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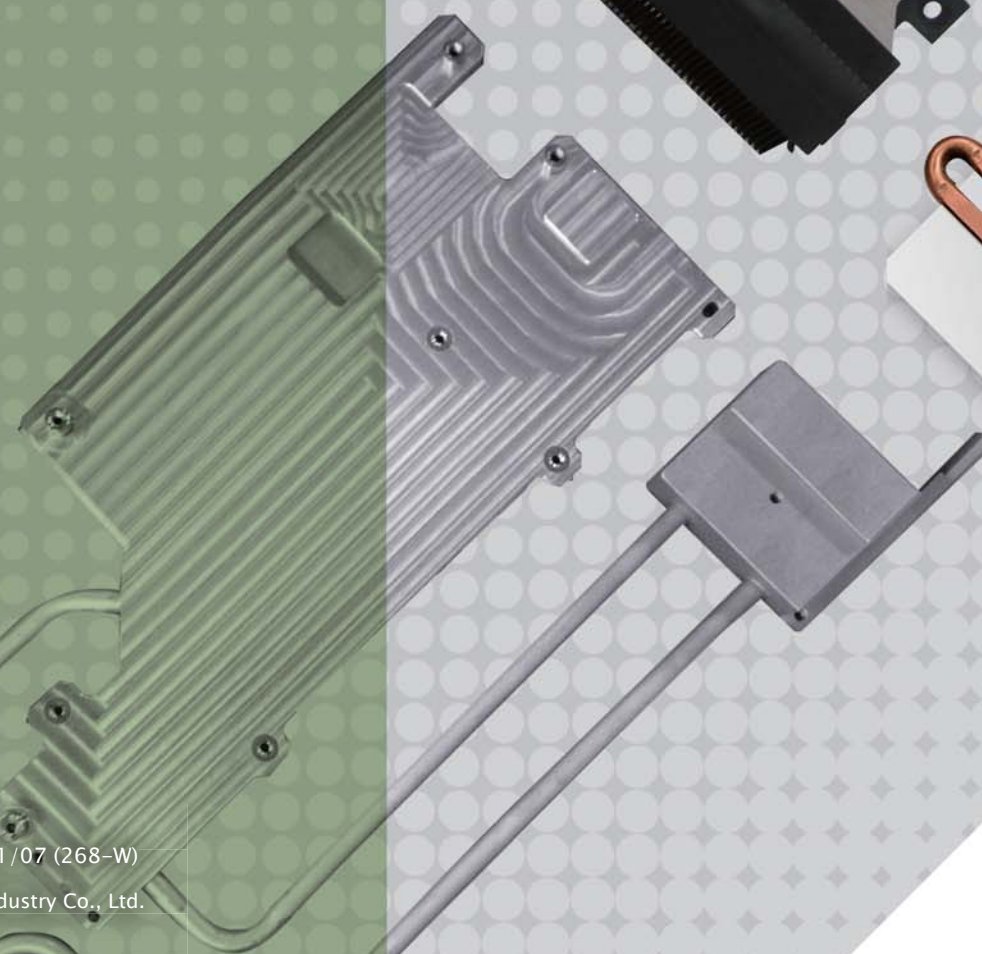
SUNON®

SUNON®

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Total Thermal Solution

*All products are RoHS compliant.

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ABOUT SUNON

Over 41 years, SUNON has specialized in various types of thermal solutions related to motors, fans, and ventilators for a wide range of applications. We offer optimal thermal solutions and prompt responses to clients' needs, with customer service and technical support networks all around the world.



SUNON's Total Solution

- ✓ Increases product profitability
- ✓ Reduces development costs and increases profits
- ✓ Decreases prototype development time
- ✓ Provides the most economic design solution

Thermal Module Applications

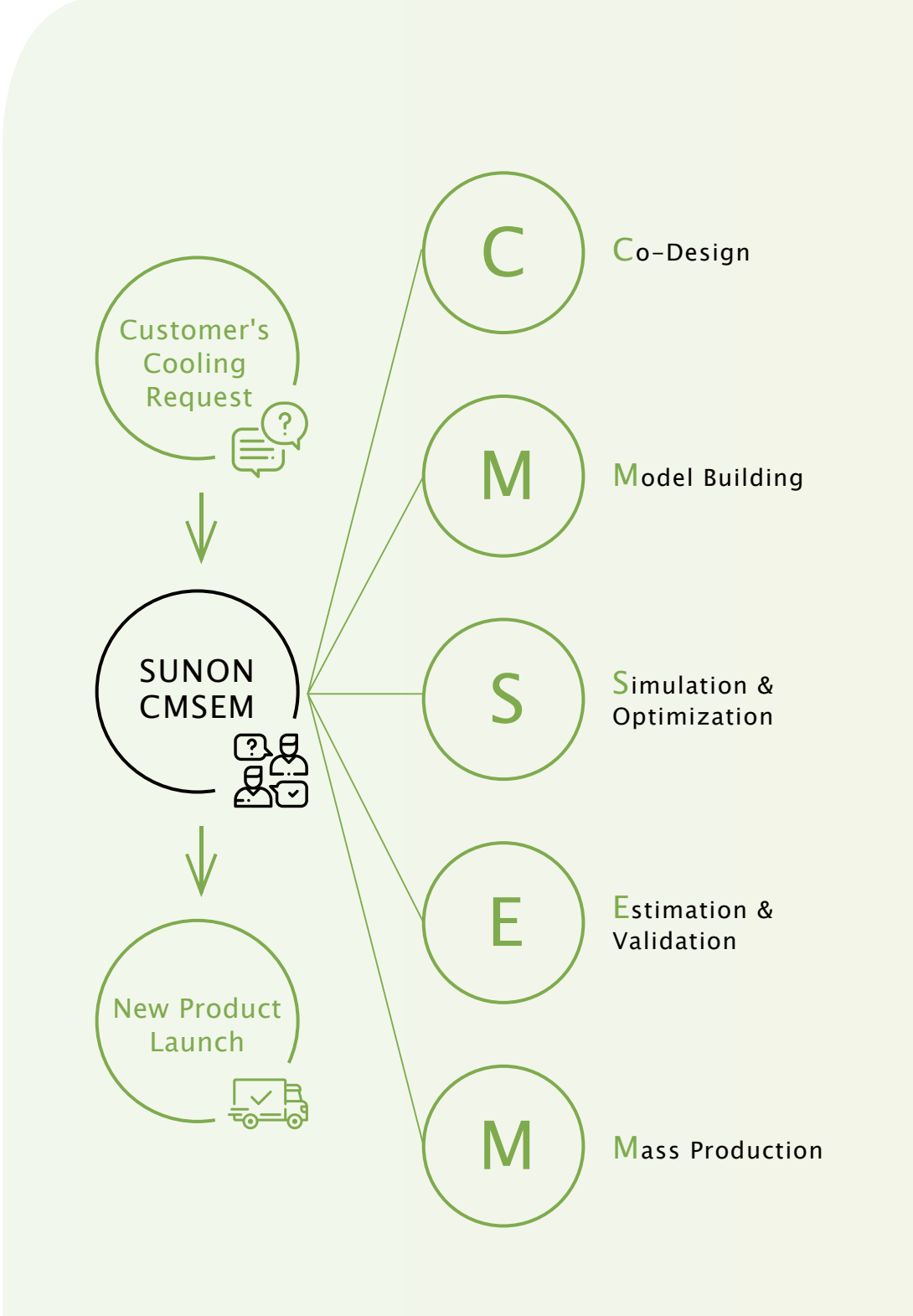
5G	07
Automotive	11
Industrial	13
Entertainment	15
LED Lighting	17

SUNON Comprehensive Thermal Solution and Technical Support Service

SUNON is an original cooling product manufacturer. We are 100% research-based, designing and manufacturing a variety of fans, vapor chambers and heat pipes and more, We can configure both active and passive cooling components to provide our clients a full range of cooling solutions through the use of scientific simulation and equipment. SUNON aims to give excellent service in thermal solutions, satisfying clients' thermal requirements for any function, sizes, and budget.

SUNON Optimal Cooling Solution

Product Info					
	Air Cooling	Liquid Cooling	Passive Cooling		
	Fan Cooling Module	Cold Plates	Heat Sink (HS)	Heat Pipe (HP)	Vapor Chamber (VC)
	Custom Design	Integral Pipelining Embedded	Extrusion Die Casting Skived Fin Stacked Fin	Mesh Grooved Sintered Powder Composite	Mesh Sintered Powder
Features	• The most efficient heat dissipation solution	• Compact design • Large power carrier • Effective space utilization	• High reliability • Economic thermal solution	• Various pipe design • Flexible configuration	• Better isothermal system • High Qmax • High power density



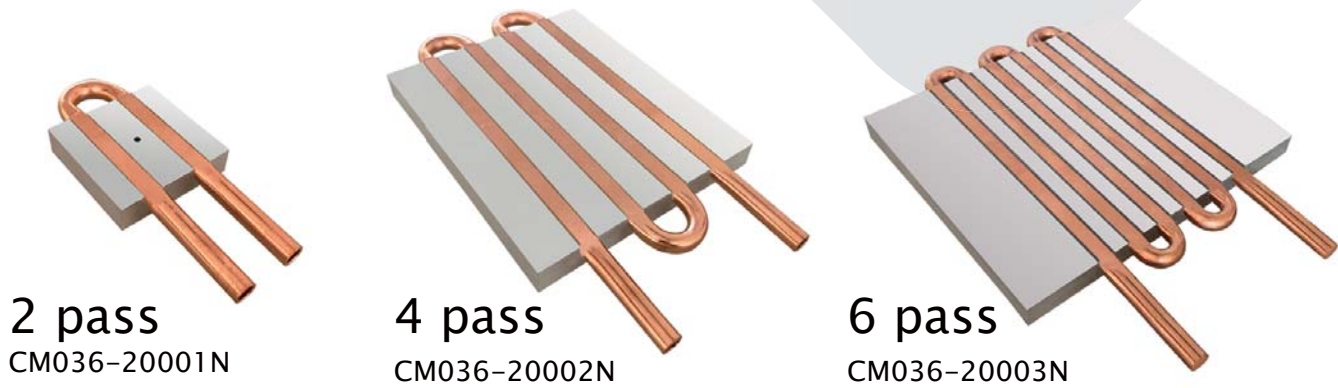
CMSEM One-Stop Thermal Solution Service

SUNON provides a set of CMSEM services, designing thermal solutions from scratch. We work together with our clients to design the best thermal modules for their individual needs. Then, we create a model to simulate and optimize each module's thermal performance, which is passed through various estimation and mass-production phrases. Through collaboration, the highest quality of service, and a timesaving process of solving heat problems, SUNON provides our clients with optimal thermal solutions.

SUNON®
Cold Plates

Application

Industrial Equipment
Inverter Drive
ADAS ECU



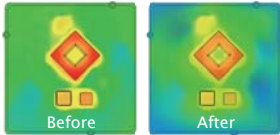
- Greater thermal efficiency, suitable for applications with high power density and in need of quick power transfer.
- Compact design for limited spaces and flexible customization of our liquid cold plates to suit your needs.
- Leaking safety and high reliability assured based on the strong thermal design and stimulation analysis on request.

Copper Tube Embedded in Aluminum Base | Tube Dim.(mm) 9.50 O.D x7.02 I.D

Description								Flow Rate Performance							
Part	# of Tube Passes	Weight (g)	Plate Dim. (mm)			Overall Length (mm)	Power Watt (W)	1 GPM		1.5 GPM		2 GPM		2.5 GPM	
								R (°C / W)	PD (psi)	R (°C / W)	PD (psi)	R (°C / W)	PD (psi)	R (°C / W)	PD (psi)
CM036-20001N	2	180	57.20	57.20	14.00	133.40	500	0.0580	0.80	0.0442	1.80	0.0400	3.20	0.0380	4.80
CM036-20002N	4	940	152.40	127.00	15.20	228.00	1000	0.0140	2.00	0.0112	4.00	0.0100	6.00	0.0093	9.20
CM036-20003N	6	1230	177.80	172.50	14.00	233.40	1000	0.0116	3.20	0.0096	5.00	0.0087	7.00	0.0080	11.00



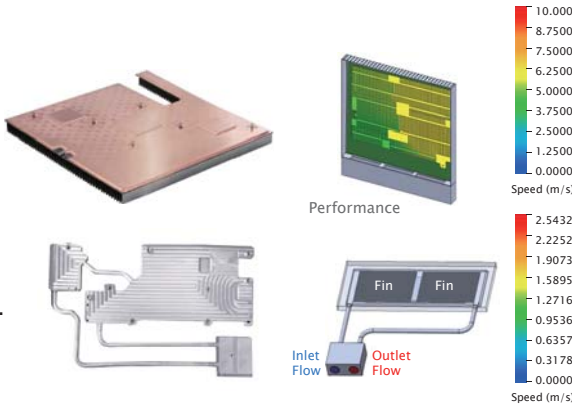
Air Cooling Solution



- Customized air cooling configuration design : ADC and AL and fan die-casting techniques.
- Space utilization and maximal thermal effectiveness.

Vapor Chamber & Cold Plate Solution

- Slim-shaped design and suitable for limited system spaces.
- Flexible and customized design that sustains high thermal effectiveness.
- Steady and fast thermal uniformity that ensures better system function.

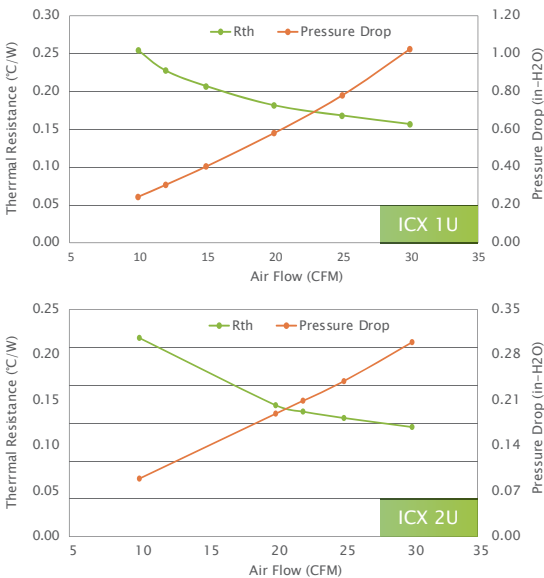


5G



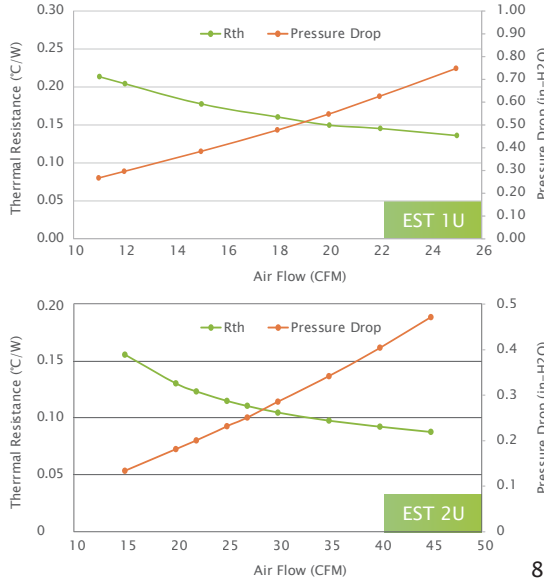
intel Ice Lake		
Product Name	ICX 1U	ICX 2U
Sunon P/N	SM316-20001Y	SM420-20001Y
Dimensions (mm)	113 x 78 x 24.7	113 x 78 x 64
Weight (g)	250	435
TDP (W)	205	300
Material	Aluminum, Copper, ADC10	
Surface Treatment	Nickle Plating	
TIM	SHIN-ETSUX23-7921	
CPU Support	Intel® Ice Lake / Cooper Lake Processor	
CPU Socket	FCLGA 4189-4/5 (Socket P4/P5)	

Passive CPU Cooler Thermal Resistance



intel Eagle Stream		
Product Name	EST 1U	EST 2U
Sunon P/N	SM320-21001Y	SM421-21002Y
Dimensions (mm)	118 x78 x 30.43	118 x 78 x 64
Weight (g)	270	450
TDP (W)	205	350
Material	Aluminum, Copper, ADC10	
Surface Treatment	Nickle Plating	
TIM	SHIN-ETSUX23-7921	
CPU Support	Intel® Eagle Stream Processor	
CPU Socket	LGA4677	

Passive CPU Cooler Thermal Resistance

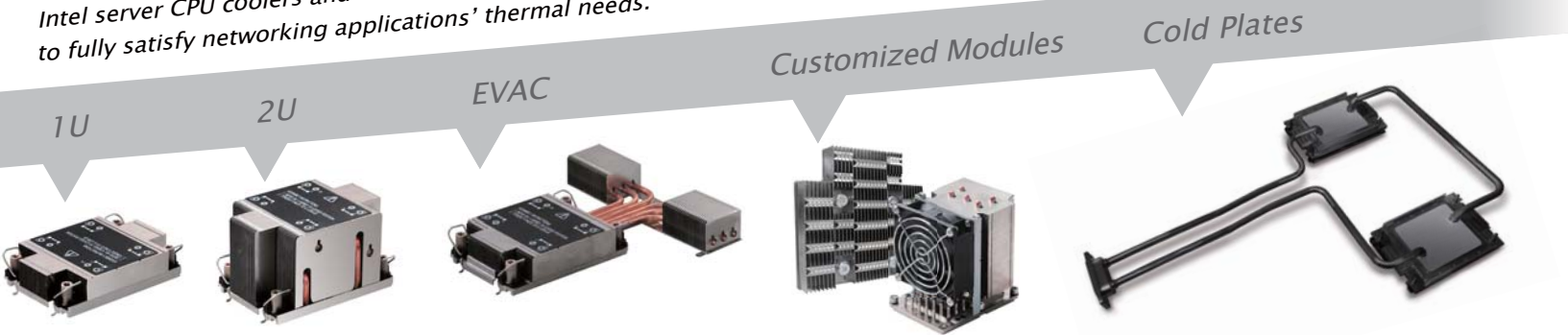


5G Networking

We customize a full range of cooling solutions to offer the best thermal solutions, meeting clients' goals and needs for any function, sizes, and budget.

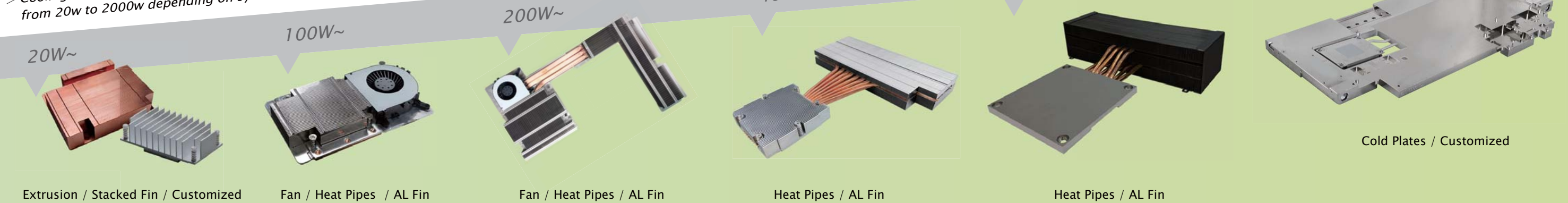
For Intel CPU Coolers and Edge and Storage

> SUNON introduces and develops the latest thermal specification for Intel server CPU coolers and various custom-design cooling modules, to fully satisfy networking applications' thermal needs.



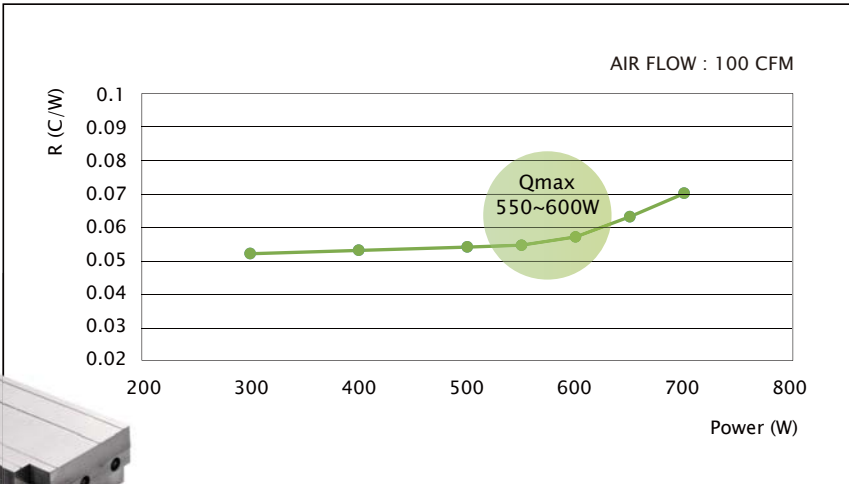
For Switch and Router

> Cooling solutions with a wide range of thermal design power from 20w to 2000w depending on systems' needs.



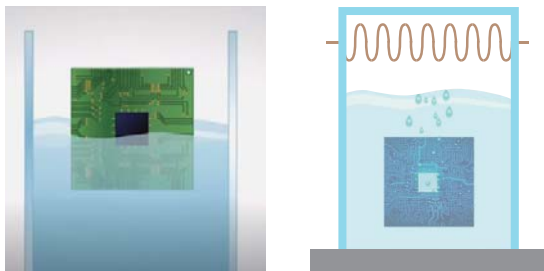
High Power Heat Pipe Solution

- > Higher level thermal conductivity : 92~100w TDP.
- > Excellent thermal equilibrium, 80% plus increase in thermal effectiveness.
- > Can be configured with other components for high powered applications to reduce thermal resistance.



Immersion Cooling Solution Water Block Solution

- > Low vibration and power-saving module
- > Low maintenance and enhanced system effectiveness
- > High reliability



Automotive



~20W

Heat Sink+Fan

- Economic design solution
- Minature module size
- Efficient heat dissipation

Application LED head light, Ambient lighting, Beam light...



50W

Heat Pipe

- Overcome space limitation
- Efficient heat transfer
- Flexible design feasibility

Application HUD, ADAS, EV car charger, onboard charger...

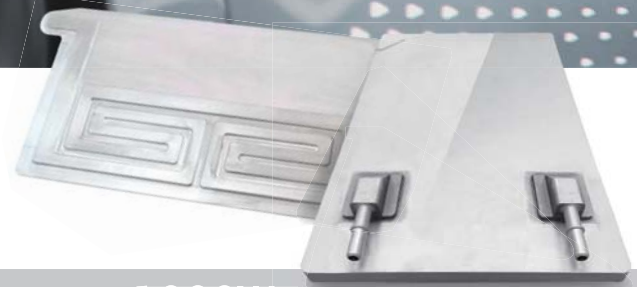


200W

Total Solution

- Efficient cooling solution
- Optimized module weight
- Shorten and simplify the purchasing

Application Stereo Amplifier, ECU, ADAS and others



1000W~

Cold Plate

- High power density
- High performance design
- Multi heat source cooling solution

Application Car Battery, ADAS, ECU

Industrial

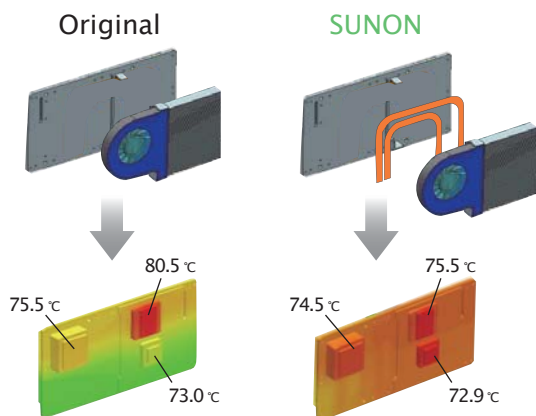
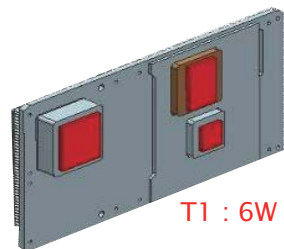
High-Efficiency Transfer Heat IPC

Power watt: 40+6+8, total 54W
Module size: 200x100x20mm
Ta: 50°C
T-CPU <80°C,
T1 <110 °C
T2 <110 °C

CPU : 40W

T2 : 8W

T1 : 6W



10~100W

100~200W

200~1000W

1000W~

Aluminum Heatsink Cooper Heatsink Die-casting Heatsink

- Thermal Reliability
- Economical Cooling Solutions

Application IPC, Embedded System

Heat Pipe Vapor Chamber Air Cooling Module

- Better Isothermal System
- Excellent Cooling Effectiveness

Application Drive, IPC

Integral / Embedded Cold Plate

- Compact Design
- Space Utilization

Application Drive, IGBT modules

Heat Exchanger

- Efficient Heat Dissipation

Application Power Supply
Embedded System

Slot Machine



TDP	30W
Dimensions (mm)	48 x 88 x 23.5
Materials	Heat Sink + Fan Module

intel AMD available

Gaming PC



TDP	250W
Dimensions (mm)	135.33 x138 x 164
Materials	Heat pipe modules+12025 Fan

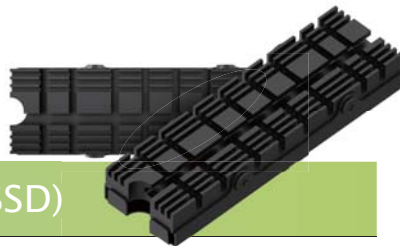
* If you need special specification. Please contact Sunon sales.

* Specifications are subject to change without notice. Specifications in this catalog are for reference.

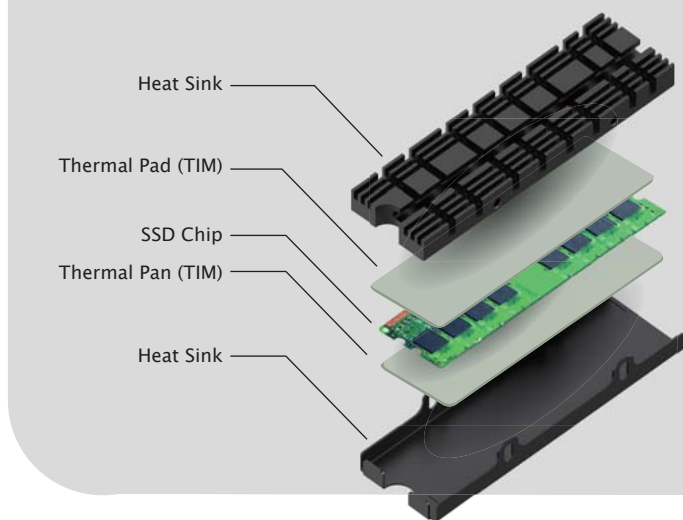
More Sunon products information please visit SUNON website at www.sunon.com.

*PS5 available

Solid State Disk (SSD)



Product Name	SD-2280
Sunon P/N	SA007-21001S
Dimensions (mm)	80 x 22 x 11.5
Materials	Aluminum, Thermalpad
Application	Suitable for 2280 SSD (1TB, 2TB, 4TB capacity)



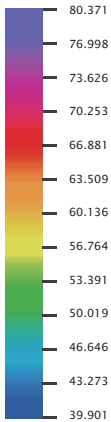
SSD Chip Temperature Distribution

Solid Temperature (°C)

Before



After



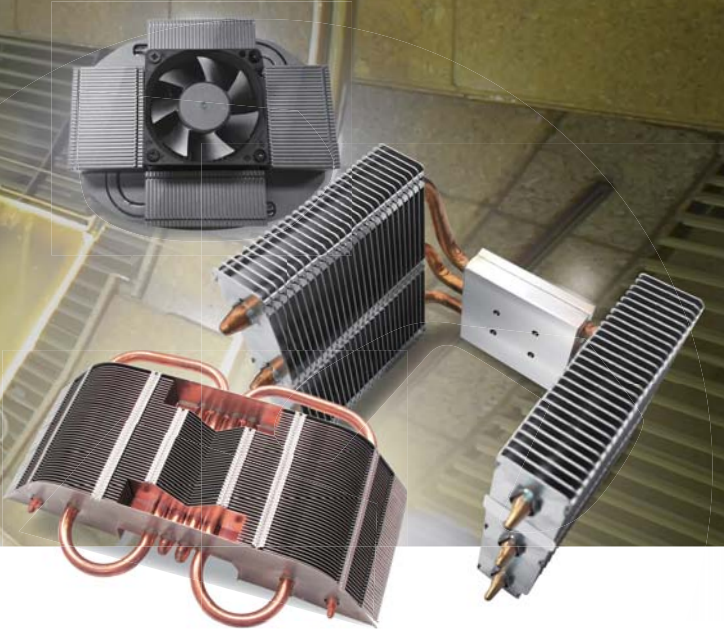
Entertainment

LED Lighting

- Passive, no energy consumption
- Compact, Very light weight
- Zero noise levels
- Easy installation

Stage Lighting

Thermal power watt: 300W~1,000W
Heat pipe, Stacked fin, Cu/AL/ADC base, Fan



Other Application Reference	SM203-13004Y SM203-14002Y	SM203-13002 SM203-14001Y	SA000-14013N	SA000-14007N	SA001-14010Y	SA001-14012Y	SA001-14013Y	SA002-14009Y	SA004-14002Y	SA002-14007Y
Dimension (mm)	D90x110	D99x110	D50x15	D50x40	D70x50	D86x10	D86x20	D86x55	D86x110	D99x50
Weight (g)	195	211	25.3	70	110	42	86	238	478	158
Material	AL1050.ADC10.C1100		AL6063-T5	AL6063-T5	AL6063-T5	AL6063-T5	AL6063-T5	AL6063-T5	AL6063-T5	AL6063-T5
Surface Treatment	Black Painting		Black Anodized	Black Anodized	Black Anodized	Anodized Natural	Anodized Natural	Black Anodized	Black Anodized	Black Anodized
TDP (W)*	36.7		6.7	10.7	14.3	10.7	17.9	26.4	42.1	24.3
Thermal Resistance (C/W) *	1.36		9.7	6.07						
Multiple Holes	Zhaga, Philips Fortimo SLM,Citizen, Osram PrevalLED, Bridgelux RS Array, Vossloh-Schwabe WU-M-Series.		Zhaga, Citizen CLL012	Zhaga, Citizen CLL022						

* TDP (=max. electrical power) and thermal resistance is for reference only. Actual thermal performance must be verified by different applications.
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