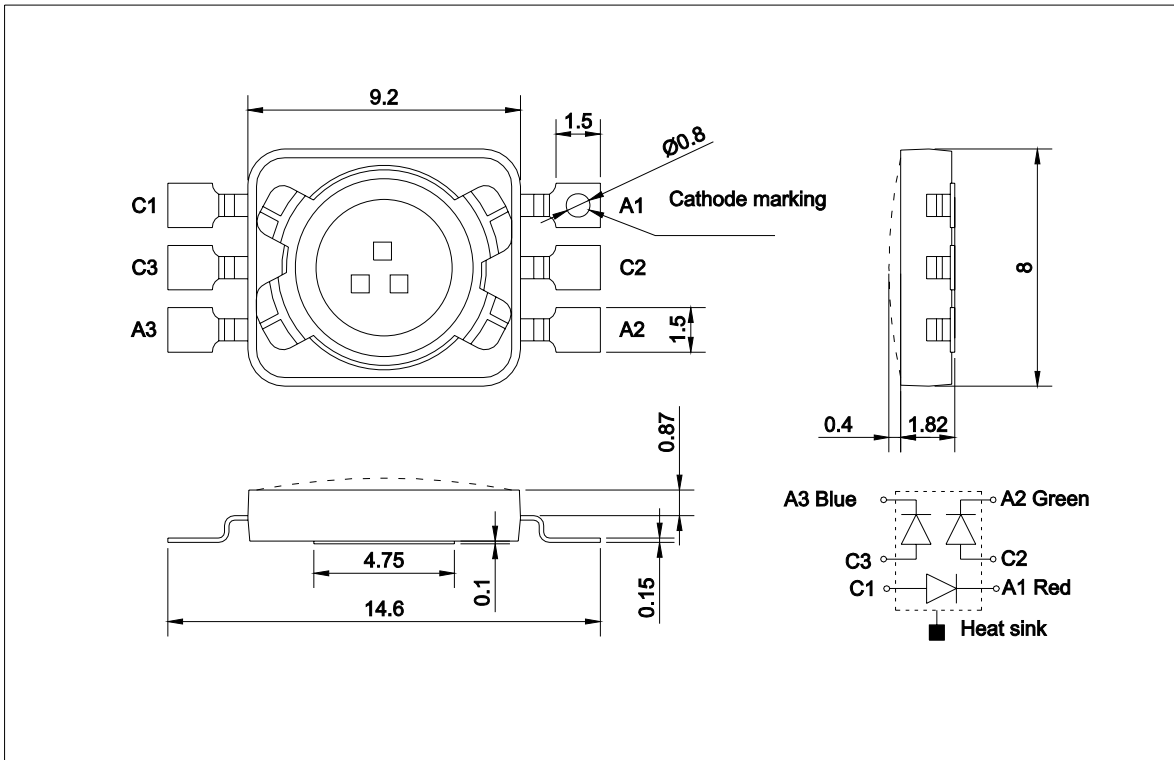
**Max. Permissible Forward Current**

$R_{(hot\ sink-ambient)}=25\text{K/W}$  ( $R_{JA}=30$ )

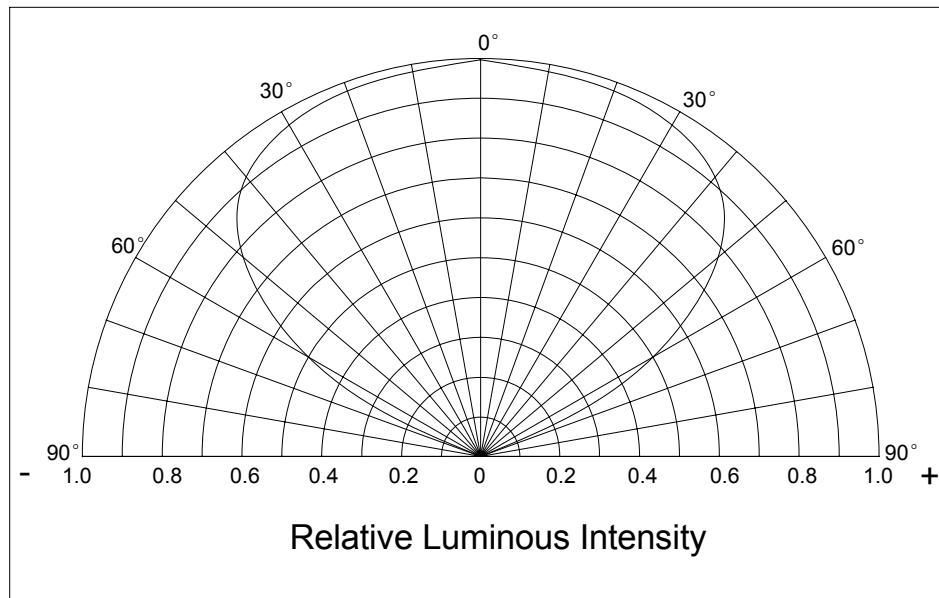




**Package Outlines**



**Radiation Characteristics**





**Recommended Soldering Pad8) page 16IR Reflow Soldering**

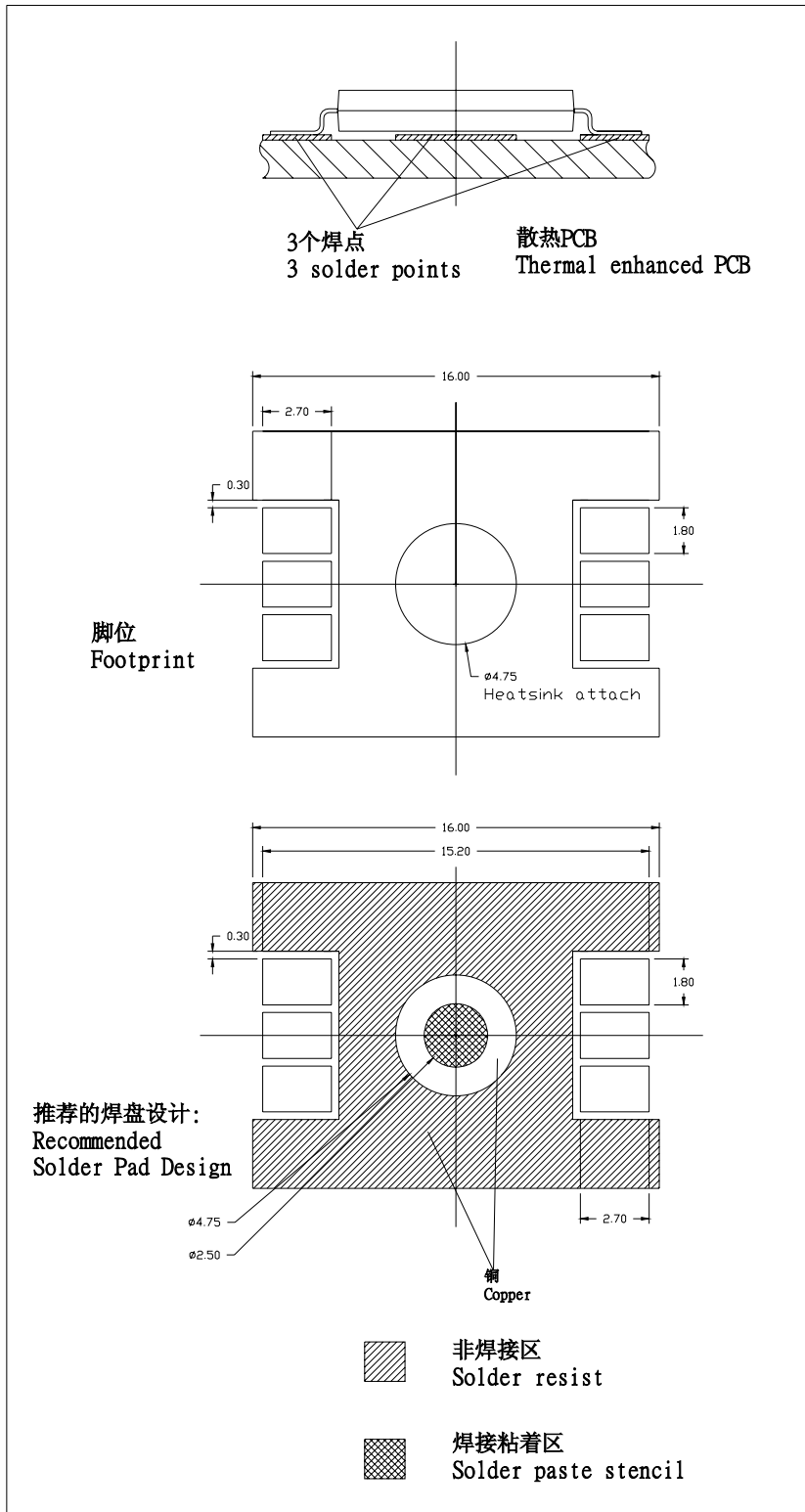
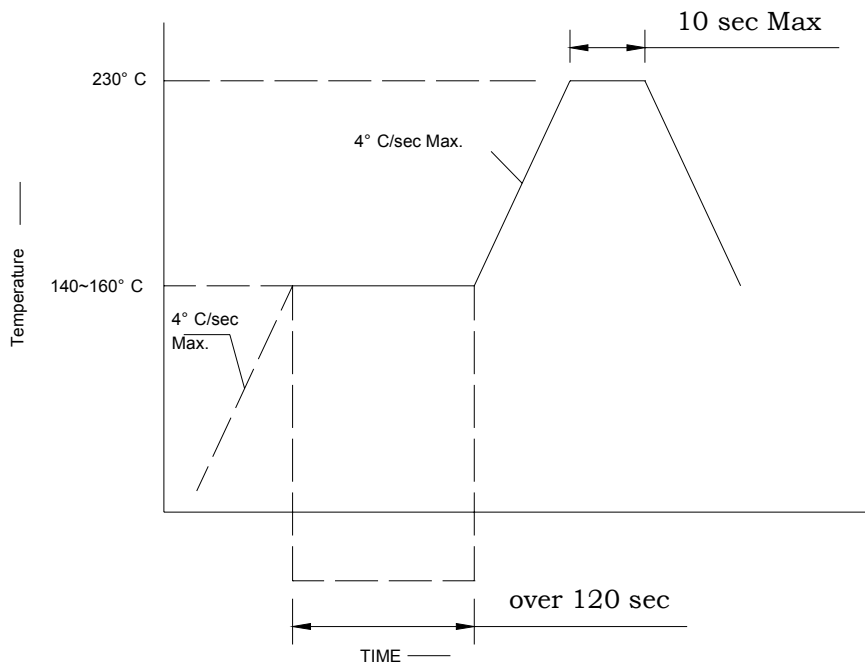




Figure 9. Recommended SnPb Reflow Soldering Profile.



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