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

Pb-free RoHS COMPLIANT

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE	RATED DISSIPATION P_{70} W	LIMITING ELEMENT VOLTAGE $U_{max.}$ V≅	TOLERANCE ± %	RESISTANCE RANGE	E-SERIES
LCA0207	0207	0.35	300	± 2 ± 5	1 Ω to 1 MΩ 0.22 Ω to 5.1 MΩ	E24 E24
LCA0414	0414	0.6	500	± 2 ± 5	1 Ω to 1 MΩ 0.22 Ω to 10 MΩ	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≅	≤ 300	≤ 500
Limiting Voltage, Short-Time	V≅	500	1000
Insulation Voltage, U_{ins} (1 Min)	V	> 700	> 700
Thermal Resistance	K/W	≤ 220	≤ 140
Insulation Resistance	Ω	≥ 10^{11}	
Category Temperature Range	°C	- 55 to + 155	
Failure Rate	10^{-9}/h	< 10	
Weight	g	0.21	0.68

Note
(1) Rated voltage $\sqrt{P \times R}$

For technical questions, contact: filmresistorsleaded@vishay.com
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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** **R5** **A1** **R2** **A2**

Notes

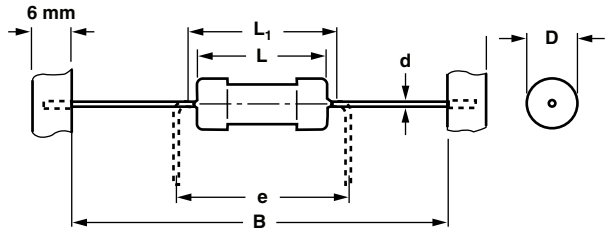
(1) Please refer to table PACKAGING

- 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

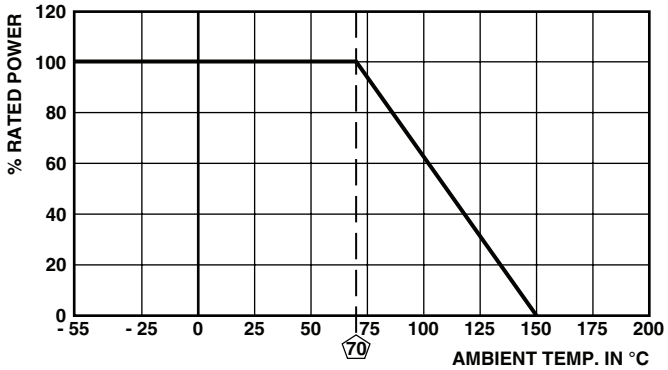
DIMENSIONS



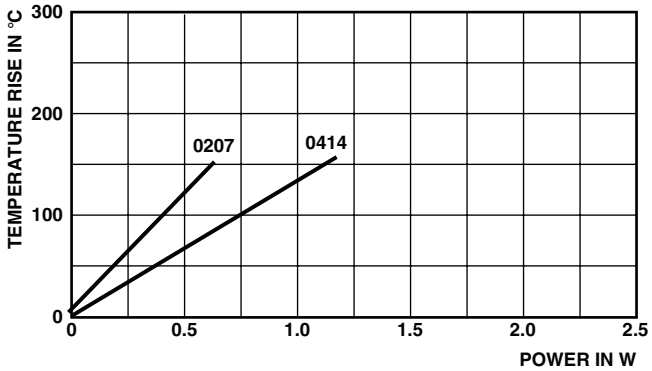
MODEL	DIMENSIONS in millimeters					
	$D_{max.}$	L	L_1	B	d	e
LCA0207	2.4 - 0.3	6.1 - 0.5	8.1	53 ± 1	0.6	7.5
LCA0414	4.2 - 0.5	12.2 - 0.7	14.2	53 ± 1	0.8	15.0

Notes

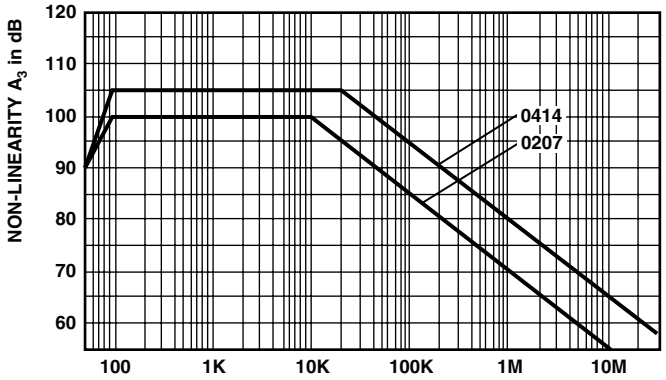
- Taping in acc. with IEC 60286-1
- D and L measured in acc. with IEC 60294
- d according to IEC 60301



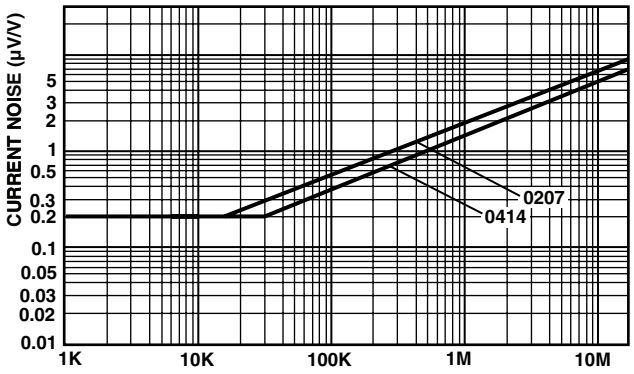
DERATING



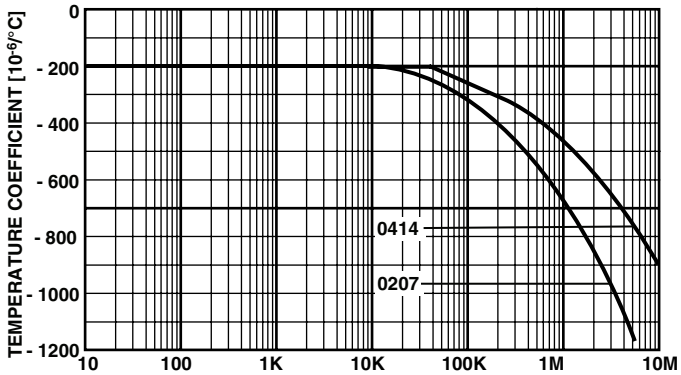
TEMPERATURE RISE



NON-LINEARITY

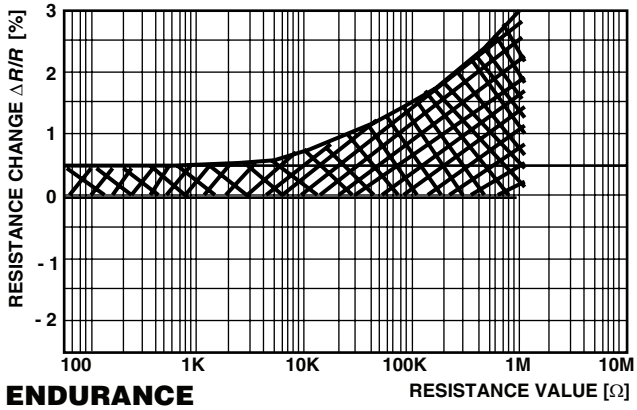


CURRENT NOISE



TEMPERATURE COEFFICIENT

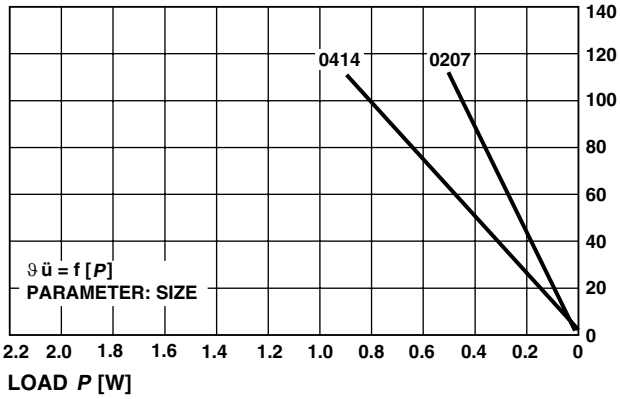
(mean value) between - 25 °C to + 125 °C deviation ± 25 %

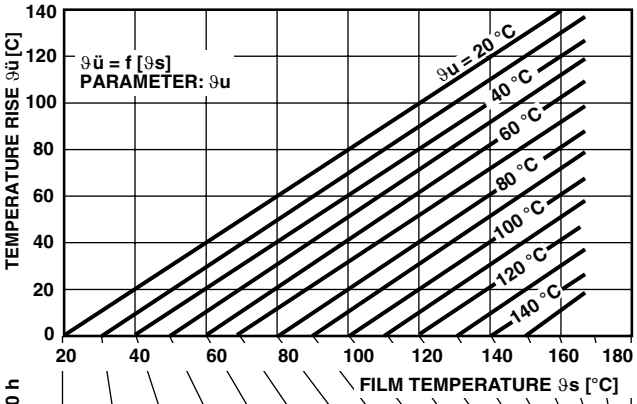


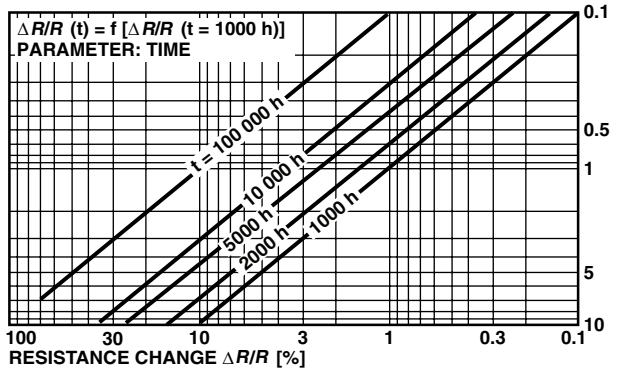
ENDURANCE

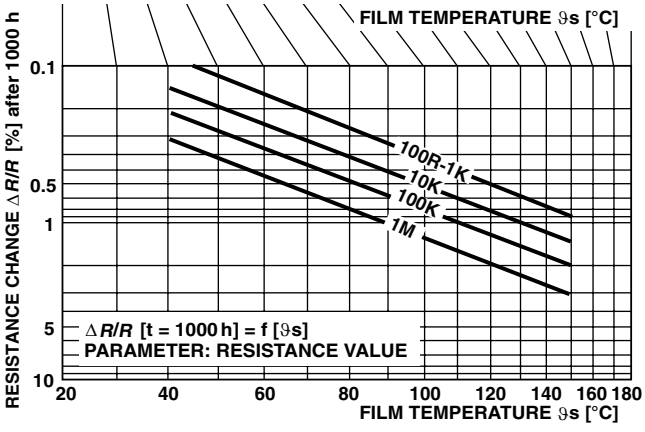
at upper category temperature, 155 °C 1000 h

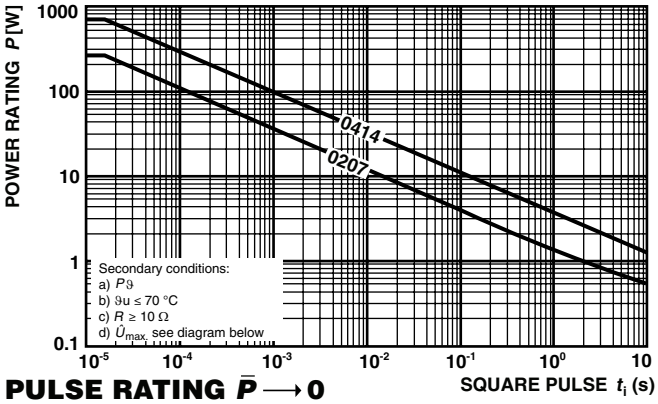
STABILITY NOMOGRAM, TYPICAL VALUES (For handling see General Information)



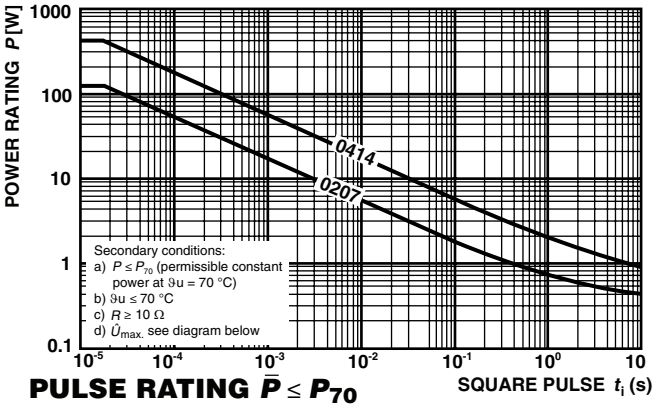




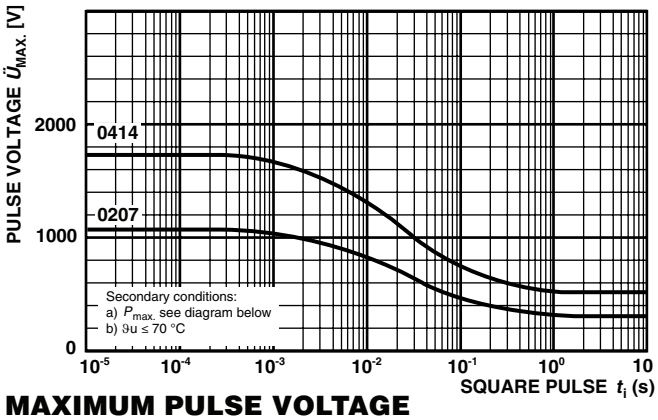




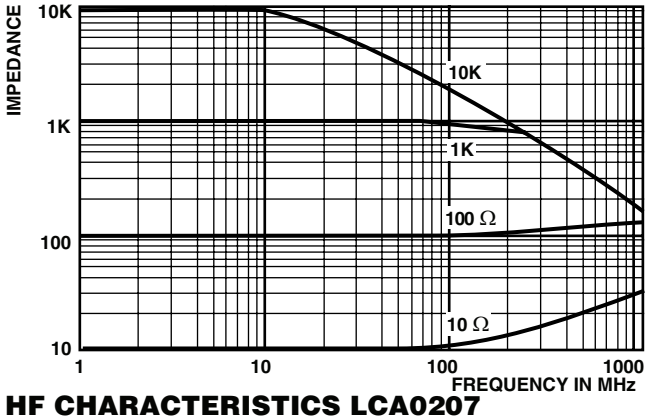
PULSE RATING $\bar{P} \longrightarrow 0$



PULSE RATING $\bar{P} \leq P_{70}$



MAXIMUM PULSE VOLTAGE



HF CHARACTERISTICS LCA0207

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	≤ ± 1.5 % ≤ ± 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	≤ ± 3.0 % ≤ ± 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	≤ ± 0.5 %
Thermal Shock IEC 60115-1, 4.19	Rapid change between upper and lower category temperature	≤ ± 0.25 %
Climatic Sequence IEC 60115-1, 4.23	Dry heat, damp heat cyclic, cold, low air pressure	≤ ± 1.5 %
Damp Heat Steady State IEC 60115, 4.24	56 days; 40 °C; 90 % to 95 % RH; loaded with 0.01 P_{70}	≤ ± 1.5 %
Resistance to Soldering Heat IEC 60115-1, 4.18	10 s at 260 °C solder bath temperature	≤ ± 0.25 %
Robustness of Terminations IEC 60115-1, 4.16	Tensile, bending and torsion	≤ ± 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	≤ ± 0.25 %

Note

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

APPLICABLE SPECIFICATIONS

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

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