

Standard Carbon Film Leaded Resistors



FEATURES

- Securely bonded carbon film
- Good moisture resistance ($\Delta R_{\max.} \leq \pm 1.5 \% R$)
- Good long term stability ($\Delta R_{\max.} \leq \pm 1.5 \% R$, for 1000 h)
- Low noise (refer to graph)
- Suitable for general purpose commercial electronics and pulse load applications
- Lead (Pb)-free solder contacts
- Pure tin plating provides compatibility with lead (Pb)-free and lead containing soldering processes
- Compliant to RoHS directive 2002/95/EC



STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE	RATED DISSIPATION P_{70} W	LIMITING ELEMENT VOLTAGE $U_{\max.}$ $V_{\equiv}$	TOLERANCE $\pm \%$	RESISTANCE RANGE	E-SERIES
LCA0207	0207	0.35	300	± 2 ± 5	1 Ω to 1 M Ω 0.22 Ω to 5.1 M Ω	E24 E24
LCA0414	0414	0.6	500	± 2 ± 5	1 Ω to 1 M Ω 0.22 Ω to 10 M Ω	E24 E24

Notes

- Coating: Light blue
- Marking: Color coded. Additional blue color marking after second band

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	LCA0207	LCA0414
Rated Dissipation, P_{70}	W	0.35	0.6
Limiting Element Voltage, $U_{\max.}$ ⁽¹⁾	$V_{\equiv}$	≤ 300	≤ 500
Limiting Voltage, Short-Time	$V_{\equiv}$	500	1000
Insulation Voltage, U_{ins} (1 Min)	V	> 700	> 700
Thermal Resistance	K/W	≤ 220	≤ 140
Insulation Resistance	Ω	$\geq 10^{11}$	
Category Temperature Range	$^{\circ}\text{C}$	- 55 to + 155	
Failure Rate	$10^{-9}/\text{h}$	< 10	
Weight	g	0.21	0.68

Note

⁽¹⁾ Rated voltage $\sqrt{P \times R}$

PART NUMBER AND PRODUCT DESCRIPTION LCA-SERIES

PART NUMBER: LCA0207002401J2500

L	C	A	0	2	0	7	0	0	2	4	0	1	J	2	5	0	0
MODEL/SIZE	VARIANT		TCR		VALUE				TOLERANCE		PACKAGING (1)		SPECIAL				
LCA0207 LCA0414	0 = Neutral		0 = Neutral See diagram		3 digit value 1 digit multiplier MULTIPLIER 7 = *10 ⁻³ 2 = *10 ² 8 = *10 ⁻² 3 = *10 ³ 9 = *10 ⁻¹ 4 = *10 ⁴ 0 = *10 ⁰ 5 = *10 ⁵ 1 = *10 ¹ 6 = *10 ⁶				G = ± 2 % J = ± 5 %		25 = A5 22 = A2 (G53) 21 = A1 D5 = R5 D2 = R2		Up to 2 digits 00 = Standard				
PRODUCT DESCRIPTION: LCA0207 2K4 5 % A5																	
LCA0207		2K4		5 %		A5											
MODEL		RESISTANCE VALUE		TOLERANCE		PACKAGING (1)											
LCA0207 LCA0414		220K = 220 kΩ 10R = 10 Ω		± 2 % ± 5 %		A5 A1 A2		R5 R2									

Notes

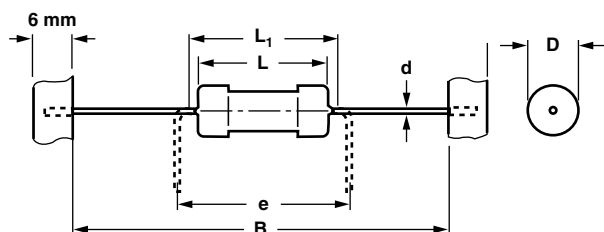
(1) Please refer to table PACKAGING

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

PACKAGING

MODEL	REEL			BOX		
	PIECES/REEL	CODE	MIN. ORDER QTY PACKAGING UNITS	PIECES/BOX	CODE	MIN. ORDER QTY PACKAGING UNITS
LCA0207	5000	R5	1	5000 2000	A5 A2	1 1
LCA0414	2000	R2	1	1000	A1	1

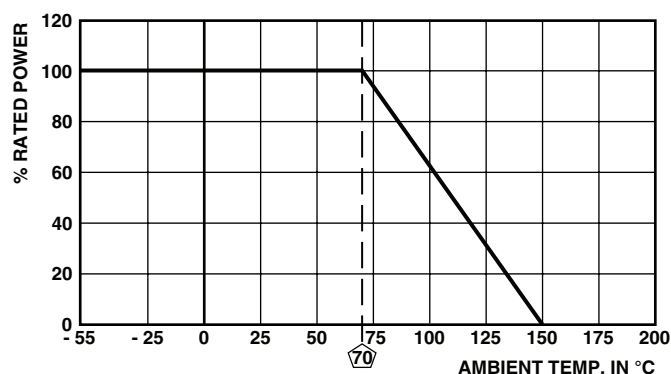
DIMENSIONS



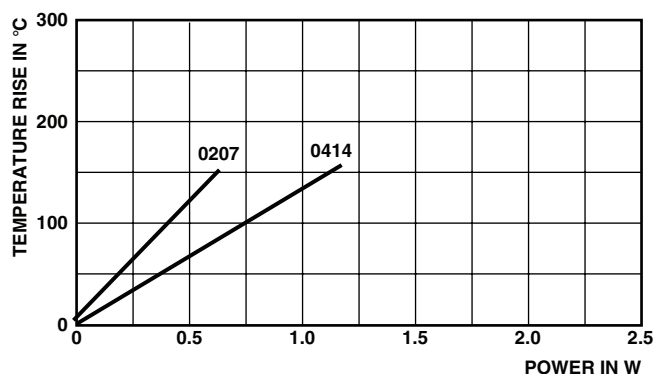
MODEL	DIMENSIONS in millimeters					
	D _{max.}	L	L ₁	B	d	e
LCA0207	2.4 - 0.3	6.1 - 0.5	8.1	53 ± 1	0.6	7.5
LCA0414	4.2 - 0.5	12.2 - 0.7	14.2	53 ± 1	0.8	15.0

Notes

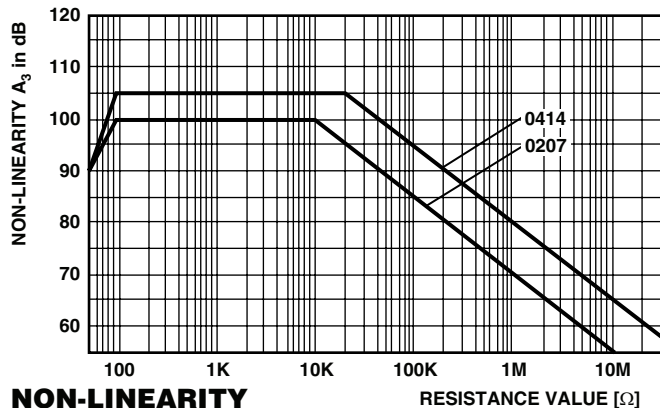
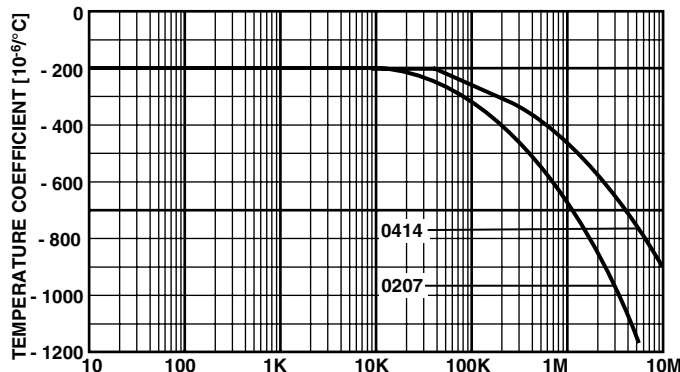
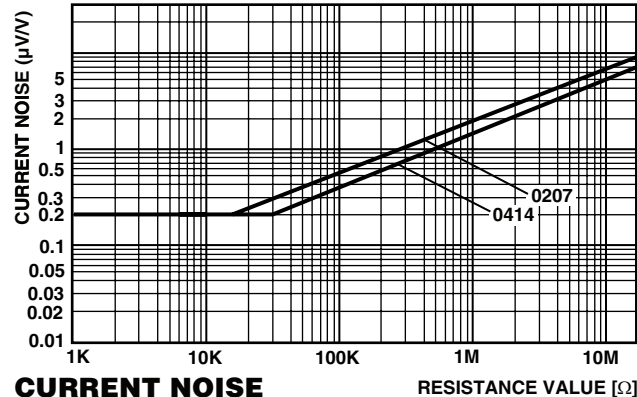
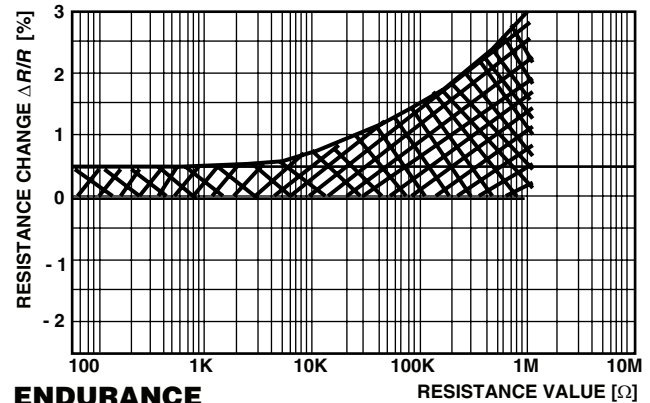
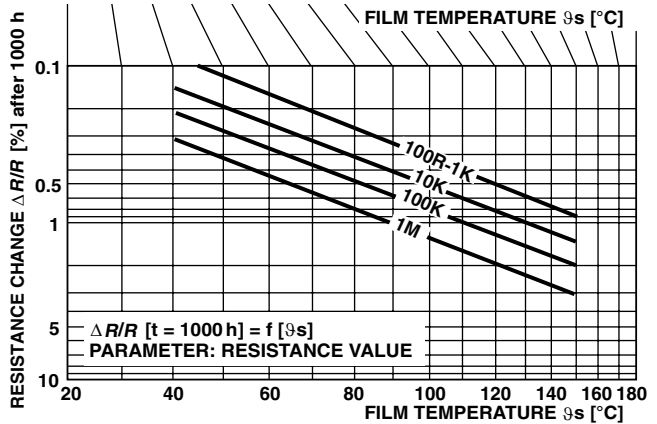
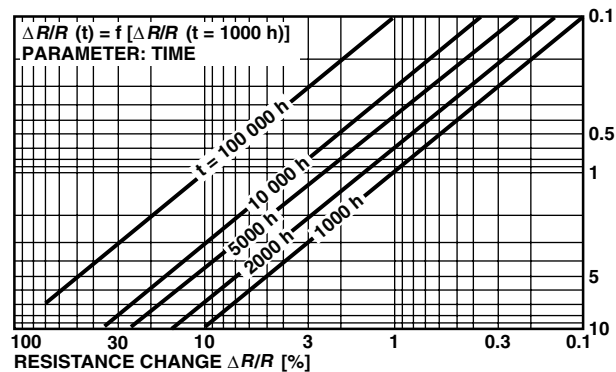
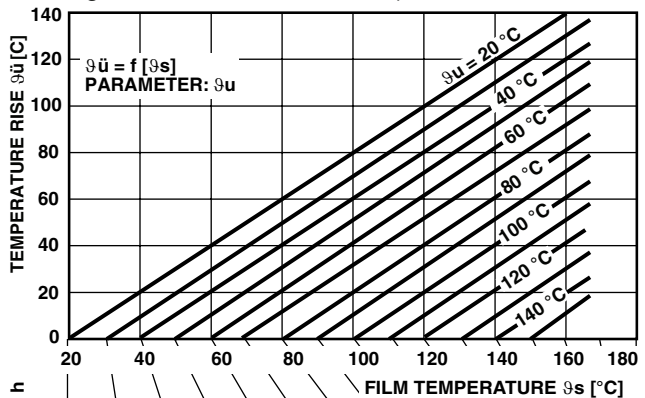
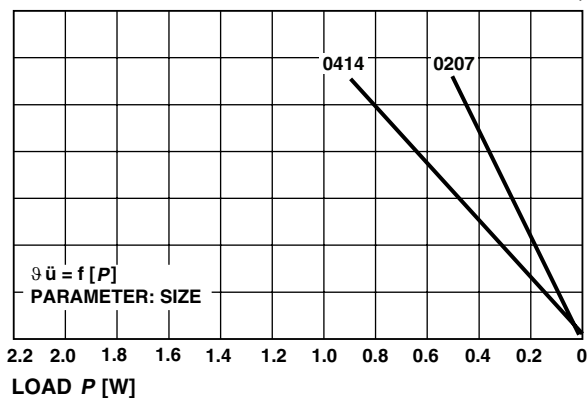
- Taping in acc. with IEC 60286-1
- D and L measured in acc. with IEC 60294
- d according to IEC 60301

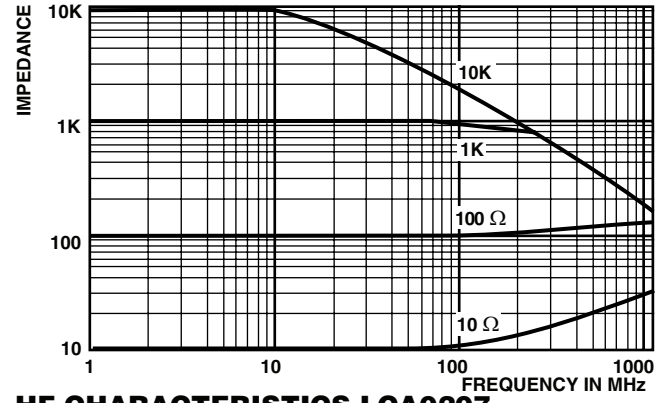
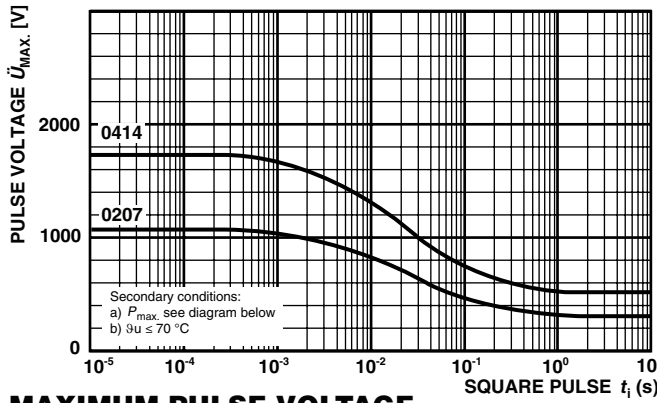
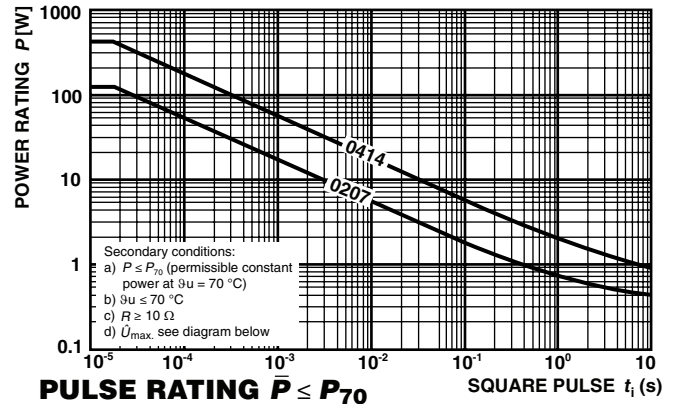
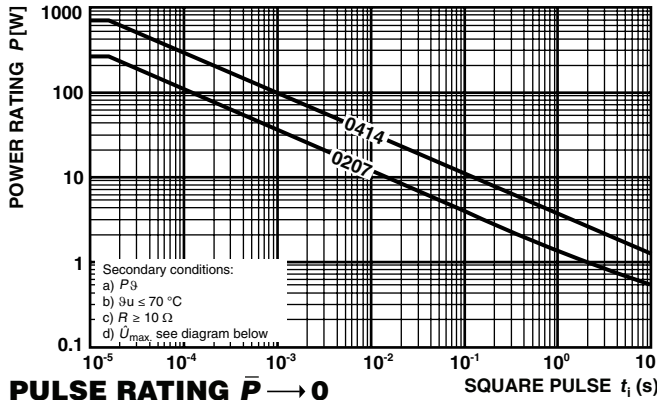


DERATING



TEMPERATURE RISE

**NON-LINEARITY****TEMPERATURE COEFFICIENT**(mean value) between -25°C to $+125^{\circ}\text{C}$ deviation $\pm 25\%$ **CURRENT NOISE****ENDURANCE**at upper category temperature, 155°C 1000 h**STABILITY NOMOGRAM, TYPICAL VALUES** (For handling see General Information)



PERFORMANCE CHARACTERISTICS

TEST	CONDITIONS OF TEST	REQUIREMENTS ($\Delta R/R$) ⁽¹⁾
Endurance Test 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 for size 0207; 5 s for size 0414	$\leq \pm 0.5 \%$
Thermal Shock IEC 60115-1, 4.19	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, 4.24	56 days; 40 °C; 90 % to 95 % RH; loaded with 0.01 P_{70}	$\leq \pm 1.5 \%$
Resistance to Soldering Heat IEC 60115-1, 4.18	10 s at 260 °C solder bath temperature	$\leq \pm 0.25 \%$
Robustness of Terminations IEC 60115-1, 4.16	Tensile, bending and torsion	$\leq \pm 0.25 \%$
Vibration IEC 60115-1, 4.22	Frequency 10 Hz to 500 Hz; displacement 1.5 mm or acceleration 10 g; three directions; 6 h	$\leq \pm 0.25 \%$

Note

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

APPLICABLE SPECIFICATIONS

- CECC 40101-806
- EN 140100; EN 60115-1



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