

Carbon Film Resistors, Flameproof



FEATURES

- Flameproof coating
- Lead (Pb)-free solder contacts
- Pure tin plating provides compatibility with lead (Pb)-free and lead containing soldering processes
- Compatible with "Restriction of the use of Hazardous Substances" (RoHS) directive 2002/95/EC (issue 2004)
- Suitable for applications with special safety requirements



STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE	POWER RATING $P_{70\text{ }^{\circ}\text{C}}$ W	LIMITING ELEMENT VOLTAGE MAX. $V_{\equiv}$	TOLERANCE %	RESISTANCE RANGE Ω	E-SERIES
LCA0204NE	0204	0.25	200	± 2 ± 5	10R - 470K 1R0 - 1M	48 24
LCA0207NE	0207	0.35	250	± 2 ± 5	1R0 - 2M2 R22 - 10M	48 24
LCA0411NE	0411	0.5	350	± 2 ± 5	1R0 - 5M1 R22 - 10M	48 24
LCA0414NE	0414	0.55	500	± 2 ± 5	1R0 - 5M1 R22 - 10M	48 24

Notes:

- Coating: Beige
- Marking: Color code, additional gold band at one end

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	0204	0207	0411	0414
Power Rating at 70 °C	W	0.25	0.35	0.5	0.55
Limiting Element Voltage ⁽¹⁾	$V_{\equiv}$	< 200	< 250	< 350	< 500
Thermal Resistance	K/W	≤ 300	≤ 220	≤ 150	≤ 140
Terminal Strength, Axial	N	> 30	> 50	> 60	> 80
Category Temperature Range	°C	- 55 to + 155			
Failure Rate	$10^{-9}/\text{h}$	< 20			
Weight	g	0.1	0.21	0.5	0.68

Note:

⁽¹⁾ Rated voltage $\sqrt{P \times R}$

PART NUMBER AND PRODUCT DESCRIPTION

PART NUMBER: LCA0204C02401GD500

L	C	A	0	2	0	4	C	0	2	4	0	1	G	D	5	0	0
MODEL/SIZE	SPECIAL CHARACTER		TCR		VALUE				TOLERANCE		PACKAGING ⁽¹⁾		SPECIAL				
LCA0204 LCA0207 LCA0411 LCA0414	C = NE (Non-flammable)		0 = Neutral See diagram		3 digit value 1 digit multiplier MULTIPLIER 7 = *10 ⁻³ 8 = *10 ⁻² 9 = *10 ⁻¹ 0 = *10 ⁰ 1 = *10 ¹ 2 = *10 ² 3 = *10 ³ 4 = *10 ⁴ 5 = *10 ⁵ 6 = *10 ⁶				G = ± 2 % J = ± 5 %		12 = A2 (G26) 22 = A2 (G53) 25 = A5 21 = A1 (G53) 41 = A1 (G73) D5 = R5 DE = RE F2 = R2		Up to 2 digits 00 = Standard				

PRODUCT DESCRIPTION: LCA0204NE 2K4 2% R5

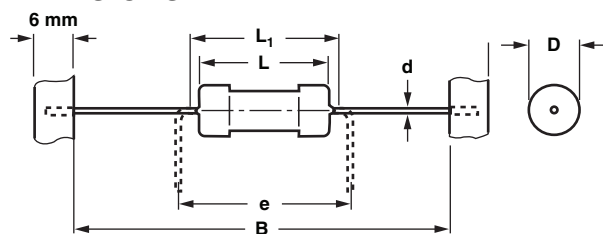
LCA0204NE MODEL LCA0204NE LCA0207NE LCA0411NE LCA0414NE	2K4 RESISTANCE VALUE 220K = 220 k Ω 10R = 10 Ω	2% TOLERANCE $\pm 2\%$ $\pm 5\%$	R5 PACKAGING (1) A2 (G26) A2 (G53) A5 A1 (G53) A1 (G73) R5 RE R2
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Notes:

(1) Please refer to table PACKAGING.

- The PART NUMBER shown above is to facilitate the unified part numbering system for ordering products.

DIMENSIONS



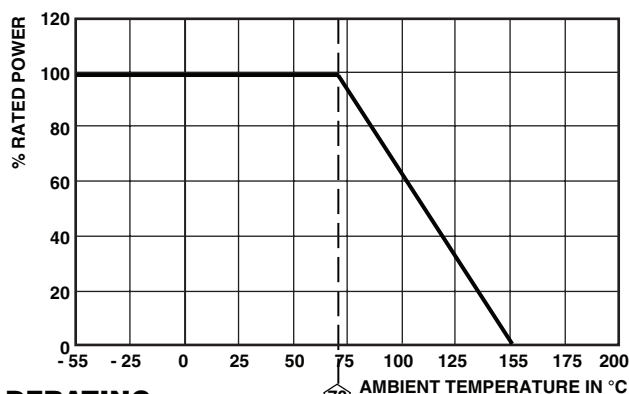
Notes:

- Taping in acc. with IEC60286-1
- D and L measured in acc. with IEC60294
- d according to IEC60301

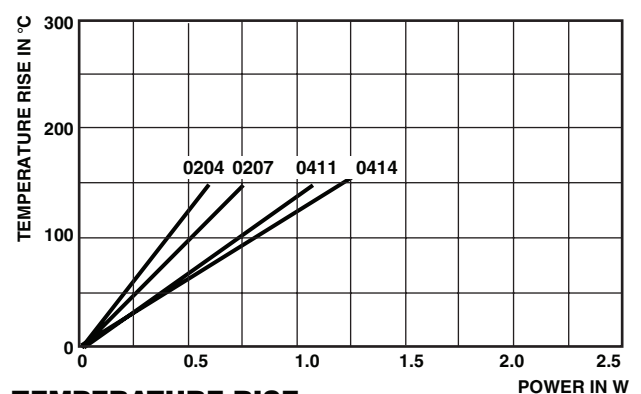
MODEL	DIMENSIONS [in millimeters]					
	D _{max.}	L	L ₁	B	d	e
LCA0204NE	1.6 - 0.3	3.6 - 0.4	4.0	53 $\pm$ 1 (2)	0.5	5.0
LCA0207NE	2.3 - 0.3	6.1 - 0.5	8.1	53 $\pm$ 1 (2)	0.6	7.5
LCA0411NE	3.5 - 0.3	10.5 - 0.6	12.5	53 $\pm$ 1 (3)	0.7	12.5
LCA0414NE	3.8 - 0.3	12.2 - 0.7	14.2	53 $\pm$ 1 (3)	0.8	15.0

Notes:

- (2) Also available in 26 mm tape spacing
- (3) Also available in 73 mm spacing



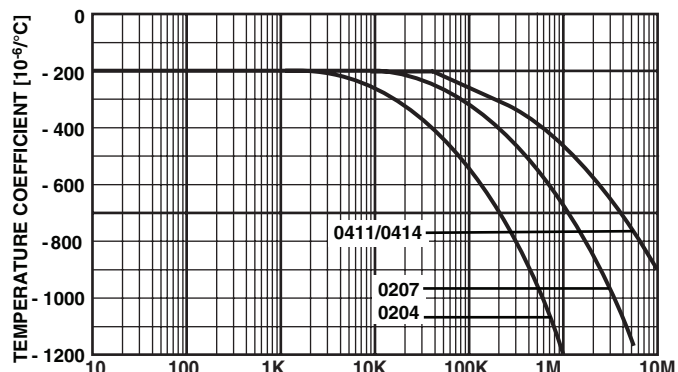
DERATING



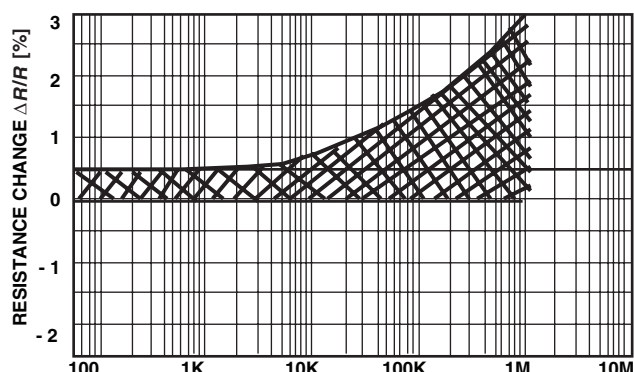
TEMPERATURE RISE

PACKAGING

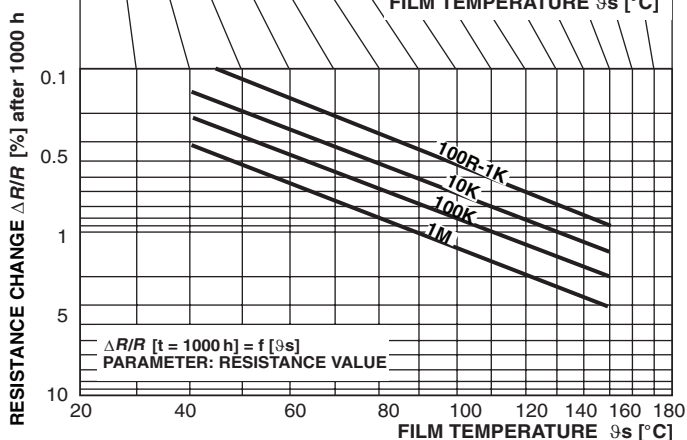
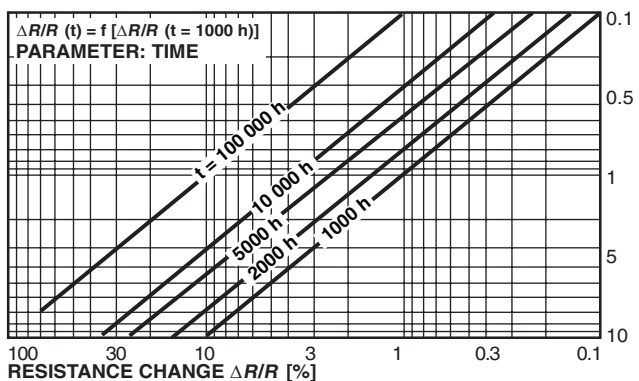
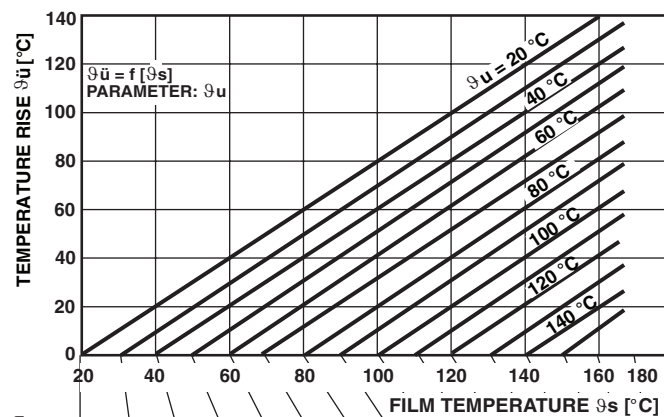
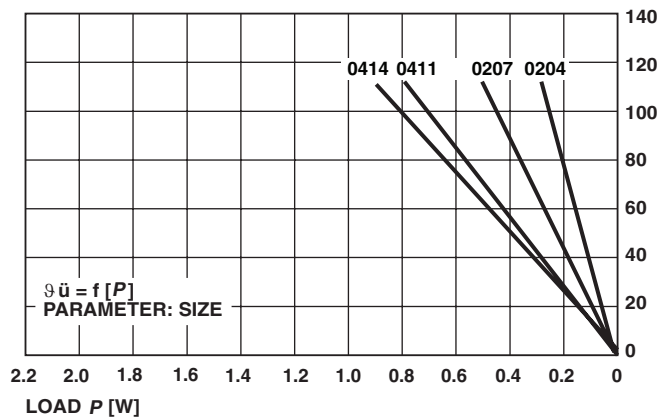
MODEL	REEL			BOX		
	PIECES/REEL	CODE	MIN. ORDER QTY PACKAGING UNITS	PIECES/BOX	CODE	MIN. ORDER QTY PACKAGING UNITS
LCA0204NE	5000	R5	1	5000/2000	A5/A2	1
LCA0207NE	5000	R5	1	5000/2000	A5/A2	1
LCA0411NE	2500	RE	1	1000	A1	1
LCA0414NE	2000	R2	1	1000	A1	1

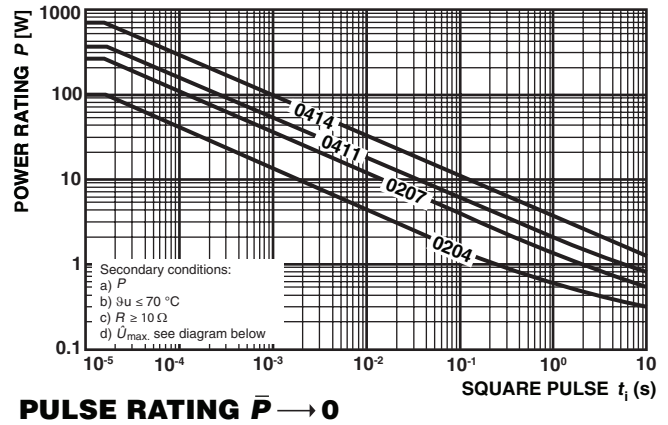
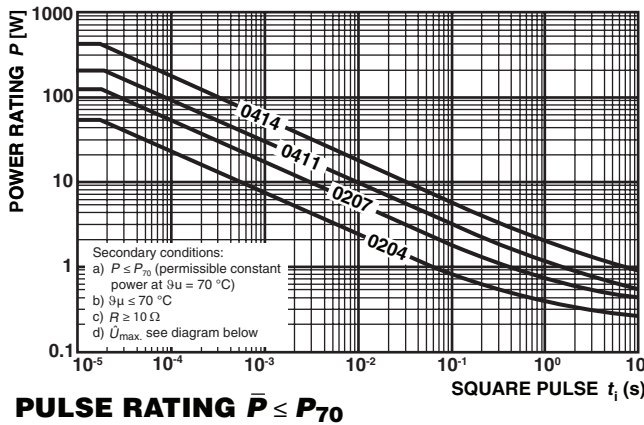
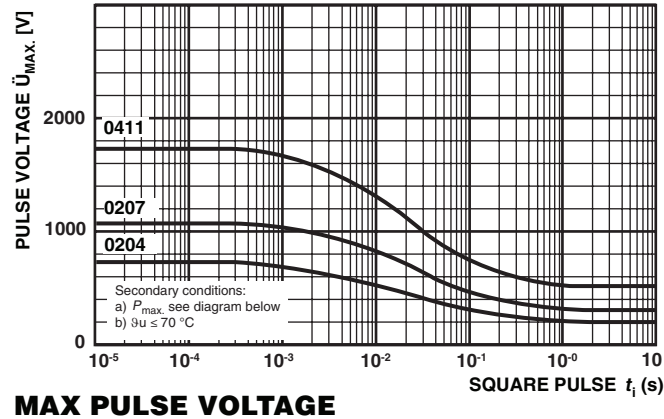
**TEMPERATURE COEFFICIENT**

(mean value) between - 25... + 125 °C deviation ± 25 %

**ENDURANCE**

at upper category temperature, 155 °C 1000 h

STABILITY NOMOGRAM, TYPICAL VALUES (For handling see General Information)



PERFORMANCE		
TEST	CONDITIONS OF TEST	REQUIREMENTS ⁽¹⁾
Endurance at 70 °C IEC 60115-1 4.25.1	1000 h at 70 °C, 1.5 h ON, 0.5 h OFF 8000 h at 70 °C, 1.5 h ON, 0.5 h OFF	$\leq \pm 1.5 \%$ $\leq \pm 4.0 \%$
Endurance at UCT IEC 60115-1 4.25.3	1000 h at 155 °C, without load 8000 h at 155 °C, without load	$\leq \pm 3.0 \%$ $\leq \pm 8.0 \%$
Overload Test IEC 60115-1 4.13	2.5 x rated power or twice the limiting element voltage, 2 s size ≤ 0207 ; 5 s for sizes ≥ 0309	$\leq \pm 0.5 \%$
Thermal Shock IEC 60115-1 4.19, IEC 60068-2-14	Rapid change between upper and lower category temperature	$\leq \pm 0.25 \%$
Climatic Sequence IEC 60115-1 4.23	Dry heat, damp heat cyclic, cold, low air pressure	$\leq \pm 1.5 \%$
Damp Heat Steady State IEC 60115-1 4.24 IEC 60068-2-3	56 days at 40 °C, 93 % relative humidity	$\leq \pm 1.5 \%$
Resistance to Soldering Heat IEC 60115-1 4.18, IEC 60068-2-20	10 s at 260 °C solder bath temperature	$\leq \pm 0.25 \%$
Robustness of Terminations IEC 60115-1 4.16, IEC 60068-2-21	Tensile, bending and torsion	$\leq \pm 0.25 \%$
Vibration IEC 60115-1 4.22, IEC 60068-2-6	0.75 mm or 10 g 10 Hz - 500 Hz 6 h	$\leq \pm 0.25 \%$

Note:

⁽¹⁾ For ohmic values between 10 Ω and 1 M Ω



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