General Purpose Thick Film Standard Power and High-Power Chip Resistor

#### Stackpole Electronics, Inc.

Resistive Product Solutions

#### Features:

- RMCF standard power ratings
- RMCP high power ratings
- Nickel barrier terminations standard
- Power derating from 100% at 70 °C to zero at +155 °C
- AEC-Q200 Compliant (except RMCP0201)
- · RoHS compliant and halogen free



Type / Code         Power Rating (W) (W) @ 70 °C         Max. Working Voltage (V) (1)         Max. Overload Voltage (V)         Max. Jumper Current (A)         TCR (ppm/°C)         Ohmic Range (Ω) and Tolerance (Ω) and To	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0 M
RMCF01005     0.03     15     30     0.5 $\pm 200$ 100 - 1 M       RMCF0201     0.05     25     50     0.5 $\pm 400$ 1 - 9.76 $\pm 200$ 10 - 10 M $\pm 200$ 1 - 9.76 (4)	0 M
RMCF0201 0.05 25 50 0.5 $\pm 200$ 100 - 1 M $\pm 400$ 1 - 9.76 $\pm 200$ 10 - 10 M $\pm 200$ 1 - 9.76 $(4)$	0 M
RMCF0201 0.05 25 50 0.5 ± 200 10 - 10 M ± 200 1 - 9.76 (4)	0 M
± 200 10 - 10 M ± 200 1 - 9.76 <sup>(4)</sup>	0 M
	0 M
RMCF0402   0.063   50   100   1   ±100   10 - 1 M	0 M
	0 M
± 200 1.02 M - 10 M 1.1 M - 2	
± 500 0.1 - 0.499	
± 400 0.5 - 0.976	
RMCF0603 0.1 75 150 1 ±200 1-9.76 1-20	М
± 100 10 - 1 M -	
± 200 1.02 M - 10 M -	
± 200 0.1 - 9.76 0.1 - 20	М
RMCF0805 0.125 150 300 2 ±100 10 - 1 M -	
± 200 1.02 M - 10 M	
±200 0.1 - 9.76 0.1 - 20	М
RMCF1206 0.25 200 400 2 ±100 10-1 M -	
± 200 1.02 M - 10 M	
± 200 0.1 - 0.976	
+400 1-976	
RMCF1210 $0.33^{(3)}$ 200 400 3 $\pm 200$ - $10-20$	M
± 100 10 - 10 M -	
± 200 0.1 - 0.976	
+400 1-976	
RMCF2010 0.75 200 400 3 ± 400 - 10 - 10	M
± 100 10 - 10 M -	
± 200 0.1 - 0.976	
+400 1-976	
RMCF2512 1 200 400 3 ± 200 - 10 - 10	M
± 100 10 - 10 M -	

Notes: (1) Lesser of √P \* R or maximum working voltage

- (2) Contact factory for extended ohmic values
- (3) Power rating is 0.5 W for ohmic values 1 K  $\Omega$  and below
- (4) Contact factory for lower ohmic values

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			Electrical Sp	pecifications	- RMCP	
Type / Code	Power Rating (W)	Max. Working	Max. Overload	Max. Jumper Current	TCR (ppm/°C)	Ohmic Range ( $\Omega$ ) and Tolerance $^{(2)}$
	@ 70 °C	Voltage (V) (1)	Voltage (V)	(A)		1%, 5%
RMCP0201	0.063	25	50	1	-200 / +400	1 - 9.76
KWC1 0201	0.003	23	30	ı	± 200	10 - 1 M
RMCP0402	0.125	50	100	1.5	± 200	1 - 9.76
KWCF0402	0.125	30	100	1.5	± 100	10 - 1 M
RMCP0603	0.25	75	150	2	± 200	1 - 9.76
KIVICF 0003	0.25	75	150	2	± 100	10 - 1 M
RMCP0805	0.33	150	300	2.5	± 200	1 - 9.76
RIVICEU003	0.55	150	300	2.5	± 100	10 - 1 M
RMCP1206	0.5	200	400	3.5	± 400	1 - 9.76
RIVICE 1200	0.5	200	400	3.5	± 100	10 - 1 M
RMCP1210	0.66	200	400	5	± 400	1 - 9.76
RIVICE 1210	0.00	200	400	5	± 100	10 - 1 M
DMCD2040	1	200	400	6	± 200	1 - 9.76
RMCP2010	1	200	400	6	± 100	10 - 1 M
DMCD0540	2	250	F00	7	± 200	1 - 9.76
RMCP2512	2	250	500	/	± 100	10 - 1 M

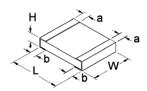
Notes: (1) Lesser of √P \* R or maximum working voltage

<sup>(2)</sup> Contact factory for extended ohmic values

	Electrical Specifications - Jumper									
Type / Code	Jumper Rated Current (A)	Max. Overload Current (A)*	Jumper Resistance Value (Ω)							
RMCP0201	0.5	1								
RMCP0402	1	3								
RMCP0603	1	3								
RMCP0805	1	3	0.05 max.							
RMCP1206	2	10	0.05 max.							
RMCP1210	2	10								
RMCP2010	2	10								
RMCP2512	2	10								

<sup>\* &</sup>lt; 1 second and 1 time

#### Mechanical Specifications



Tuna / Cada	Average Unit	L	W	Н	а	b	Linit
Type / Code	Weight (mg)	Body Length	Body Width	Body Height	Top Termination	Bottom Termination	Unit
RMCF01005	0.07	$0.016 \pm 0.0008$	$0.008 \pm 0.0008$	$0.005 \pm 0.0008$	$0.004 \pm 0.0012$	0.004 ± 0.0012	inches
KIVICEUTUUS	0.07	$0.40 \pm 0.02$	$0.20 \pm 0.02$	$0.13 \pm 0.02$	$0.10 \pm 0.03$	$0.10 \pm 0.03$	mm
RMCF0201	0.16	$0.024 \pm 0.0012$	$0.012 \pm 0.0012$	$0.009 \pm 0.0012$	$0.006 \pm 0.002$	$0.006 \pm 0.002$	inches
RMCP0201	0.16	$0.60 \pm 0.03$	$0.30 \pm 0.03$	$0.23 \pm 0.03$	$0.15 \pm 0.05$	$0.15 \pm 0.05$	mm
RMCF0402	0.57	$0.039 \pm 0.004$	$0.020 \pm 0.002$	$0.012 \pm 0.002$	$0.008 \pm 0.004$	$0.010 \pm 0.006$	inches
RMCP0402	0.62	$1.00 \pm 0.10$	$0.50 \pm 0.05$	$0.30 \pm 0.05$	$0.20 \pm 0.10$	$0.25 \pm 0.15$	mm
RMCF0603	1.88	$0.061 \pm 0.006$	$0.031 \pm 0.006$	$0.018 \pm 0.004$	$0.012 \pm 0.008$	$0.012 \pm 0.008$	inches
RMCP0603	2.04	$1.55 \pm 0.15$	$0.80 \pm 0.15$	$0.45 \pm 0.10$	$0.30 \pm 0.20$	$0.30 \pm 0.20$	mm
RMCF0805	5.00	$0.079 \pm 0.008$	$0.049 \pm 0.004$	$0.020 \pm 0.006$	$0.014 \pm 0.010$	$0.014 \pm 0.010$	inches
RMCP0805	4.37	$2.00 \pm 0.20$	1.25 ± 0.10	$0.50 \pm 0.15$	$0.35 \pm 0.25$	$0.35 \pm 0.25$	mm
RMCF1206	8.86	$0.126 \pm 0.010$	$0.063 \pm 0.006$	$0.022 \pm 0.006$	$0.020 \pm 0.012$	$0.020 \pm 0.012$	inches
RMCP1206	8.95	$3.20 \pm 0.25$	$1.60 \pm 0.15$	$0.55 \pm 0.15$	$0.50 \pm 0.30$	$0.50 \pm 0.30$	mm

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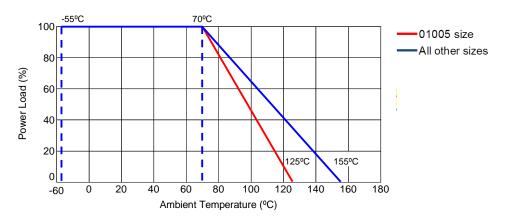
## Stackpole Electronics, Inc. Resistive Product Solutions

	Mechanical Specifications (cont.)										
Type / Code	Average Unit	L	W	Н	а	b	Unit				
Type / Code	Weight (mg)	Body Length	Body Width	Body Height	Top Termination	Bottom Termination	Offit				
RMCF1210	15.55	0.126 ± 0.010	0.098 ± 0.010	$0.022 \pm 0.006$	$0.020 \pm 0.012$	$0.020 \pm 0.012$	inches				
RMCP1210	15.96	$3.20 \pm 0.25$	$2.50 \pm 0.25$	$0.55 \pm 0.15$	$0.50 \pm 0.30$	$0.50 \pm 0.30$	mm				
RMCF2010	23.56	0.197 ± 0.008	$0.098 \pm 0.008$	$0.022 \pm 0.006$	$0.024 \pm 0.012$	$0.024 \pm 0.014$	inches				
RMCP2010	24.24	$5.00 \pm 0.20$	$2.50 \pm 0.20$	$0.55 \pm 0.15$	$0.60 \pm 0.30$	$0.60 \pm 0.35$	mm				
RMCF2512	40.02	0.248 ± 0.008	0.126 ± 0.010	$0.022 \pm 0.006$	$0.024 \pm 0.012$	$0.024 \pm 0.014$	inches				
RMCP2512	39.45	$6.30 \pm 0.20$	$3.20 \pm 0.25$	$0.55 \pm 0.15$	$0.60 \pm 0.30$	$0.60 \pm 0.35$	mm				

	Performance Characteristics									
Test	Test Specifications	Test Conditions (JIS-C 5202)								
	± (2% + 0.1 Ω)	2.5 X rated voltage for 5 seconds								
Short Time Overload	Jumper: Max 0.05 Ω after test	0201 = 1 A 0402 / 0603 / 0805 = 2.5 A 1206 / 1210 / 2010 / 2512 = 5 A								
Dielectric Withstanding Voltage	No flashover or breakdown	100 VAC, 1 minute								
Resistance to Soldering Heat	± 1%	260 °C ± 5 °C, for 10 seconds ± 0.5 seconds (Solder Bath)								
Solderability	95% coverage, minimum	235 °C ± 5 °C, for 2 seconds ± 0.5 seconds (Colophonium flux)								
Temperature Cycle	$\pm$ (1% + 0.05 Ω) Jumper (< 0.05 Ω)	-65 °C: 30 minutes 25 °C: 2 to 3 minutes 155 °C: 30 minutes 25 °C: 2 to 3 minutes (5 Cycles)								
Endurance (Damp load)	± (3% + 0.1 Ω) Jumper (<0.05 Ω)	40 °C ± 2 °C, 90% RH, Rated Load 90 minutes On, 30 minutes Off for 1000 hours -0 hour / +48 hours								
Load Life	Values < 1 Ω: $\pm$ (3% + 0.1 Ω)	70 ± 2 °C, RCWV or max. working voltage whichever is less								
(Endurance)	Jumper: Max. 0.1 Ω after test	for 1000 hours with 1.5 hours "ON" and 0.5 hour "OFF"								
Voltage Coefficient	± 100 (ppm/V)	1/10 rated voltage for 3 seconds max. then rated voltage for 3 seconds max.								
Robustness of Termination	± (1% + 0.05 Ω)	Bend of 3 mm for 5 ± 1 seconds								
Resistance to Solvent	1%: ± (0.5% + 0.05 Ω) 5%: ± (0.5% + 0.05 Ω) Jumper: Max. 0.05 Ω after test	The tested resistor should be immersed into isopropyl alcohol of 20 ~ 25 °C for 60 seconds. Then the resitor is left in the room for 48 hours.								
Damp Heat with Load	1%: $\pm$ (1% + 0.05 Ω) 5%: $\pm$ (2% + 0.05 Ω) Values < 1 Ω: $\pm$ (3% + 0.1 Ω) Jumper: Max. 0.1 Ω after test	40 ± 2 °C, 90 ~ 95% R.H. RCWV or max. working voltage whichever is less for 1000 hours with 1.5 hours "ON" and 0.5 hours "OFF"								

Operating Temperature Range: -55 °C to +125 °C (01005 size) -55 °C to +155 °C (all others)

#### Power Derating Curve:



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#### Repetitive Pulse Information

(This information is for reference only and is not guaranteed performance.)

If repetitive pulses are applied to resistors, pulse wave form must be less than "Pulse limiting voltage", "Pulse limiting current" or "Pulse limiting wattage" calculated by the formula below.

 $Vp = K \sqrt{PxRxT/t}$   $Ip = K \sqrt{P/RxT/t}$   $Pp = K^2xPxT/t$ 

Where: Vp: Pulse limiting voltage (V)

lp: Pulse limiting current (A) Pp: Pulse limiting wattage (W)

P: Power rating (W)

R: Nominal resistance (ohm)
T: Repetitive period (sec)
t: Pulse duration (sec)

K: Coefficient by resistors type (refer to below matrix)

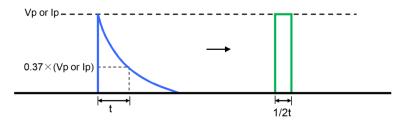
[Vr: Rated Voltage (V), Ir: Rated Current (A)]

			,	Vp(lp) or Pp
	t ←	Τ,		

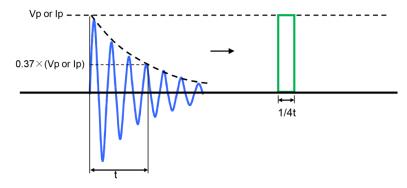
RMCF Coefficient (K) Matrix							
Resistor Type	К						
R < 10 Ω	0.50						
10 Ω ≤ R < 100 Ω	0.45						
100 Ω ≤ R < 1 K Ω	0.35						
1 K Ω ≤ R < 10 K Ω	0.25						
10 K Ω ≤ R	0.20						

#### Waveform Transformation to Square Wave

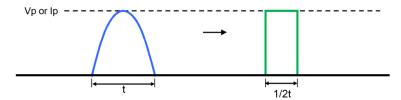
1. Discharge curve wave with time constant "t" → Square wave



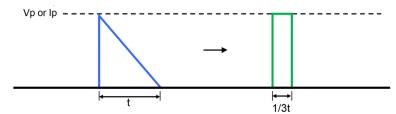
2. Damping oscillation wave with time constant of envelope "t" → Square wave



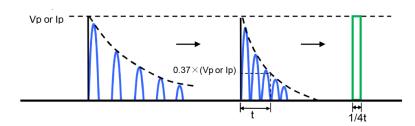
3. Half-wave rectification wave → Square wave



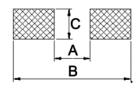
4. Triangular wave → Square wave



5. Special wave → Square wave



#### Recommended Pad Layout



Size	А	В	С	Unit
01005	0.008	0.020	0.008	inches
01005	0.20	0.50	0.20	mm
0201	0.012	0.039	0.016	inches
0201	0.30	1.00	0.40	mm
0402	0.020	0.059	0.024	inches
0402	0.50	1.50	0.60	mm
0603	0.031	0.083	0.035	inches
0603	0.80	2.10	0.90	mm
0805	0.047	0.118	0.051	inches
0605	1.20	3.00	1.30	mm
1206	0.087	0.165	0.063	inches
1206	2.20	4.20	1.60	mm
1210	0.087	0.165	0.110	inches
1210	2.20	4.20	2.80	mm
2010	0.138	0.240	0.110	inches
2010	3.50	6.10	2.80	mm
2512	0.193	0.315	0.138	inches
2312	4.90	8.00	3.50	mm

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#### Packaging (EIA Standard RS-481)

## Packaging Specifications M D Wall

Reel Type	Wa	М	А	В	С	D	Unit
7" reel for	0.354 ± 0.020	7.008 ± 0.079	$0.079 \pm 0.020$	0.531 ± 0.020	$0.827 \pm 0.020$	2.362 ± 0.039	inches
8 mm tape	$9.00 \pm 0.50$	178.00 ± 2.00	$2.00 \pm 0.50$	13.50 ± 0.50	21.00 ± 0.50	60.00 ± 1.00	mm
10" reel for	$0.394 \pm 0.020$	10.000 ± 0.079	$0.079 \pm 0.020$	$0.531 \pm 0.020$	$0.827 \pm 0.020$	$3.937 \pm 0.039$	inches
8 mm tape	10.00 ± 0.50	254.00 ± 2.00	$2.00 \pm 0.50$	13.50 ± 0.50	21.00 ± 0.50	100.00 ± 1.00	mm

# Taping Specifications - 01005, 0201, 0402 Taping Specifications - 01005, 0201, 0402 Press Pocket Carrier Tape (01005) Control Tape (01005) Press Pocket Carrier Tape (01005)

Size	7" Reel Quantity	,	/pical Full I Weight (g)	Tape Widtl	- A	В		W		E	F	Unit
01005	10000	127	.3 ± 12.0	0.315 8.00	0.018 ±	 0.010 ± 0.00 0.25 ± 0.00	-	$0.315 \pm 0.0^{\circ}$ $8.00 \pm 0.30^{\circ}$		069 ± 0.004 .75 ± 0.10	$0.138 \pm 0.002$ $3.50 \pm 0.05$	inches mm
0201	10000	97	.2 ± 9.0	0.315 8.00		 0.015 ± 0.00 0.38 ± 0.00	-	$0.315 \pm 0.00$ $8.00 \pm 0.10$		069 ± 0.004 .75 ± 0.10	$0.138 \pm 0.002$ $3.50 \pm 0.05$	inches mm
0402	10000	94	.5 ± 9.0	0.315 8.00		 0.026 ± 0.00 0.65 ± 0.00	-	$0.315 \pm 0.00$ $8.00 \pm 0.20$		069 ± 0.004 .75 ± 0.10	$0.138 \pm 0.002$ $3.50 \pm 0.05$	inches mm
Size	T1		T2		Р	P0		P1	Unit			
01005	0.012 ± 0. 0.31 ± 0.		0.007 ± 0.0 0.17 ± 0.0		0.079 ± 0. 2.00 ± 0.	 0.157 ± 0.002 4.00 ± 0.05		079 ± 0.002 2.00 ± 0.05	inches mm	3		
0201	0.017 ± 0. 0.42 ± 0.		0.011 ± 0.0 0.28 ± 0.0		0.079 ± 0. 2.00 ± 0.	 0.157 ± 0.002 4.00 ± 0.05		079 ± 0.002 2.00 ± 0.05	inches mm	3		

 $0.157 \pm 0.002$ 

 $4.00 \pm 0.05$ 

0.079 ± 0.002 inches

 $2.00 \pm 0.05$ 

0402

 $0.016 \pm 0.008$ 

 $0.40 \pm 0.20$ 

 $0.016 \pm 0.002$ 

 $0.40 \pm 0.05$ 

 $0.079 \pm 0.004$ 

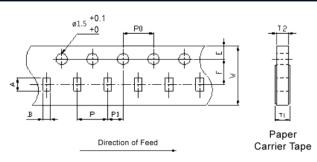
 $2.00 \pm 0.10$ 

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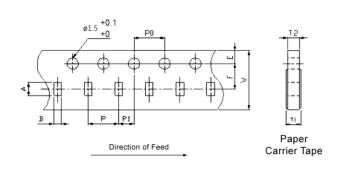
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#### Taping Specifications - 0603, 0805, 1206, 1210



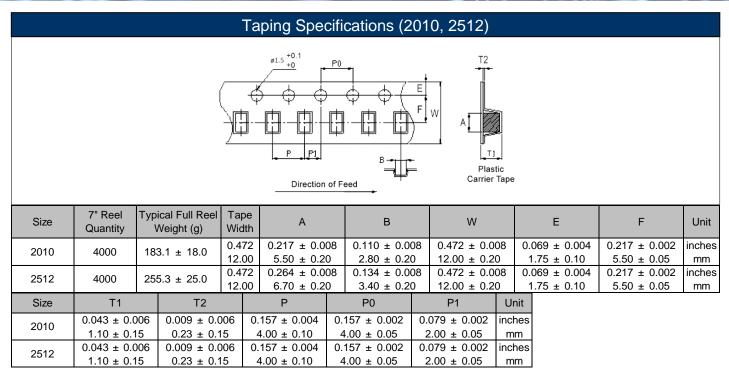
Size	7" Reel Quantity (1)	Typical Full Reel Weight (g)	Tape Width	А	В	W	E	F	Unit
0603	5000	118.3 ± 11.0	0.315	0.071 ± 0.004	0.039 ± 0.004	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	inches
			8.00	1.80 ± 0.10	1.00 ± 0.10	$8.00 \pm 0.20$	1.75 ± 0.10	$3.50 \pm 0.05$	mm
0806	5000	5000 139.2 ± 13.0	0.315	$0.091 \pm 0.004$	$0.061 \pm 0.004$	$0.315 \pm 0.008$	$0.069 \pm 0.004$	$0.138 \pm 0.002$	inches
0000	3000	100.2 1 10.0	8.00	$2.30 \pm 0.10$	1.55 ± 0.10	$8.00 \pm 0.20$	$1.75 \pm 0.10$	$3.50 \pm 0.05$	mm
1206	5000	151.4 ± 15.0	0.315	$0.138 \pm 0.008$	$0.075 \pm 0.008$	$0.315 \pm 0.008$	$0.069 \pm 0.004$	0.138 ± 0.002	inches
1200	3000	131.4 ± 13.0	8.00	$3.50 \pm 0.20$	1.90 ± 0.20	$8.00 \pm 0.20$	$1.75 \pm 0.10$	$3.50 \pm 0.05$	mm
1210	4000	175.7 ± 17.0	0.315	$0.138 \pm 0.008$	0.110 ± 0.008	$0.315 \pm 0.008$	$0.069 \pm 0.004$	0.138 ± 0.002	inches
1210	4000	173.7 ± 17.0	8.00	$3.50 \pm 0.20$	2.80 ± 0.20	$8.00 \pm 0.20$	1.75 ± 0.10	$3.50 \pm 0.05$	mm

#### Taping Specifications - 0603, 0805, 1206, 1210 (cont.)

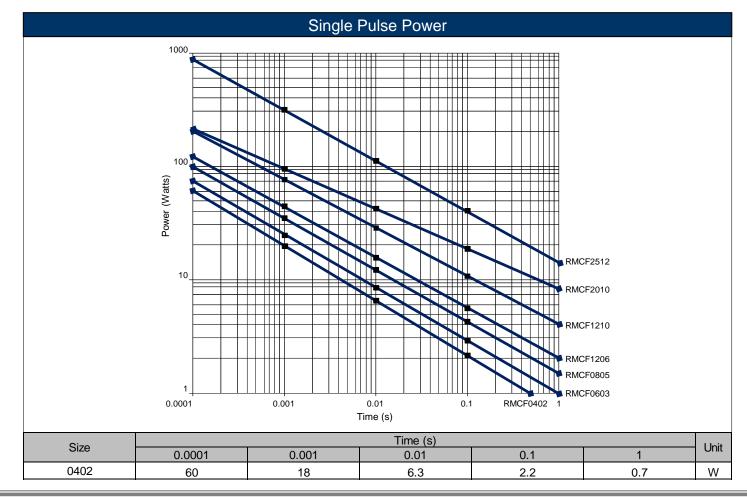


Size	T1	T2	Р	P0	P1	Unit
0603	$0.024 \pm 0.008$	$0.024 \pm 0.004$	0.157 ± 0.004	0.157 ± 0.002	$0.079 \pm 0.002$	inches
0003	$0.60 \pm 0.20$	$0.60 \pm 0.10$	4.00 ± 0.10	4.00 ± 0.05	$2.00 \pm 0.05$	mm
0805	$0.030 \pm 0.008$	$0.030 \pm 0.004$	0.157 ± 0.004	0.157 ± 0.002	$0.079 \pm 0.002$	inches
0000	$0.75 \pm 0.20$	$0.75 \pm 0.10$	4.00 ± 0.10	4.00 ± 0.05	$2.00 \pm 0.05$	mm
1206	$0.030 \pm 0.008$	$0.030 \pm 0.004$	0.157 ± 0.004	0.157 ± 0.002	$0.079 \pm 0.002$	inches
1200	$0.75 \pm 0.20$	$0.75 \pm 0.10$	4.00 ± 0.10	4.00 ± 0.05	$2.00 \pm 0.05$	mm
1210	$0.030 \pm 0.008$	$0.030 \pm 0.004$	0.157 ± 0.004	0.157 ± 0.002	$0.079 \pm 0.002$	inches
1210	0.75 ± 0.20	$0.75 \pm 0.10$	4.00 ± 0.10	4.00 ± 0.05	$2.00 \pm 0.05$	mm

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Note: Plastic carrier tape used for 2010 and 2512 sizes.



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Single Pulse Power (cont.)									
Cizo	Time (s)								
Size	0.0001	0.001	0.01	0.1	1	Unit			
0603	70	21.5	7.6	2.8	1	W			
0805	94	34	12	4.4	1.6	W			
1206	120	43	15	5.6	2	W			
1210	240	86	31	11	4	W			
2010	210	96	41	18	8	W			
2512	800	300	110	42	16	W			

The data provided are for reference only. They are typical performance for this product but are not guaranteed. The actual pulse handling of each individual resistor may vary depending on a variety of factors including resistance tolerance and resistance value. Stackpole Electronics, Inc. assumes no liability for the use of this information. Customers should validate the performance of these products in their applications. Contact Stackpole marketing to discuss specific pulse application requirements.

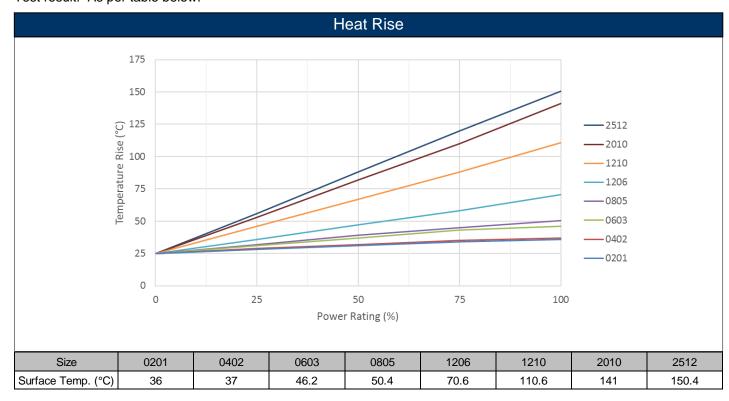
#### Temperature Measurement of Resistor Surface

Description: The resistor surface generated temperature variation after applied rated voltage. Products and power:

Size	0201	0402	0603	0805	1206	1210	2010	2512
R-V	15 K	40.2 K	57.6 K	180 K	182 K	100 K	100 K	75 K
Rated Power (W)	1/20	1/16	1/10	1/8	1/4	1/2	3.4	1
Max Rated Voltage (V)	25	50	75	150	200	200	200	200

Test method: Measure component surface temperature directly after the temperature stabilizes.

Test result: As per table below:



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#### Part Marking Specifications



#### 1% Marking

The nominal resistance is marked on the surface of the overcoating with the use of 4 digit markings.

0201 and 0402 are not marked.



#### 5% Marking

The nominal resistance is marked on the surface of the overcoating with the use of 3 digit markings.

0201 and 0402 are not marked.

For shared E24/E96 values, 1% tolerance product may be marked with three digit marking instead of the standard four digit marking for all other E96 values. All E24 values available in 1% tolerance are also marked with three digit marking.

#### Mark Instructions for 0603 1% Chip Resistors (per EIA-J)

A two-digit number is assigned to each standard R-Value (E96) as shown in the chart below. This is followed by one alpha character which is used as a multiplier. Each letter "Y" – "F" represents a specific multiplier as follows:

Y = 0.1	X = 1	A = 10	B = 100
C = 1000	D(d) = 10000	E = 100000	F = 1000000

#### **EXAMPLE**:

Chip Marking	Explanation	Value
01B	01 means 10.0 and B = 100	$10.0 \times 100 = 1 \text{ K ohm}$
25C	25 means 17.8 and C = 1,000	17.8 x 1,000 = 17.8 K ohm
93D	93 means 90.9 and D = 10,000	90.9 x 10,000 = 909 K ohm

E96											
1%	#	1%	#	1%	#	1%	#	1%	#	1%	#
10.0	01	14.7	17	21.5	33	31.6	49	46.4	65	68.1	81
10.2	02	15.0	18	22.1	34	32.4	50	47.5	66	69.8	82
10.5	03	15.4	19	22.6	35	33.2	51	48.7	67	71.5	83
10.7	04	15.8	20	23.2	36	34.0	52	49.9	68	73.2	84
11.0	05	16.2	21	23.7	37	34.8	53	51.1	69	75.0	85
11.3	06	16.5	22	24.3	38	35.7	54	52.3	70	76.8	86
11.5	07	16.9	23	24.9	39	36.5	55	53.6	71	78.7	87
11.8	08	17.4	24	25.5	40	37.4	56	54.9	72	80.6	88
12.1	09	17.8	25	26.1	41	38.3	57	56.2	73	82.5	89
12.4	10	18.2	26	26.7	42	39.2	58	57.6	74	84.5	90
12.7	11	18.7	27	27.4	43	40.2	59	59.0	75	86.6	91
13.0	12	19.1	28	28.0	44	41.2	60	60.4	76	88.7	92
13.3	13	19.6	29	28.7	45	42.2	61	61.9	77	90.9	93
13.7	14	20.0	30	29.4	46	43.2	62	63.4	78	93.1	94
14.0	15	20.5	31	30.1	47	44.2	63	64.9	79	95.3	95
14.3	16	21.0	32	30.9	48	45.3	64	66.5	80	97.6	96

General Purpose Thick Film Standard Power and High-Power Chip Resistor

#### Stackpole Electronics, Inc.

Resistive Product Solutions

#### RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

	RoHS Compliance Status										
Standard Product Series	Description	Package / Termination Type	Standard Series RoHS Compliant	Lead-Free Termination Composition	Lead-Free Mfg. Effective Date (Std Product Series)	Lead-Free Effective Date Code (YY/WW)					
RMCF	General Purpose Thick Film Surface Mount Chip Resistor	SMD	YES <sup>(1)</sup>	100% Matte Sn over Ni	Jan-04 (Japan) Jan-05 (Taiwan, China)	04/01 05/01					
RMCP	General Purpose High Power Thick Film Chip Resistor	SMD	YES <sup>(1)</sup>	100% Matte Sn over Ni	Always	Always					

Note (1): RoHS Compliant by means of exemption 7c-I.

#### "Conflict Metals" Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the "conflict region" of the eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

#### Compliance to "REACH"

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, "The Registration, Evaluation, Authorization and Restriction of Chemicals", otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

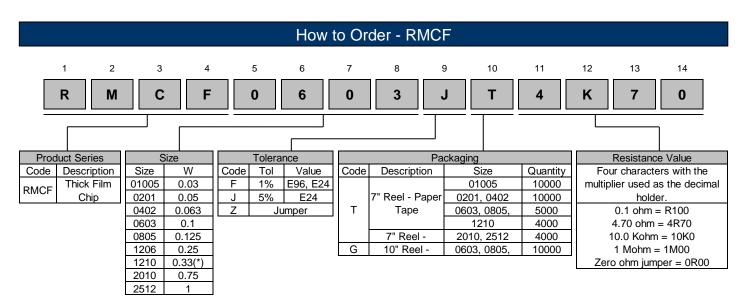
#### **Environmental Policy**

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

General Purpose Thick Film Standard Power and High-Power Chip Resistor

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Resistive Product Solutions



(\*) Power rating is 0.5 W for ohmic values below 1 K  $\Omega$ 

