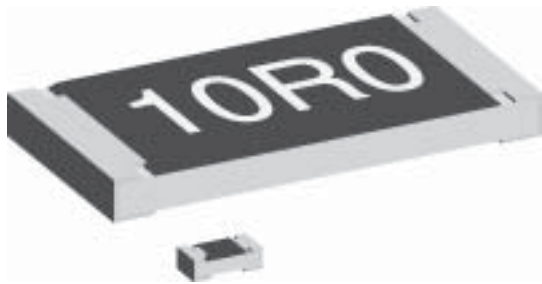


## Thick Film, Rectangular Chip Resistors



### FEATURES

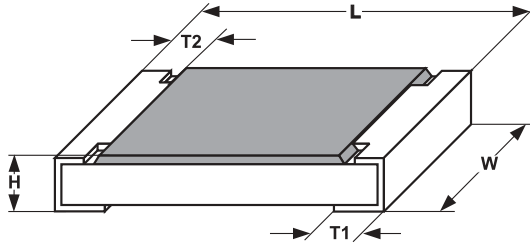
- Metal glaze on high quality ceramic
- Protective overglaze
- SnPb contacts on Ni barrier layer
- Excellent stability in different environmental conditions
- High volume product suitable for commercial and special applications

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

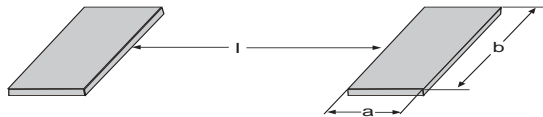
\* Size not specified in CECC  
 • Ask about further value ranges  
 • Marking and packaging: see appropriate catalog or web pages  
 • Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material  
 • AgPd or Pd terminations for conductive adhesive attachment on request.



**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 <sup>+0.10</sup> <sub>-0.05</sub>	0.85 ±0.1	0.45 ±0.05	0.3 ±0.2	0.3 ±0.2
0805	2012	2.0 <sup>+0.20</sup> <sub>-0.10</sub>	1.25 ±0.15	0.45 ±0.05	0.3 <sup>+0.20</sup> <sub>-0.10</sub>	0.3 ±0.2
1206	3216	3.2 <sup>+0.10</sup> <sub>-0.20</sub>	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 <sup>+0.10</sup> <sub>-0.20</sub>	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]					
INCH	METRIC	REFLOW SOLDERING			WAVE SOLDERING		
		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

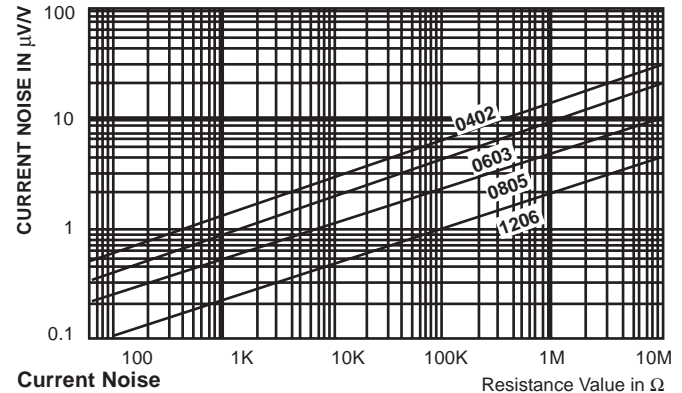
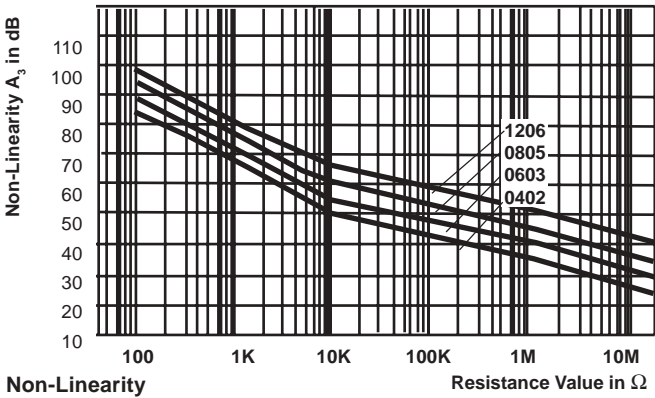
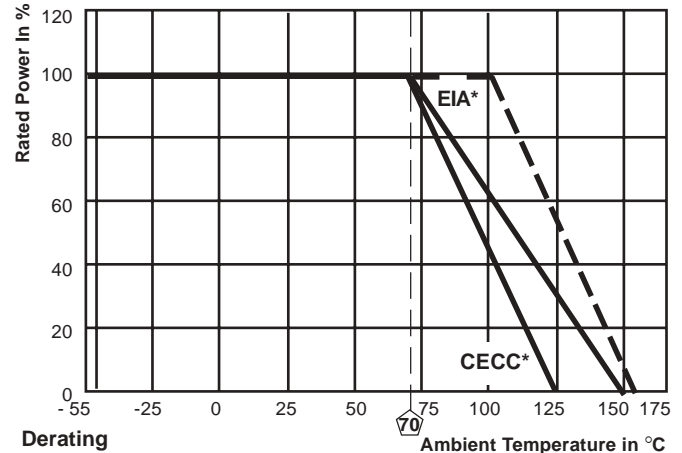
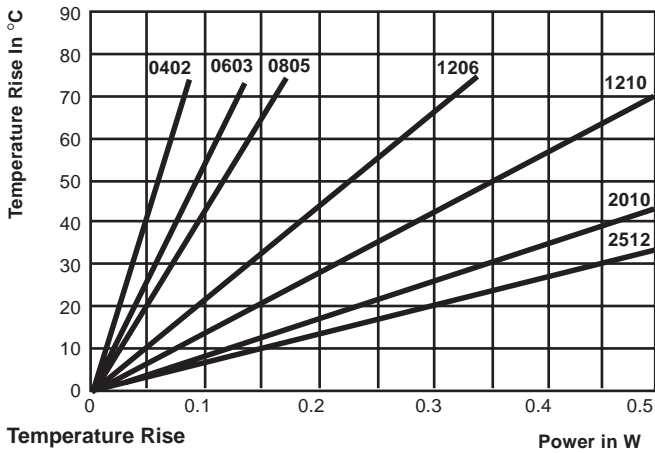
TECHNICAL SPECIFICATIONS												
PARAMETER	UNIT	D10 CRCW0402	D11 CRCW0603	D12 CRCW0805	D25 CRCW1206	CRCW1210	CRCW1218	CRCW2010	CRCW2512			
Rated Dissipation at 70°C (CECC 40401   EIA 575)	W	0.063	0.1	0.063	0.125	0.1	0.25	0.125	0.33	1.0	0.5	1.0
Limiting Element Voltage <sup>2)</sup>	V <sub>≅</sub>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

<sup>1)</sup> Measuring conditions in acc. to CECC 40401

<sup>3)</sup> Depending on solder pad dimensions

<sup>2)</sup> Rated voltage: √PxR

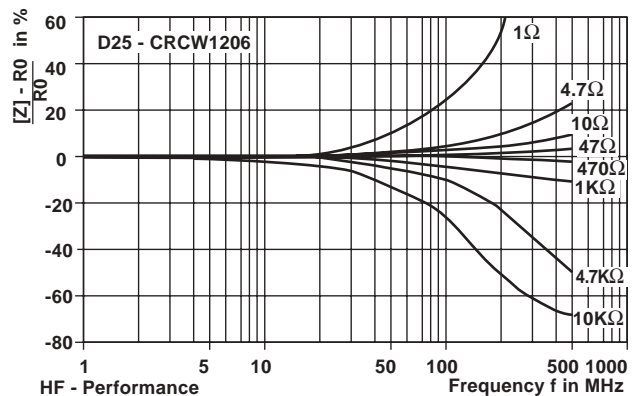
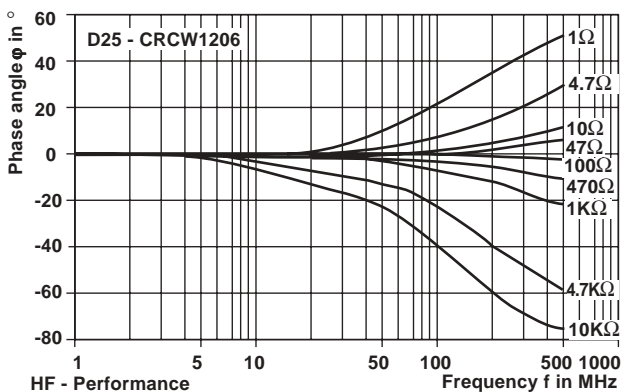
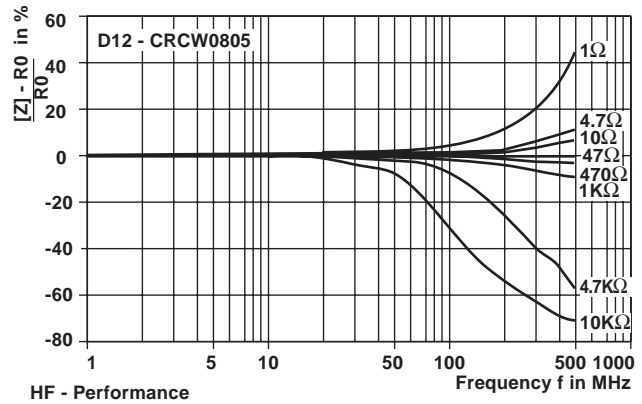
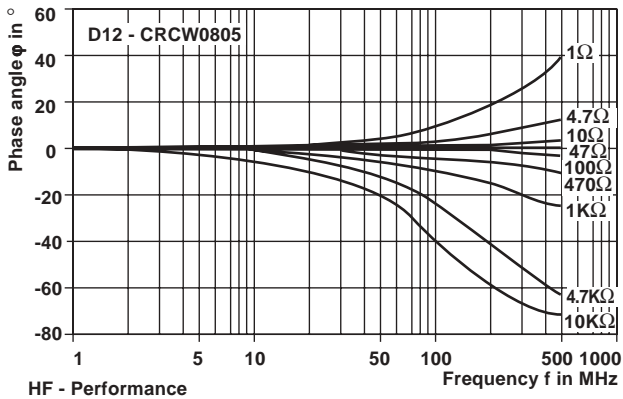
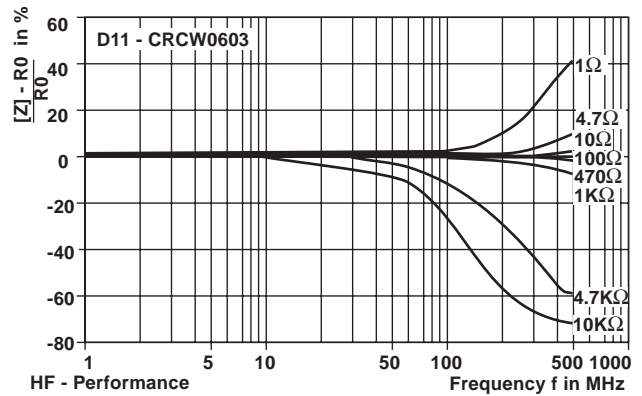
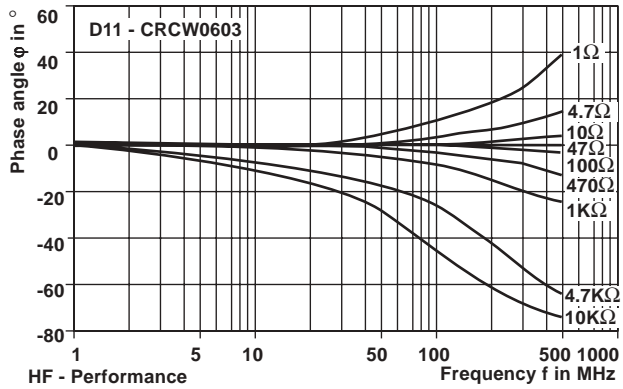
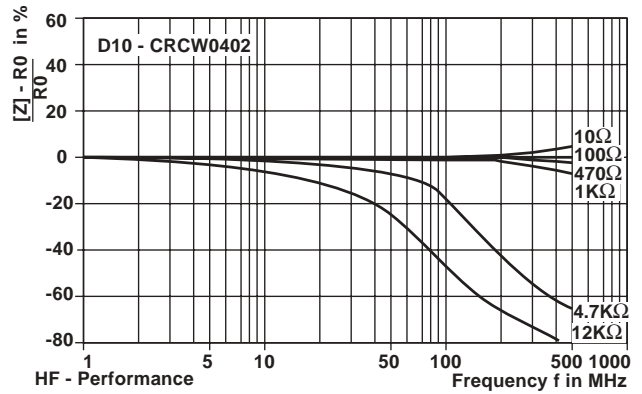
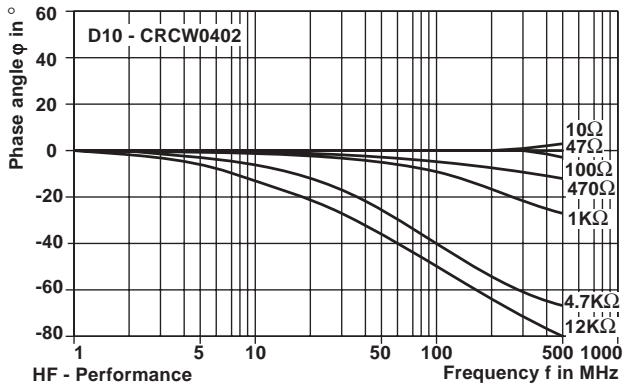
ORDERING INFORMATION					
<b>D-SERIES</b>					
D11 MODEL	100 TC ppm / K	562R RESISTANCE VALUE Ω	1% TOLERANCE ± % F = ± 1%, J = ± 5%	PN PACKAGING Papertape 20000 pcs	
<b>CRCW-SERIES</b>					
CRCW MODEL	0603 SIZE	5620 RESISTANCE VALUE Ω	F TOLERANCE ± % D = ± 0.5% F = ± 1% J = ± 5%, Z = 0Ω Jumper	100 TC* 50ppm 100ppm 200ppm *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.	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			

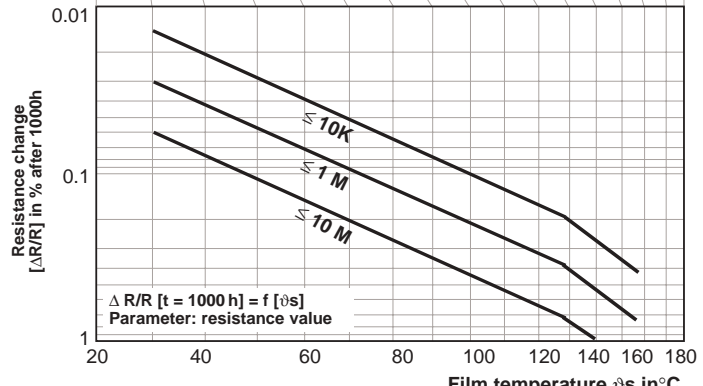
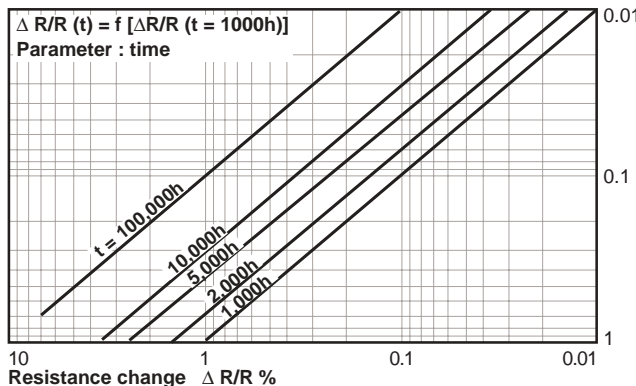
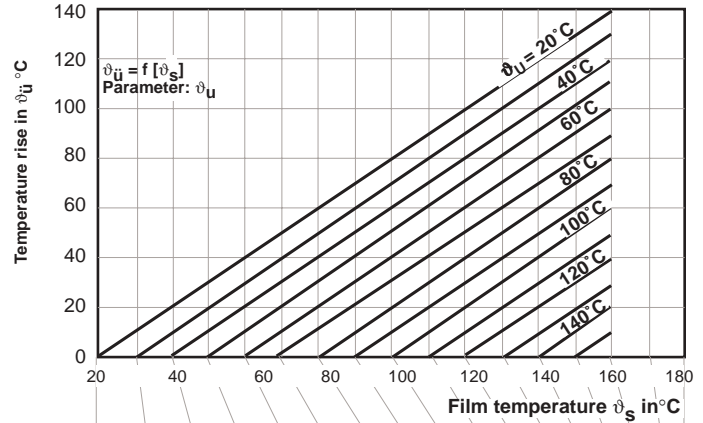
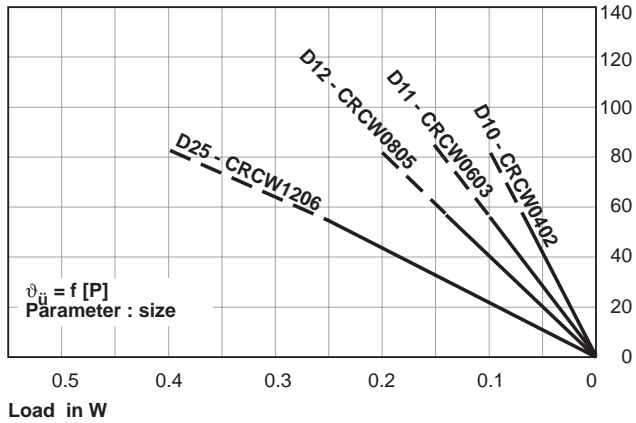


**PACKAGING**

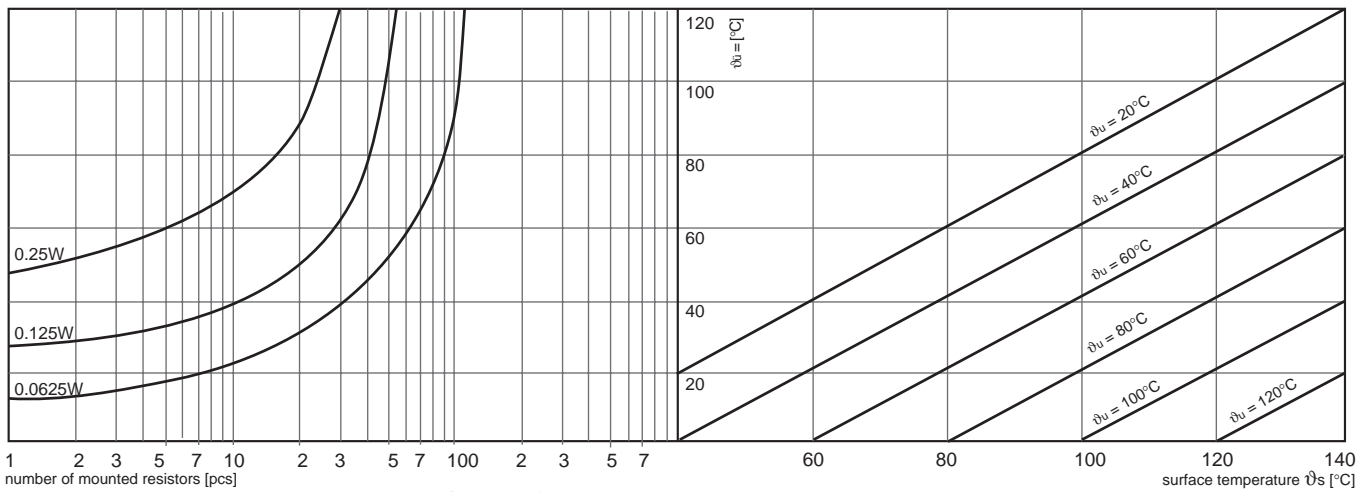
MODEL	REEL			PACKAGING CODE		BULK	
	TAPE WIDTH	DIAMETER	PIECES / REEL	BULK FEEDING MAGAZINE		PIECES / MAGAZINE	
				PAPER <sup>4)</sup>	BLISTER <sup>4)</sup>	PIECES	CODE <sup>4)</sup>
D10	8mm	180mm / 7"	10000	P0 / RT7		50000 <sup>3)</sup>	MZ / B27
CRCW0402	Papertape	330mm / 13"	50000	PZ / RF4			
D11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

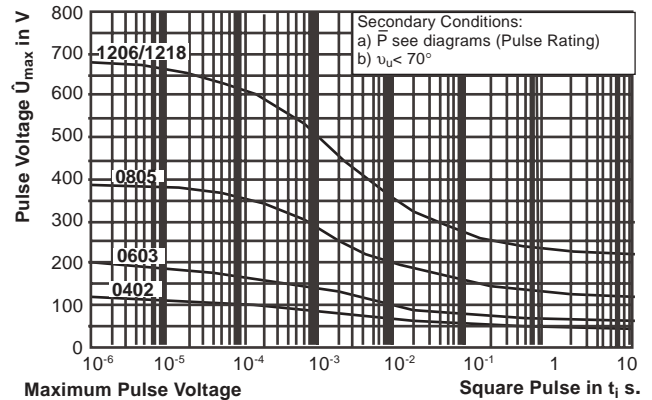
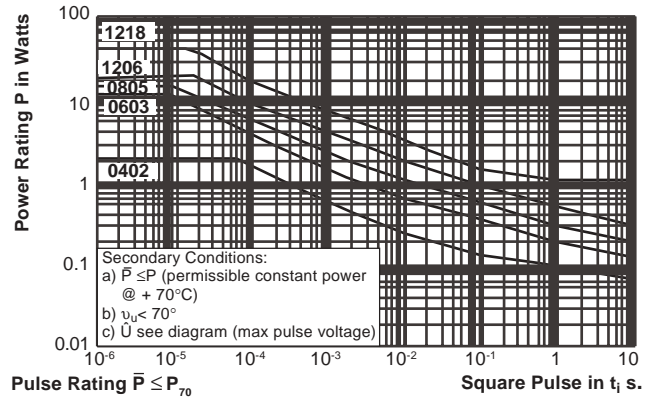
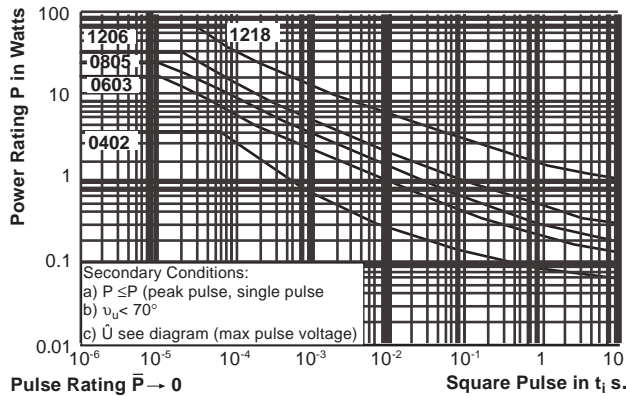




Stability nomogram typical values (for handling see general explanations)



Power rating as a function of packaging density (guideline)



PERFORMANCE				
TEST	CONDITIONS OF TEST	TEST RESULTS %		
		0402 0603	0805 1206 1210	1218 2010 2512
Endurance Test at $70^\circ\text{C}$ IEC 60115-1 4.25.1; EIA-575	1000 hours at $70^\circ\text{C}$ 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 $125^\circ\text{C}$ 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 $40^\circ\text{C}$ 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 60068-2-20; EIA-575	10 seconds at $260^\circ\text{C}$ solder bath temperature	$\leq \pm 0.25$	$\leq \pm 0.25$	$\leq \pm 0.5$

APPLICABLE SPECIFICATIONS
<ul style="list-style-type: none"> <li>CECC40000 / 40400 / 40401-004,-006,-007,-802</li> <li>EN140400 / IEC 60115 – 1</li> <li>EIA-575</li> </ul>