Komatsu Thermoelectric Coolers

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Table 1: Micro Modules

Type		Model No.	I max (A)		V max (V)		Delta T max (C)			Qc max (W)			Top Ceramics		Bottom Ceramics		Height	Height Tolerance	Other Specifications
				Thj= 27 C	Thj= 50 C	Thj = 70 C	Thj= 27 C	Thj= 50 C	Thj = 70 C	Thj= 27 C	Thj= 50 C	Thj = 70 C	W (mm)	L (mm)	W (mm)	L (mm)	H (mm)	(+/- mm)	
Single Stage Standard	Low Current	KSML01007Z	1.5	0.8	0.9	1.0	74	84	92	0.7	0.8	0.9	4.4	4.4	4.4	4.4	2.70	0.1	1) Ceramics All models can be assembled with alumina &/or aluminum nitride ceramics. 2) Metallization Standard metallization is CuNiAu with Au thickness of 0.25 um and 0.6 um. 3) Assembly solder is 95Sn5Sb with melting point of 232 degrees C. 4) Pretinning is available for InSn, BiSn, InPbAg, PbSn or other solders specified by a customer. (Solder volume control is available.) 5) KSML type can be made with the height of 2.02 mm, and KSMH type can be made with the height of 1.65 mm. 6) KSEH type can be made with the height of 1.51 mm. 7) Delta T is measured in vacuum of 0.13 Pa. (Delta T max in air or nitrogen is 5 to 6 degrees lower than in vacuum.)
		KSML01012Z	1.5	1.4	1.6	1.7	74	84	92	1.2	1.4	1.5	4.3	6.5	4.3	7.6	2.70	0.1	
		KSML01018Z	1.5	2.1	2.3	2.6	74	84	92	1.8	2.0	2.3	6.0	6.2	6.0	7.2	2.70	0.1	
		KSML01023Z	1.5	2.6	3.0	3.3	74	84	92	2.3	2.6	2.9	6.0	8.2	6.0	8.2	2.02	0.1	
		KSML01029Z	1.5	3.3	3.8	4.1	74	84	92	3.0	3.3	3.6	6.0	10.2	6.0	10.2	2.02	0.1	
		KSML01031Z	1.5	3.5	4.0	4.4	74	84	92	3.2	3.5	3.9	8.0	8.0	8.0	8.0	2.02	0.1	
		KSML01035Z	1.5	4.0	4.5	5.0	74	84	92	3.6	4.0	4.4	6.0	12.2	6.0	12.2	2.02	0.1	
		KSML01047Z	1.5	5.3	6.1	6.7	74	84	92	4.9	5.3	5.9	8.0	12.2	8.0	12.2	2.02	0.1	
	High Current	KSMH01007Z	2.0	0.8	0.9	1.0	74	84	92	1.0	1.1	1.2	4.4	4.4	4.4	4.4	2.33	0.1	
		KSMH01012Z	2.0	1.3	1.5	1.7	74	84	92	1.6	1.9	2.0	4.3	6.5	4.3	7.6	2.33	0.1	
		KSMH01018Z	2.0	2.0	2.3	2.5	74	84	92	2.4	2.7	3.0	6.0	6.2	6.0	7.2	2.33	0.1	
		KSMH01023Z	2.0	2.6	2.9	3.2	74	84	92	3.2	3.6	3.9	6.0	8.2	6.0	8.2	1.65	0.1	
		KSMH01029Z	2.0	3.2	3.7	4.1	74	84	92	4.0	4.5	4.9	6.0	10.2	6.0	10.2	1.65	0.1	
		KSMH01031Z	2.0	3.5	4.0	4.4	74	84	92	4.3	4.8	5.2	8.0	8.0	8.0	8.0	1.65	0.1	
		KSMH01035Z	2.0	3.9	4.4	5.0	74	84	92	4.8	5.4	5.9	6.0	12.2	6.0	12.2	1.65	0.1	
		KSMH01047Z	2.0	5.3	6.1	6.7	74	84	92	6.5	7.1	7.9	8.0	12.2	8.0	12.2	1.65	0.1	
Single-stage Enhanced		KSEH02007Z	2.4	0.8	0.9	1.0	74	84	92	1.1	1.3	1.4	4.4	4.4	4.4	4.4	1.65	0.1	
		KSEH02012Z	2.4	1.3	1.5	1.7	74	84	92	1.9	2.2	2.4	4.3	6.5	4.3	7.6	1.65	0.1	
		KSEH02018Z	2.4	2.0	2.3	2.5	74	84	92	2.9	3.2	3.7	6.0	6.2	6.0	7.2	1.65	0.1	
		KSEH02023Z	2.4	2.6	2.9	3.2	74	84	92	3.7	4.2	4.6	6.0	8.2	6.0	8.2	1.65	0.1	
		KSEH02029Z	2.4	3.2	3.7	4.1	74	84	92	4.8	5.3	5.8	6.0	10.2	6.0	10.2	1.65	0.1	
		KSEH02031Z	2.4	3.5	4.0	4.4	74	84	92	5.1	5.6	6.2	8.0	8.0	8.0	8.0	1.65	0.1	
		KSEH02035Z	2.4	3.9	4.4	5.0	74	84	92	5.8	6.4	7.0	6.0	12.2	6.0	12.2	1.65	0.1	
		KSEH02047Z	2.4	5.3	6.1	6.7	74	84	92	7.8	8.5	9.4	8.0	12.2	8.0	12.2	1.65	0.1	
Two-stage		K2M-02006Z	2.4	0.8	0.9	1.0	98	110	120	0.7	0.8	0.8	4.05	4.05	4.05	4.05	3.0	0.2	
		K2M-02010Z	2.4	1.3	1.5	1.6	97	109	119	1.1	1.2	1.3	4.05	6.05	4.05	6.05	3.0	0.2	
		K2M-02016Z	2.4	2.0	2.3	2.5	97	108	118	1.8	2.0	2.1	6.05	6.25	6.05	6.25	3.0	0.2	
		K2M-02022Z	2.4	2.8	3.1	3.5	96	108	117	2.4	2.6	2.9	6.05	8.25	6.05	8.25	3.0	0.2	
		K2M-02028Z	2.4	3.5	4.0	4.4	96	107	116	3.0	3.3	3.6	6.05	10.25	6.05	10.25	3.0	0.2	
		K2M-02030Z	2.4	3.7	4.2	4.7	96	107	116	3.2	3.6	3.9	8.05	8.05	8.05	8.05	3.0	0.2	
		K2M-02034Z	2.4	4.2	4.8	5.3	96	107	116	3.6	4.0	4.4	6.05	12.05	6.05	12.05	3.0	0.2	
		K2M-02046Z	2.4	5.7	6.5	7.2	94	106	115	4.8	5.4	5.8	8.05	12.05	8.05	12.05	3.0	0.2	

All modules are screened by the following processes with the ACR change criterion of +/- 2%.
1) Thermal Shock: -40/85 degrees C Temperature Cycling
2) Burn-in: 25/75 degrees C Power Cycling

Enhanced type modules are designed for relatively higher Qc purpose with the same dimensions as the standard type.

Two-stage type modules are designed for relatively higher delta T application with the same footprints as the standard type.

Explanation of I max, V max, Delta T max and Qc max are described in page 10 of the catalogue.

How to read the model number

(Ex.) **K S ML 01 018 Z**

- Z: Element material (Z-material)
- 018: Number of couples (18 couples)
- 01: Max. current (Imax) class
- ML: Module type
- S: Number of stages (S=single stage, 6=six stages)
- K: Komatsu Electronics Inc.