



DOMI Co., Ltd.

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**DMP1KKM
VCSEL Product Specification**

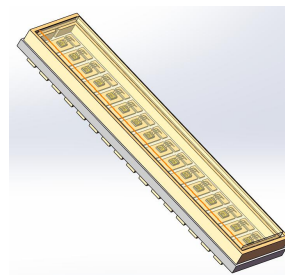
Revision Info

Description	Date	Revision
Initial issue	2022/7/12	1.0



Features:

- Size(mm): 17.3*4.0*1.7mm
- AlN ceramic package
- Peak wavelength 905nm
- 16 Channels Line Array
- High reliability

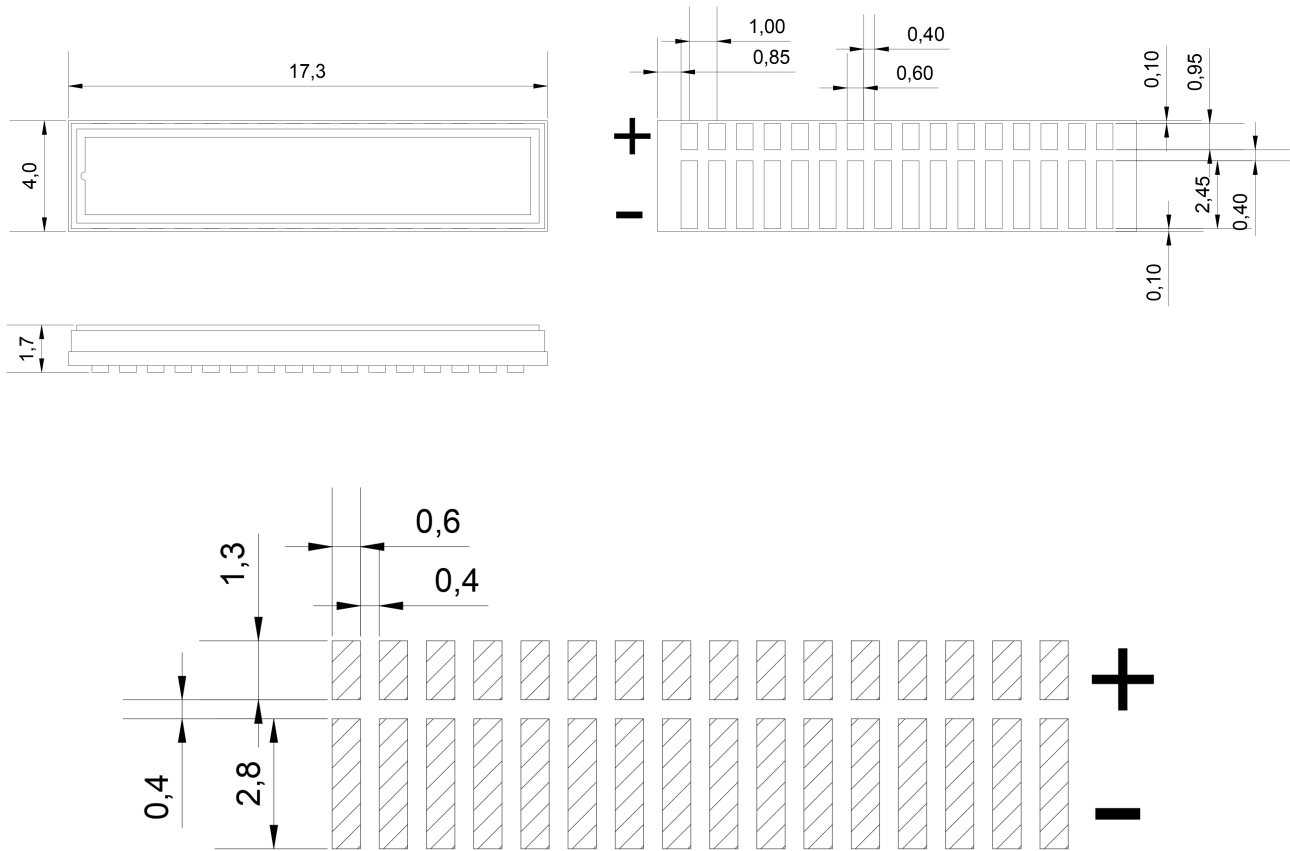


Applications:

- Surveillance systems
- Lidar, Autopilot
- Machine vision systems

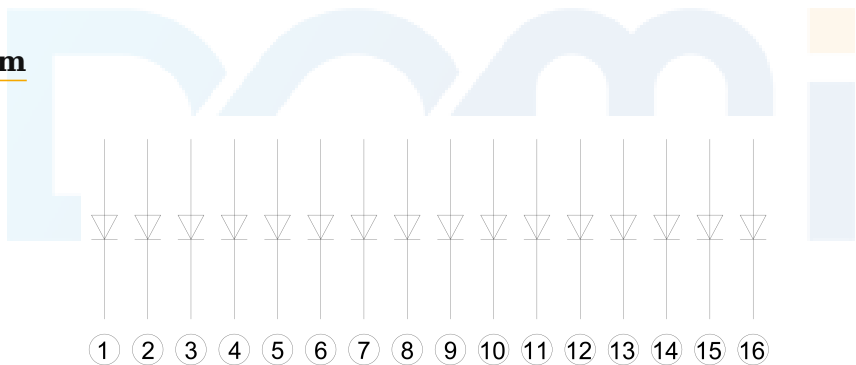


Package Outline and Recommended Pad Pattern



Note: Unit: mm; Tolerance: $\pm 0.2\text{mm}$

Circuit Diagram



Absolute Maximum Ratings

Parameter	Symbol	Values
Operation temperature	T_{OPR}	-20°C to 85°C
Storage temperature	T_{stg}	-40°C to 110°C
Forward Current(Pulsed operation) ¹	I_{FP}	30A
ESD withstand voltage(HBM)	ESD	4KV
Soldering Temperature	T_{STG}	260°C
Reverse Breakdown Voltage	V_r	50V

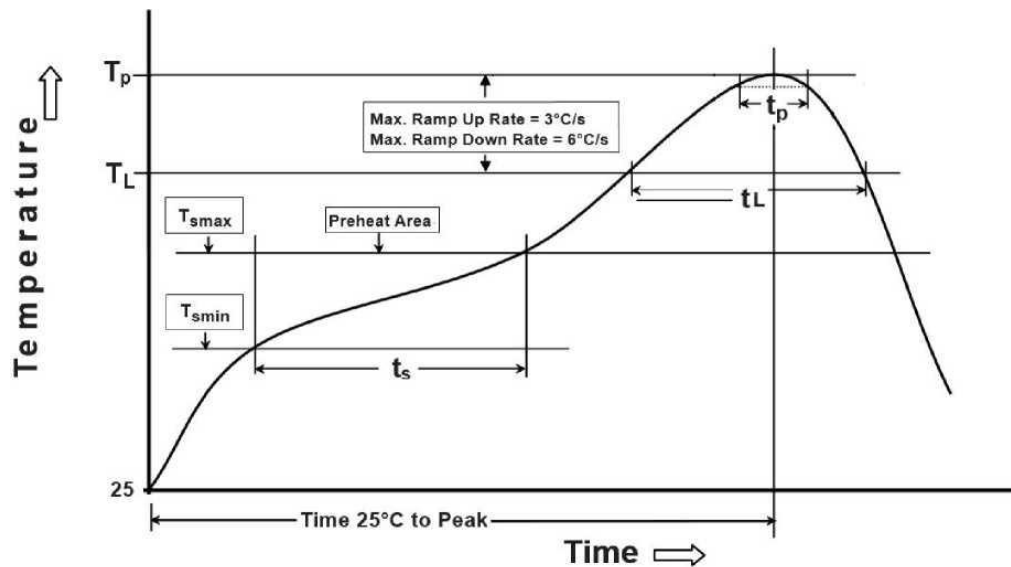
Note: 1. $T_p = 2.0\text{ns}$; $DC = 0.03\%$; $TS = 25^\circ\text{C}$; for each channel

Electro-Optical Characteristics(for each channel)

Electro-optical characteristics (T = 25°C)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Peak Wavelength	λ_p	If=15A, 1.5-2 nsec pulse width, 0.03% DC	895	905	915	nm
Operating Current	If	1.5-2 nsec pulse width, 0.03% DC	-	15	-	A
Threshold Current	I_{tc}	1.5-2 nsec pulse width, 0.03% DC	-	0.4	-	A
Forward Voltage	V_f	If=15A, 1.5-2 nsec pulse width, 0.03% DC	-	20.5	30	V
Peak Power	Φ_e	If=15A, 1.5-2 nsec pulse width, 0.03% DC	40	70	-	W
Beam Divergence (FW D86) ¹	θ	If=15A, 1.5-2 nsec pulse width, 0.03% DC	-	-	24	Deg
Spectrum Bandwidth	$\Delta\lambda$	If=15A, 1.5-2 nsec pulse width, 0.03% DC	-	-	3.0	nm
Slope Efficiency	η	If=15A, 1.5-2 nsec pulse width, 0.03% DC	-	4.9	-	W/A
Series Resistance Ohms	Ohm	If=15A, 1.5-2 nsec pulse width, 0.03% DC	-	0.7-0.9	-	Ω
Reverse Current	I_R	If=15A	-	-	10	μA

1. Defined as two times the angle between the propagation direction and the radius from the beam axis containing 86% of the total emitter power.

Reflow Soldering Characteristics:



Profile Feature	Pb-Free (SnAgCu) Assembly
Preheat/Soak Temperature Min (T_{smin}) Temperature Max (T_{smax}) Time (t_s) from (T_{smin} to T_{smax})	150°C 200°C 60-120 seconds
Ramp-up rate (T_L to T_p)	3°C/second max.
Liquidous temperature (T_L) Time (h) maintained above T_L	217°C 60-150 seconds
Peak package body temperature (T_p)	260°C
Time within 5°C of actual Peak Temperature (t_p)	30 seconds
Ramp-down rate (T_p to T_L)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

Other Caution:

- VCSEL is very sensitive to Electrostatic discharge (ESD) and Electrical over stress (EOS), excessive ESD/EOS have damage the chip and result in performance degradation. Please make sure during the whole usage and installation process does not exist to affect the VCSEL.
- VCSEL can also be damaged by electrical surge, please make sure any driving electrical circuits are equipped with surge protection.
- During the installation process, please make sure all the equipment and personnel are grounded properly and production environment should make use of ion-blowers, ESD protection equipment such as anti-static gloves, anti-static wrist bands, anti-static mats, anti-static clothes, anti-static shoes and anti-static containers.

