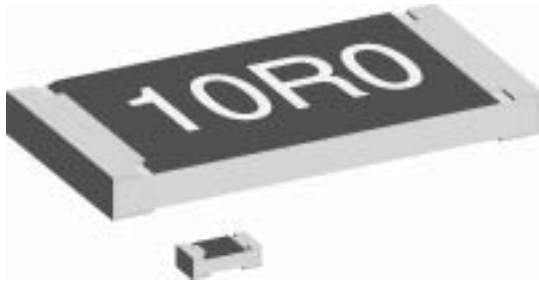


Thick Film, Rectangular Chip Resistors



FEATURES

- Metal glaze on high quality ceramic
- Protective overglaze
- SnPb contacts on Ni barrier layer
- Excellent stability in different environmental conditions
- High volume product suitable for commercial and special applications

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE		POWER RATING $P_{70^{\circ}\text{C}}$ W		LIMITING ELEMENT VOLTAGE MAX $V_{\geq}$	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE Ω	E-SERIES
	INCH	METRIC	CECC 40401-802	EIA 575					
D10 CRCW0402	0402	1005	0.063	0.063	50	50 100 200 200	0.5, 1 0.5, 1 1 5	100R – 1M0 10R – 4M7 1R0 – 9R1 1R0 – 10M	24 + 96 24 + 96 24 24
Zero-Ohm-Resistor : $R_{\max} = 20\text{m}\Omega$ $I_{\max} = 1\text{A}$									
D11 CRCW0603	0603	1608	0.1	0.063	75	50 100 200 200	0.5, 1 0.5, 1 1 5	100R – 10M 10R – 10M 1R0 – 9R76 1R0 – 10M	24 + 96 24 + 96 24 + 96 24
Zero-Ohm-Resistor : $R_{\max} = 20\text{m}\Omega$ $I_{\max} = 1.5\text{A}$									
D12 CRCW0805	0805	2012	0.125	0.1	150	50 100 200 200	0.5, 1 0.5, 1 1 5	100R – 10M 10R – 10M 1R0 – 9R76 1R0 – 10M	24 + 96 24 + 96 24 + 96 24
Zero-Ohm-Resistor : $R_{\max} = 20\text{m}\Omega$ $I_{\max} = 2\text{A}$									
D25 CRCW1206	1206	3216	0.25	0.125	200	50 100 200 200	0.5, 1 0.5, 1 1 5	100R – 10M 10R – 10M 1R0 – 9R76 1R0 – 27M	24 + 96 24 + 96 24 + 96 24
Zero-Ohm-Resistor : $R_{\max} = 20\text{m}\Omega$ $I_{\max} = 2.5\text{A}$									
CRCW1210	1210	3225	0.33 ^{*)}	0.25	200	100 200 200	1 1 5	10R – 1M0 1R0 – 9R76 1R0 – 1M0	24 + 96 24 + 96 24
Zero-Ohm-Resistor : $R_{\max} = 20\text{m}\Omega$ $I_{\max} = 2.5\text{A}$									
CRCW1218	1218	3246	1.0 ^{*)}	1.0	200	50 100 200 200	0.5, 1 1 1 5	100R – 2M2 10R – 2M2 1R0 – 9R76 1R0 – 2M2	24 + 96 24 + 96 24 + 96 24
Zero-Ohm-Resistor : $R_{\max} = 20\text{m}\Omega$ $I_{\max} = 4\text{A}$									
CRCW2010	2010	5025	0.5 ^{*)}	0.5	400	50 100 100 200 200	0.5, 1 0.5 1 1 5	100R – 10M 10R – 10M 1R0 – 10M 1R0 – 9R76 1R0 – 10M	24 + 96 24 + 96 24 + 96 24 + 96 24
Zero-Ohm-Resistor : $R_{\max} = 20\text{m}\Omega$ $I_{\max} = 3\text{A}$									
CRCW2512	2512	6332	1.0 ^{*)}	1.0	500	50 100 100 200 200	0.5, 1 0.5 1 1 5	100R – 10M 10R – 10M 10R – 10M 1R0 – 9R76 1R0 – 10M	24 + 96 24 + 96 24 + 96 24 + 96 24
Zero-Ohm-Resistor : $R_{\max} = 20\text{m}\Omega$ $I_{\max} = 4\text{A}$									

* Size not specified in CECC

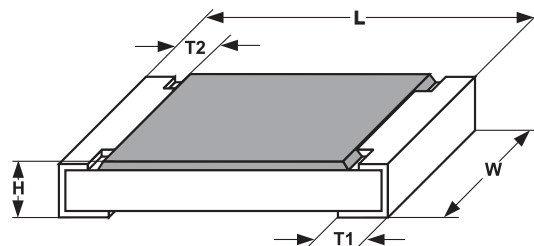
• Ask about further value ranges

• Marking and packaging: see appropriate catalog or web pages • AgPd or Pd terminations for conductive adhesive attachment on request.

• Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material



DIMENSIONS



SIZE		DIMENSIONS [in millimeters]				
INCH	METRIC	L	W	H	T1	T2
0402	1005	1.0 ±0.05	0.5 ±0.05	0.35 ±0.05	0.25 ±0.05	0.2 ±0.1
0603	1608	1.55 ^{+0.10} _{-0.05}	0.85 ±0.1	0.45 ±0.05	0.3 ±0.2	0.3 ±0.2
0805	2012	2.0 ^{+0.20} _{-0.10}	1.25 ±0.15	0.45 ±0.05	0.3 ^{+0.20} _{-0.10}	0.3 ±0.2
1206	3216	3.2 ^{+0.10} _{-0.20}	1.6 ±0.15	0.55 ±0.05	0.45 ±0.2	0.4 ±0.2
1210	3225	3.2 ±0.2	2.5 ±0.2	0.55 ±0.05	0.45 ±0.2	0.4 ±0.2
1218	3246	3.2 ^{+0.10} _{-0.20}	4.6 ±0.15	0.55 ±0.05	0.45 ±0.2	0.4 ±0.2
2010	5025	5.0 ±0.15	2.5 ±0.15	0.6 ±0.05	0.6 ±0.2	0.6 ±0.2
2512	6332	6.3 ±0.2	3.15 ±0.15	0.6 ±0.05	0.6 ±0.2	0.6 ±0.2



SIZE		SOLDER PAD DIMENSIONS [in millimeters]					
		REFLOW SOLDERING			WAVE SOLDERING		
INCH	METRIC	a	b	l	a	b	l
0402	1005	0.4	0.6	0.5			
0603	1608	0.5	0.9	1.0	0.9	0.9	1.0
0805	2012	0.7	1.3	1.2	0.9	1.3	1.3
1206	3216	0.9	1.7	2.0	1.1	1.7	2.3
1210	3225	0.9	2.5	2.0	1.1	2.5	2.2
1218	3246	1.05	4.9	1.9	1.25	4.8	1.9
2010	5025	1.0	2.5	3.9	1.2	2.5	3.9
2512	6332	1.0	3.2	5.2	1.2	3.2	5.2

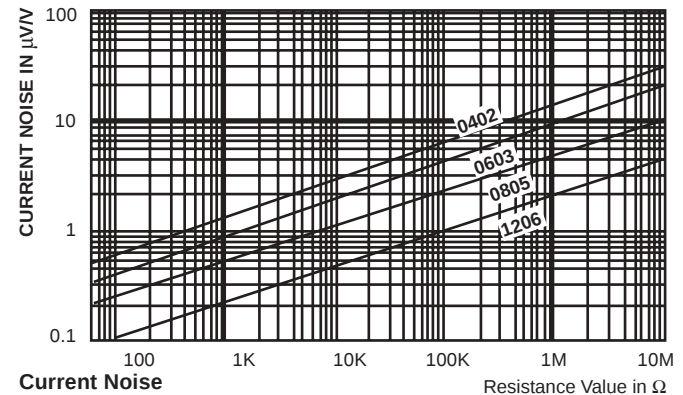
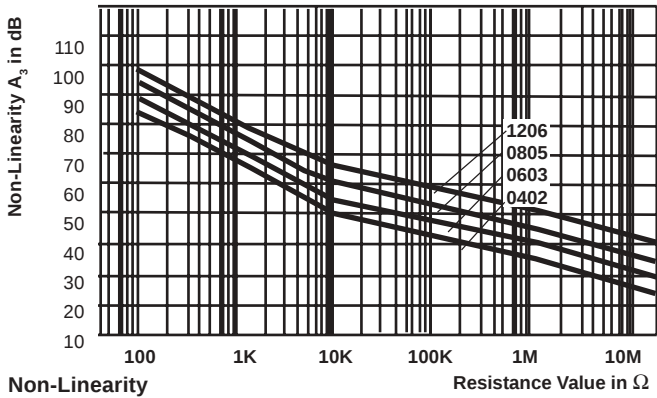
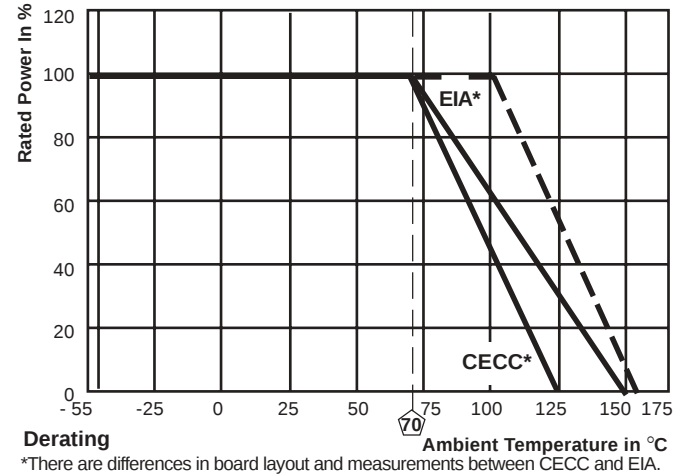
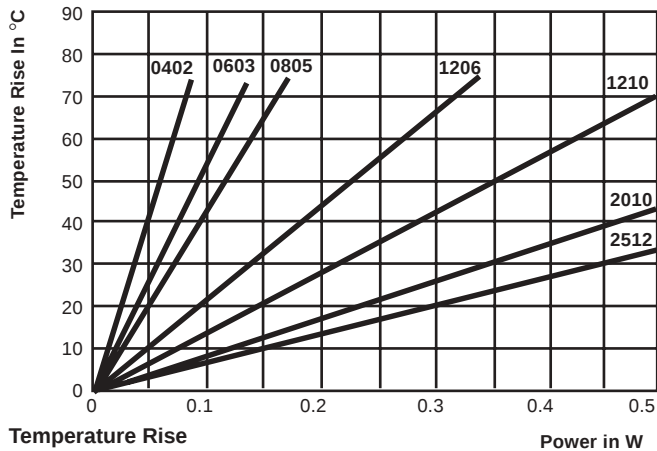
TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	D10 CRCW0402	D11 CRCW0603	D12 CRCW0805	D25 CRCW1206	CRCW1210	CRCW1218	CRCW2010	CRCW2512
Rated Dissipation at 70°C (CECC 40401 EIA 575)	W	0.063	0.1 0.063	0.125 0.1	0.25 0.125	0.33	1.0	0.5	1.0
Limiting Element Voltage ²⁾	V _≧	50	75	150	200	200	200	400	500
Insulation Voltage (1 min)	V _{peak}	> 75	> 100	> 200	> 300	> 300	> 300	> 300	> 300
Thermal Resistance	K/W	≤ 870 ¹⁾	≤ 550 ¹⁾	≤ 440 ¹⁾	≤ 220 ¹⁾	≤ 140 ³⁾	³⁾	≤ 88 ³⁾	≤ 65 ³⁾
Insulation Resistance	Ω				> 10 ⁹				
Category Temperature Range	°C	- 55 / + 125 (+ 155)							
Failure Rate	h ⁻¹	0.3 • 10 ⁻⁹							
Weight / 1000pcs	g	0.65	2	5.5	10	16	29.5	25.5	40.5

¹⁾ Measuring conditions in acc. to CECC 40401³⁾ Depending on solder pad dimensions²⁾ Rated voltage: $\sqrt{P \times R}$

ORDERING INFORMATION

D-SERIES					
D11 MODEL	100 TC ppm / K	562R RESISTANCE VALUE Ω	1% TOLERANCE ± % F = ± 1%, J = ± 5%	PN PACKAGING Papertape 20000 pcs	
CRCW-SERIES					
CRCW MODEL	0603 SIZE	5620 RESISTANCE VALUE Ω	F TOLERANCE ± %	100 TC* 50ppm 100ppm 200ppm	RT6 PACKAGING Papertape 20000 pcs
	± 1% = 3 sig. digits, plus multiplier ± 5% = 2 sig. digits, plus multiplier Example: 49R9F = 49.9Ω, ± 1% 5R1J = 5.1Ω, ± 5% 3011F = 3.01KΩ, ± 1% 000Z = 0Ω Jumper		D= ± 0.5% F = ±1% J = ± 5%, Z = 0Ω Jumper	*NOTE: Entering a TC value in this field is optional. If no TC is specified by the Customer, the default TC will be entered by the factory.	



PACKAGING

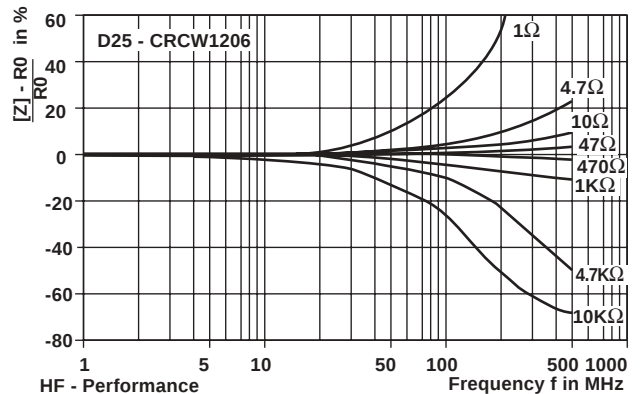
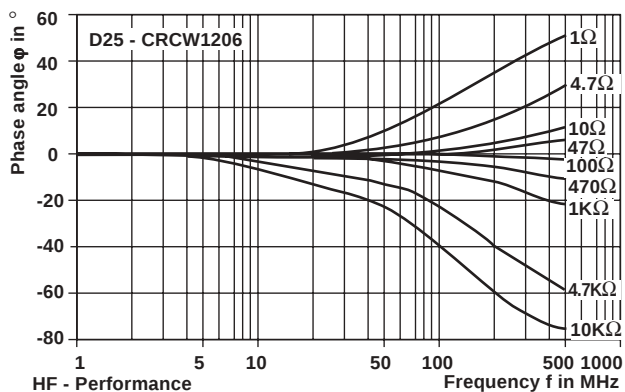
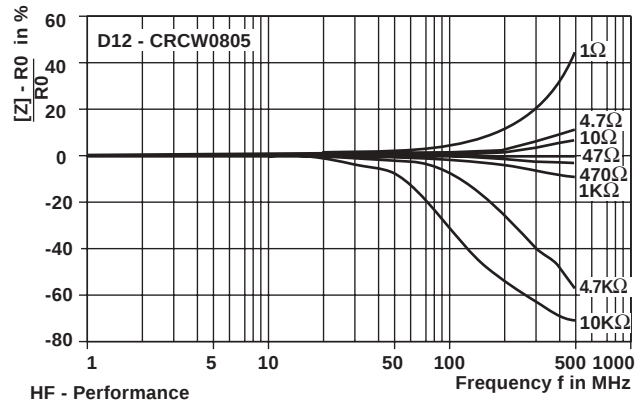
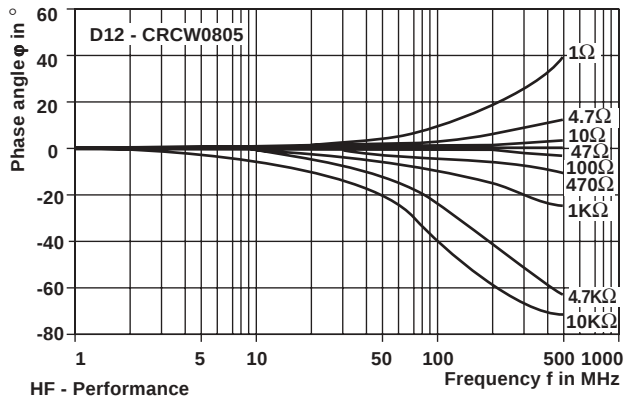
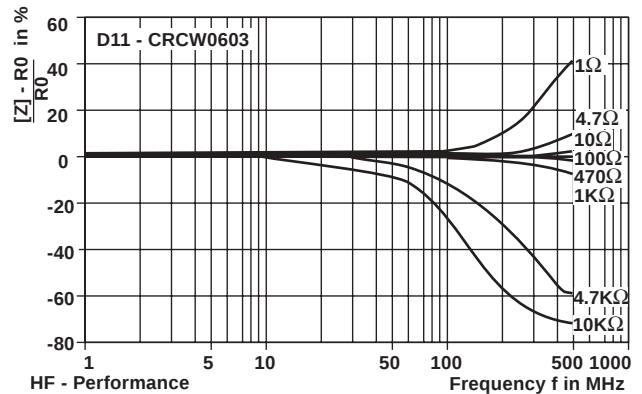
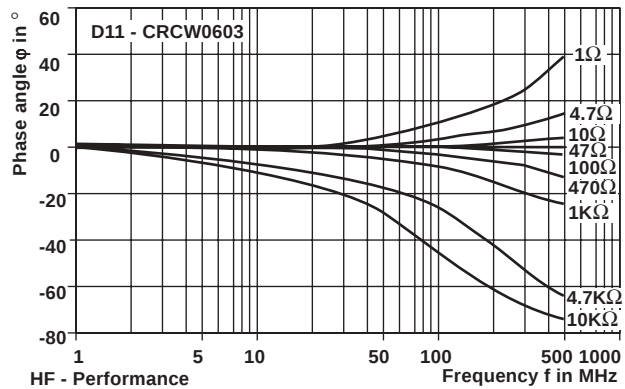
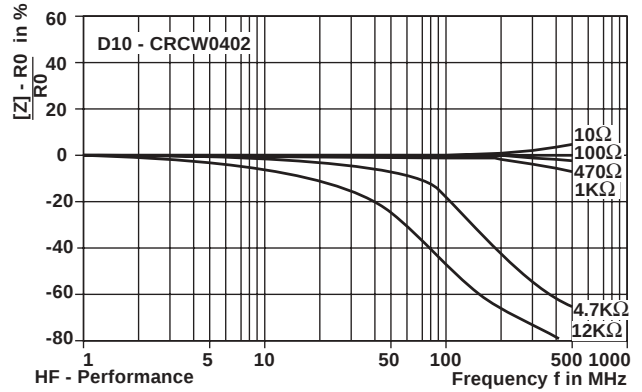
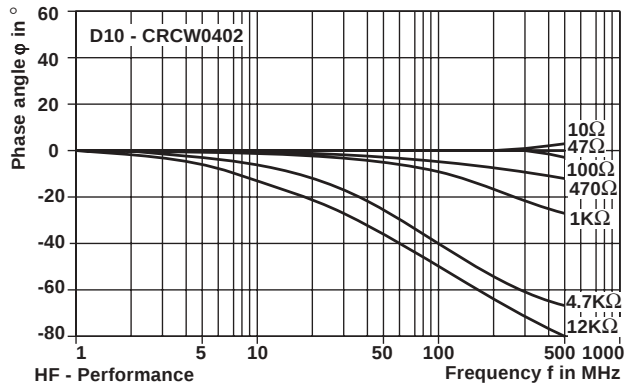
MODEL	REEL			PACKAGING CODE		BULK	
	TAPE WIDTH	DIAMETER	PIECES / REEL			BULK FEEDING MAGAZINE	
				PAPER ⁴⁾	BLISTER ⁴⁾	PIECES	CODE ⁴⁾
D10	8mm	180mm / 7"	10000	P0 / RT7		50000 ³⁾	MZ / B27
CRCW0402	Papertape	330mm / 13"	50000	PZ / RF4			
D11	8mm	180mm / 7"	5000	P5 / RT1	B5/na	25000	MU / B27
CRCW0603	Paper-/ Blister ¹⁾	255mm / 10" 330mm / 13"	10000 20000	P0 / RT5 PN / RT6	BN/na		
D12	8mm	180mm / 7"	5000	P5 / RT1	B5/na	10000	MO / B27
CRCW0805	Paper-/ Blister ¹⁾	255mm / 10" 330mm / 13"	10000 20000	P0 / RT5 PN / RT6	BN/na		
D25	8mm	180mm / 7"	5000	P5 / RT1	B5/na		
CRCW1206	Paper-/ Blister ¹⁾	255mm / 10" 330mm / 13"	10000 20000	P0 / RT5 PN / RT6	BN/na		
CRCW1210	8mm Paper-/Blister ¹⁾	180mm / 7" 330mm / 13"	5000 20000	P5 / RT1 PN / RT6	B5/na BN/na		
CRCW1218	12mm Blister ²⁾	180mm / 7"	4000		B4 / RT9		
CRCW2010	12mm Blister ²⁾	180mm / 7"	4000		B4 / RO2		
CRCW2512	12mm Blister ²⁾	180mm / 7"	2000 4000		B2 / R67 B4 / R82		

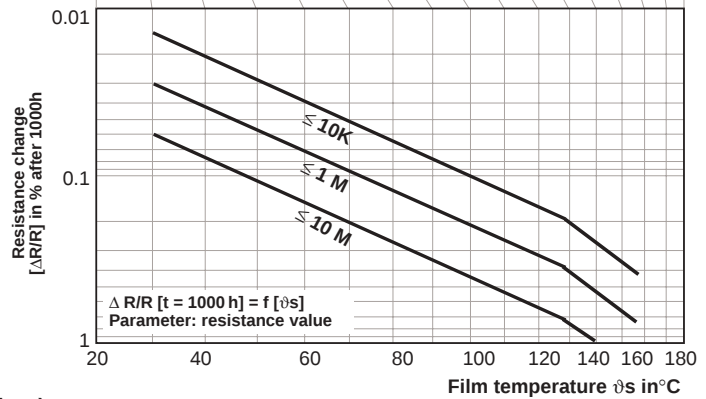
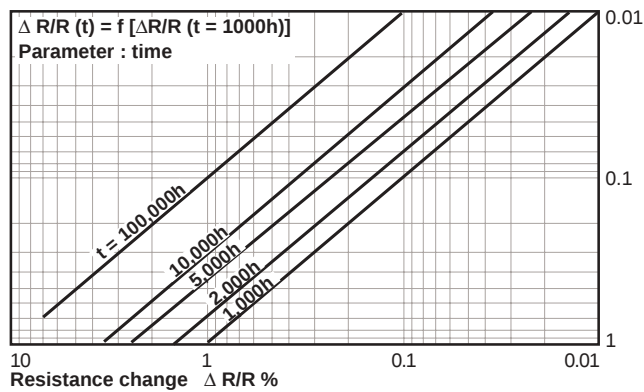
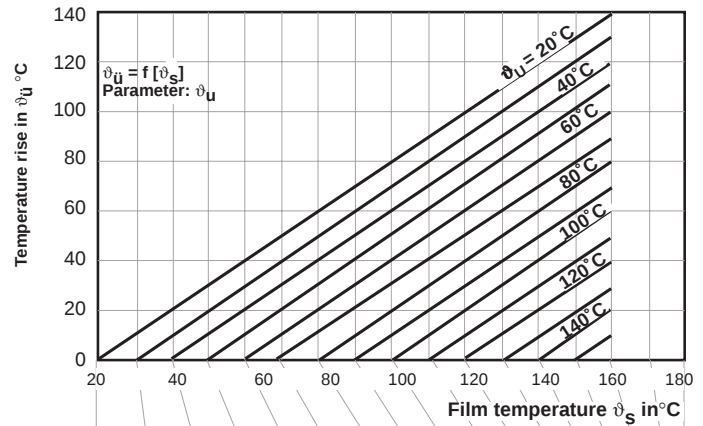
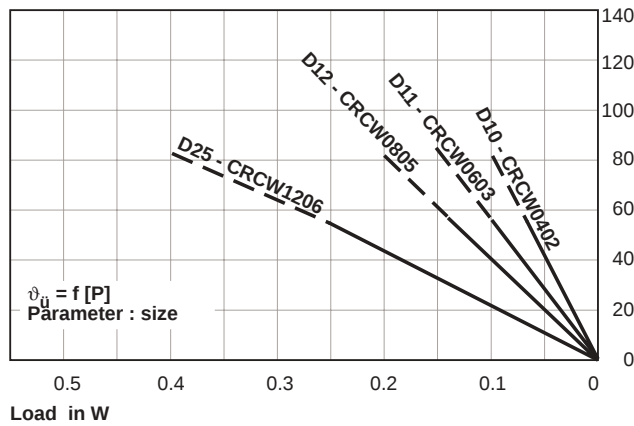
¹⁾ Only in combination with 180mm / 7" and 330mm / 13" plastic reel

²⁾ Plastic reel

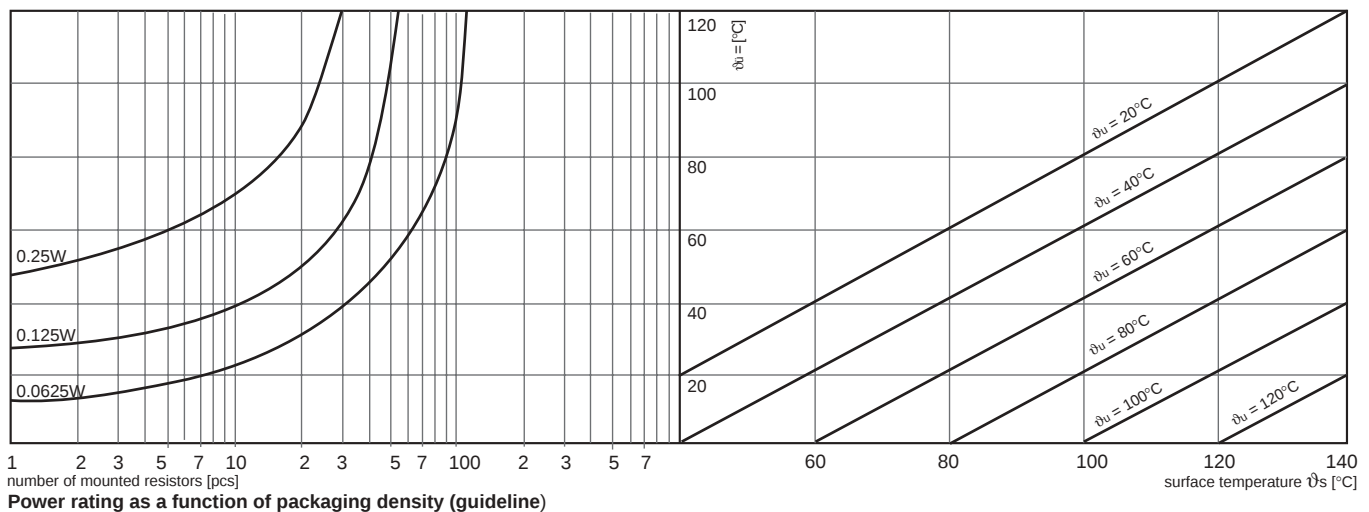
³⁾ On request,

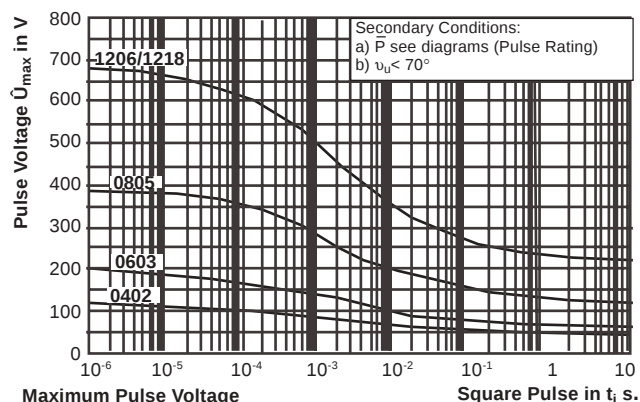
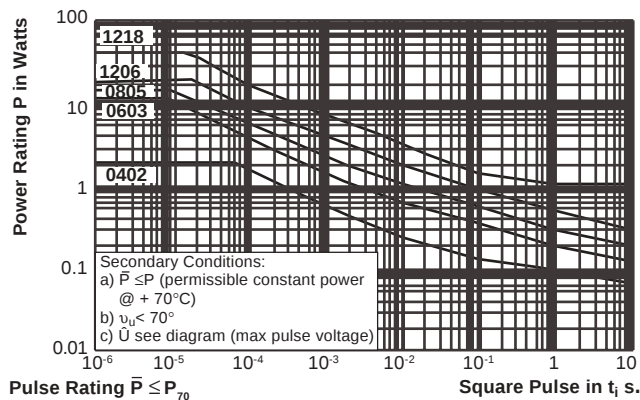
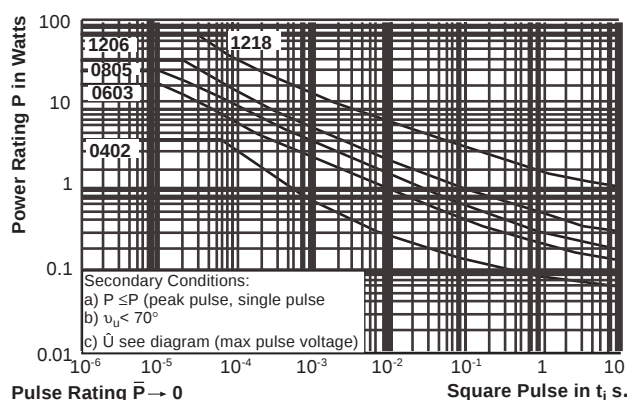
⁴⁾ European / N.American packaging codes na = NOT AVAILABLE • Further information about packaging: see appropriate catalog or web page.





Stability nomogram typical values (for handling see general explanations)





PERFORMANCE				
TEST	CONDITIONS OF TEST	TEST RESULTS %		
		0402 0603	0805 1206 1210	1218 2010 2512
Endurance Test at 70°C IEC 60115-1 4.25.1; EIA-575	1000 hours at 70°C 1.5 hours "ON" 0.5 hours "OFF"	$\leq \pm 1.0$	$\leq \pm 0.5$	$\leq \pm 1.0$
Endurance at UCT IEC 60115-1 4.25.3	1000 hours at 125°C without load	$\leq \pm 1.0$	$\leq \pm 0.5$	$\leq \pm 1.0$
Overload Test IEC 60115-1 4.13; EIA-575	Short time overload, 2.5 x rated voltage or 2 x limiting element voltage.	$\leq \pm 0.25$	$\leq \pm 0.25$	$\leq \pm 0.5$
Thermal Shock IEC 60115-1 4.19; IEC 60068-2-14; EIA-575	Rapid change between upper and lower category temperature	$\leq \pm 0.25$	$\leq \pm 0.25$	$\leq \pm 0.5$
Damp Heat Steady State IEC 60115-1 4.24; IEC 60068-2-3	56 days at 40°C and 93% relative humidity	$\leq \pm 1.0$	$\leq \pm 0.5$	$\leq \pm 1.0$
Resistance to Soldering Heat IEC 60115-1 4.18; IEC 600 68-2-20; EIA-575	10 seconds at 260°C solder bath temperature	$\leq \pm 0.25$	$\leq \pm 0.25$	$\leq \pm 0.5$

APPLICABLE SPECIFICATIONS
- CECC40000 / 40400 / 40401-004,-006,-007,-802 - EN140400 / IEC 60115 – 1 - EIA-575