KOA SPEER ELECTRONICS, INC.

RoHS COMPLIANT

spec sheet

SS-197 R5
AHA 6/07/07

Surface Mount Coat-insulated Fixed Metal Film Resistors

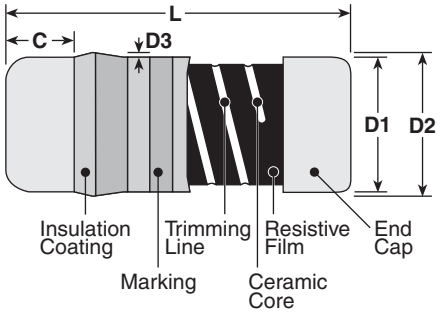
ISO 9001:2000 CERTIFIED
TS-16949 CERTIFIED

RN41, RM41 Type

1. Features

- Suitable for reflow and wave soldering
- High stability in short and long term tests
- Products with lead-free terminations meet RoHS requirements. Pb located in glass material, electrode and resistor element is exempt per Annex 1, exemption 5 of EU directive 2005/95/EC
- Meets or exceeds EIAJ-8009, EIA-PDP-100
- Marking: Blue body color for “RN” , green for “RM”

2. Dimensions and Construction



Type (Inch Size Code)	Dimensions inches *(mm)*				
	L	C (min.)	D1	D2 (max.)	D3 (max.)
2A (0805)	.079±.004 *(2.0±0.1)*	.012 *(0.3)*	.049±.002 *(1.25±0.05)*	.053 *(1.35)*	.003 *(0.07)*
2B (1406)	.138±.008 *(3.5±0.2)*	.02 *(0.5)*	.057±.004 *(1.45±0.1)*	.061 *(1.55)*	.004 *(0.1)*
2D (1206)	.126±.008 *(3.2±0.2)*	.02 *(0.5)*	.061±.006 *(1.55±0.15)*	.069 *(1.75)*	
2ES (1406)	.138±.008 *(3.5±0.2)*	.02 *(0.5)*	.055±.004 *(1.4±0.1)*	.061 *(1.55)*	
2E, 2H (2309)	.232±.008 *(5.9±0.2)*	.02 *(0.5)*	.087±.004 *(2.2±0.1)*	.094 *(2.4)*	.006 *(0.15)*
3AS	.232±.008 *(5.9±0.2)*	.02 *(0.5)*	.087±.004 *(2.2±0.1)*	.094 *(2.4)*	.071 *(1.8)*

3. Type Designation

The type designation shall be the following form:

New Type

RN41	2B	T	TE	1002	J	50*
Dielectric	Size	Termination Material	Packaging	Nominal Resistance	Tolerance	T.C.R. (ppm/°C)
RN41	2A: 0805 2B: 1406 2D: 1206 2E: 2309 2ES: 1406 2H: 2309 3AS: 2309	T: Sn (Other termination styles may be available, please contact factory for options)	TE: 7" Embossed Plastic (2A, 2B, 2ES - 3,000 pcs/reel) (2D - 2,000 pcs/reel) (2E, 2H, 3AS - 1,500 pcs/reel)	±5%: 2 significant figures + 1 multiplier. “R” indicates decimal on values <10Ω ±1%: 3 significant figures + 1 multiplier. “R” indicates decimal on values <100Ω	B = ±0.1% C = ±0.25% D = ±0.5% F = ±1% J = ±5%	25 50 100 200

*T.C.R. noted for RN41 only

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Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

3. Type Designation (continued)

The type designation shall be the following form:

New Type

RM41	2D	T	TE	1R0	J
Dielectric	Size	Termination Material	Packaging	Nominal Resistance	Tolerance
RM41	2D: 1206 2H: 2309	T: Sn (Other termination styles may be available, please contact factory for options)	TE: 7" Embossed Plastic (2D - 2,000 pcs/reel) (2H - 1,500 pcs/reel)	±5%: 2 significant figures + 1 multiplier. "R" indicates decimal on values <10Ω	J = ±5%

4. Applications and Ratings

Part Designation	Power Rating @ 70°C	T.C.R. (ppm/°C) Max.	Resistance Range					Absolute Maximum Working Voltage	Absolute Maximum Overload Voltage	Operating Temperature Range
			(B±0.1%)	E-24, E-96 (C±0.25%)	E-24, E-96 (D±0.5%)	E-24, E-96 (F±1%)	E-24 (J±5%)			
RN412A	1/8W (.125W)	±100	—	—	—	100Ω-100KΩ	—	150V	200V	-55°C to +155°C
RN412B	1/8W (.125W)	±25	—	100Ω-100KΩ	100Ω-604KΩ	—	—		300V	
		±50	—	—	—	10Ω-604KΩ	—			
RN412D	1/5W (.2W)	±50	—	—	—		—			
RN412E	1/4W (.25W)	±25	—	100Ω-100KΩ	100Ω-1MΩ	—	—	250V	500V	
		±50	—	—	—	10Ω-1.0MΩ	—			
RN412ES	1/4W (.25W)	±25	10KΩ-100KΩ	100Ω-100KΩ	100Ω-604KΩ	—	—	200V	400V	
		±50	—	—	— —	1Ω-5.1MΩ	0.22Ω-0.91Ω			
RN412H	1/2W (.5W)	±200	—	—	—	—	0.22Ω-100KΩ	250V	600V	
RM412D	1/5W (.2W)	±350	—	—	—	—	0.22Ω-8.2Ω (E-12)	$\sqrt{PxR}$	$\sqrt{PxRx6.25}$	
RM412H	1/2W (.5W)	±350	—	—	—	—				
RN413AS	1W	±50	—	—	—	1Ω-1MΩ	0.22Ω-0.91Ω		600V	

*1) Please contact KOA Speers for further information.

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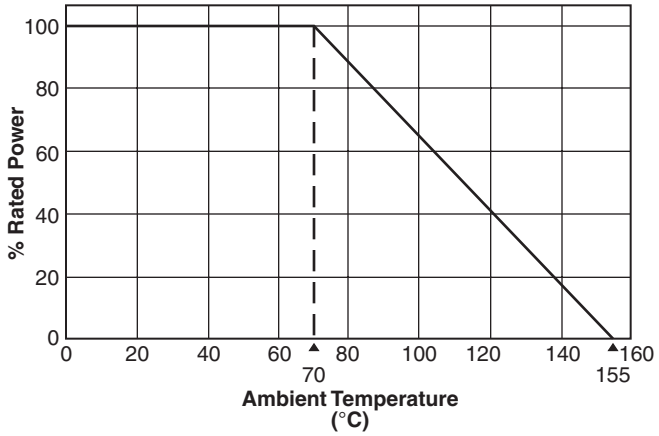
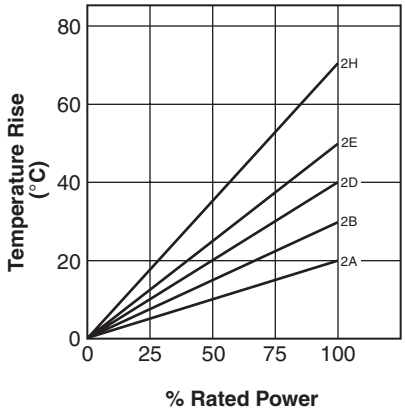
5. Environmental Application

Derating Curve



Surface Temperature Rise



6. Performance Characteristics

Parameter	Maximum Δ R ±(% + 0.05Ω)	Test Method
Thermal Shock	±0.5%	MIL-STD-202, Method 107, -55°C to +155°C, 5 cycles
Low Temperature Exposure	±0.2%	MIL-R-55342 π 4.7.4, 1 Hour @ -55°C
High Temperature Exposure	±1.0% RN, ±2.0% RM	MIL-R-55342 π 4.7.6, 100 hours @ 155°C
Short Time Overload	±0.5%	MIL-R-55342 π 4.7.5, 2.5 x RCWV for 5 seconds
Resistance to Solder Heat	±0.5% RN, ±1.0% RM	MIL-R-55342 π 4.7.7, 260°C for 10 seconds
Pulse	±1.0% RN, ±2.0% RM	2.5 x RCWV, not exceeding maximum overload voltage, 1 second ON, 25 seconds OFF, 10,000 cycles
Moisture Resistance	±1.0% RN, ±3.0% RM	MIL-STD-202, Method 103, 40°C, 90 - 95% RH, 1000 hours
Life	±1.0% RN, ±3.0% RM	MIL-STD-202, Method 108, 70°C, 1000 hours @ RCWV, 1.5 hr ON, 0.5 hr OFF
Dielectric Withstanding Voltage 2A 2B 2D 2E 2H 3AS	 200V Minimum 300V Minimum 300V Minimum 400V Minimum 500V Minimum 600V Minimum	 1 minute minimum MIL-STD-202, Method 301
Insulation Resistance	10,000 MΩ	—

* RCWV = Rated Continuous Working Voltage.

7. Packing

Packing box shall be marked with the following items.

(1) Type, style and characteristic
(2) Nominal resistance (3) Quantity
(4) Lot number (5) Manufacturer's name

Type	Quantity	
	Bulk	Taping
2A	3,000 pcs./box	3,000 pcs./reel
2B, 2ES	3,000 pcs./box	3,000 pcs./reel
2D	2,000 pcs./box	2,000 pcs./reel
2E, 2H, 3AS	1,500 pcs./box	1,500 pcs./reel

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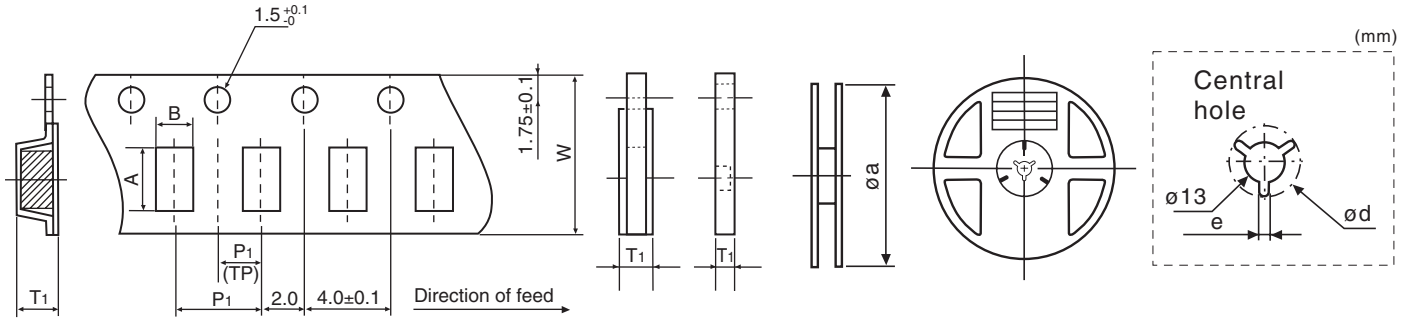
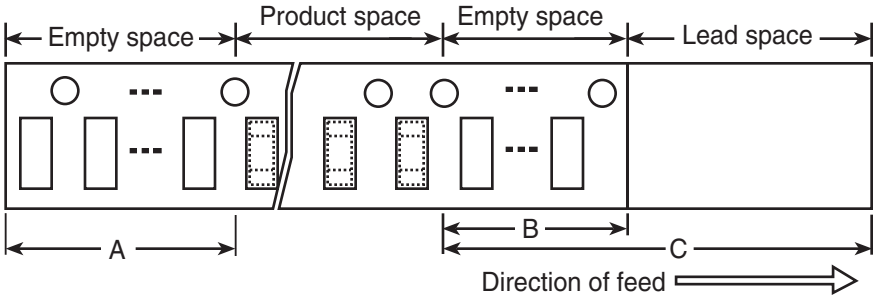
9. Taping Dimensions/Reel Dimensions



Dimensions in inches (mm)

Type	A	B	W	P_1	T_1	øa	ød	e
2A	.094 (2.4 ± 0.2)	.059 (1.5 ± 0.2)	.315 (8.0 ± 0.2)	.157 (4.0 ± 0.1)	.059 (1.45 ± 0.2)	7.01 (178)	.827 (21)	.079 (2)
2B, 2ES	.146 (3.7 ± 0.2)	.067 (1.7 ± 0.2)	.315 (8.0 ± 0.2)	.157 (4.0 ± 0.1)	.067 (1.7 ± 0.2)	7.01 (178)	.827 (21)	.079 (2)
2D	.146 (3.7 ± 0.2)	.067 (1.7 ± 0.2)	.315 (8.0 ± 0.2)	.157 (4.0 ± 0.1)	.067 (1.7 ± 0.2)	7.01 (178)	.827 (21)	.079 (2)
2E, 2H	.244 (6.2 ± 0.2)	.094 (2.4 ± 0.2)	.472 (12.0 ± 0.1)	.157 (4.0 ± 0.1)	.102 (2.6 ± 0.2)	7.01 (178)	.827 (21)	.079 (2)
3AS	.244 (6.2 ± 0.2)	.094 (2.4 ± 0.2)	.472 (12.0 ± 0.1)	.157 (4.0 ± 0.1)	.102 (2.6 ± 0.2)	10.01 (255)	.827 (21)	.079 (2)

10. Taping Configuration



Dimensions in inches (mm)

A min	B min	C min
3.93 (10 pitch)	1.38 (35 pitch)	11.40 (290 mm)

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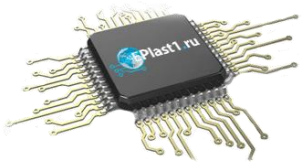
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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