

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
- Material categorization: For definitions of compliance please see www.vishay.com/doc?999912


**RoHS
COMPLIANT**

STANDARD ELECTRICAL SPECIFICATIONS

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

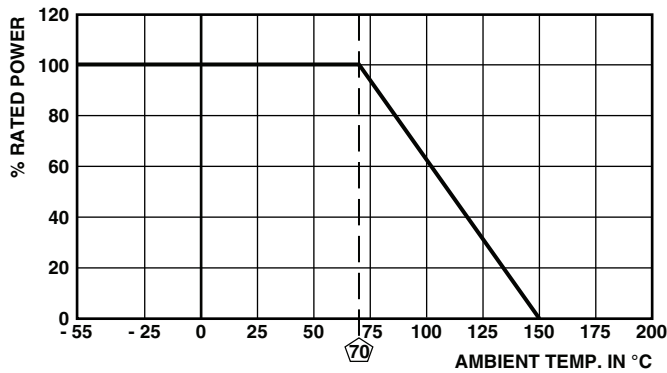
- The PART NUMBER shown above is to facilitate the unified part numbering system for ordering products.
- ⁽¹⁾ Please refer to table PACKAGING.

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
LCA0414	2000	R2	1	1000	A1	1

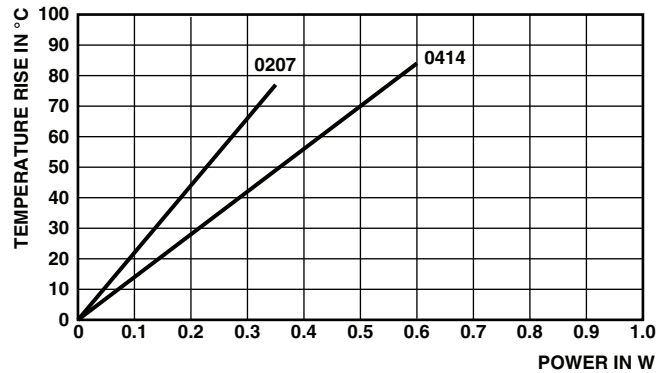
DIMENSIONS in millimeters						
MODEL	D _{max.}	L	L ₁	B	d	e
LCA0207	2.4 - 0.3	6.1 - 0.5	8.1	53 ± 1	0.6	7.5
LCA0414	4.2 - 0.5	12.2 - 0.7	14.2	53 ± 1	0.8	15.0

Notes

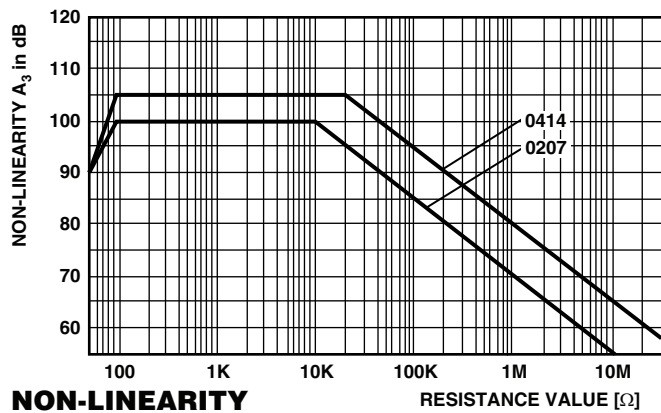
- Taping in according with IEC 60286-1.
- D and L measured in according with IEC 60294.
- d according to IEC 60301.



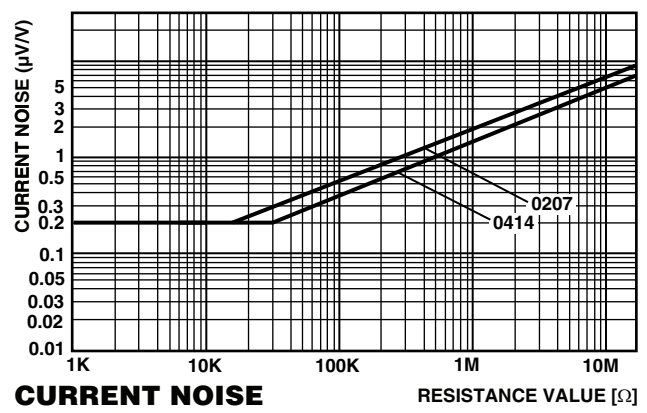
DERATING



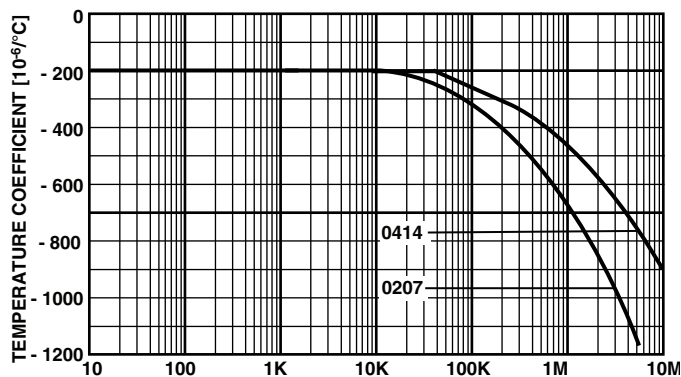
TEMPERATURE RISE



NON-LINEARITY

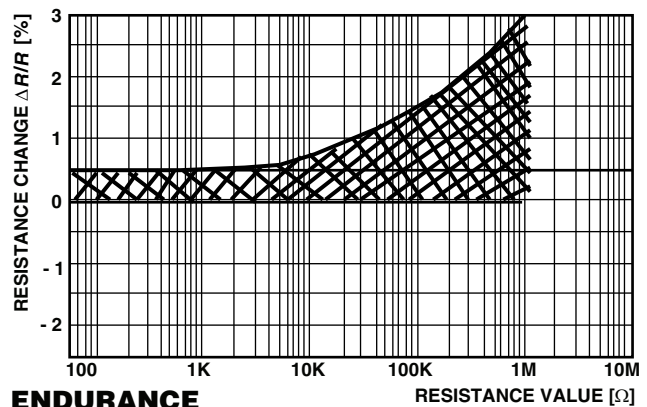


CURRENT NOISE



TEMPERATURE COEFFICIENT

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

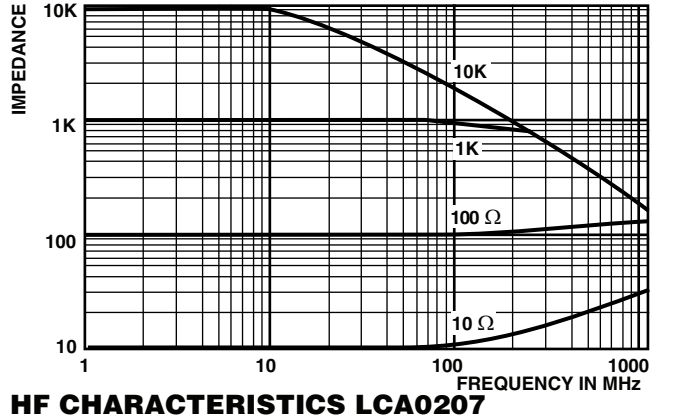
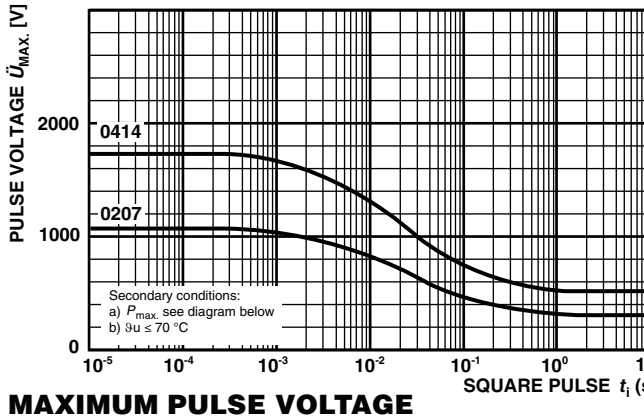
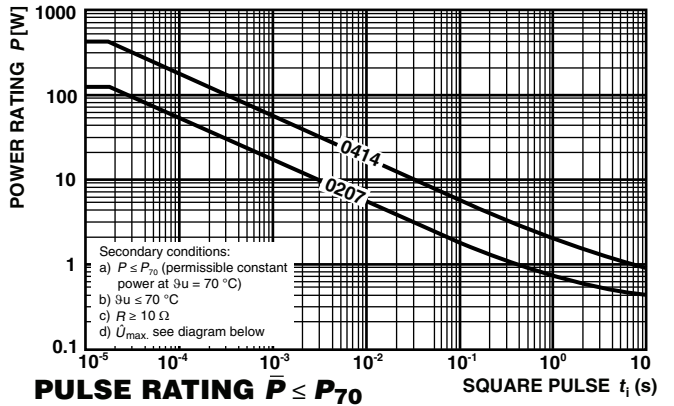
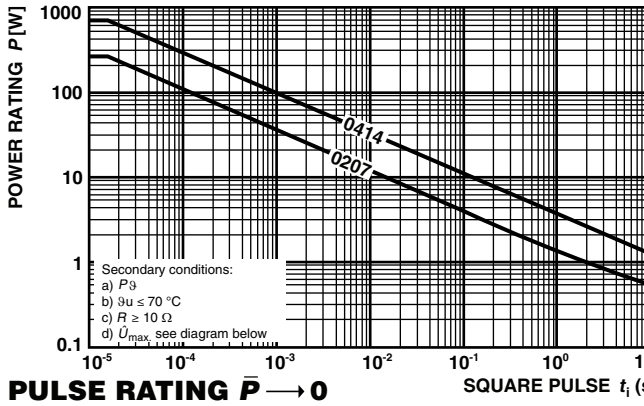
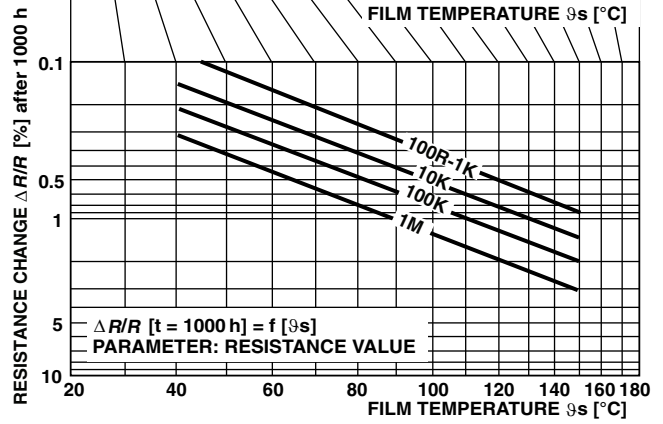
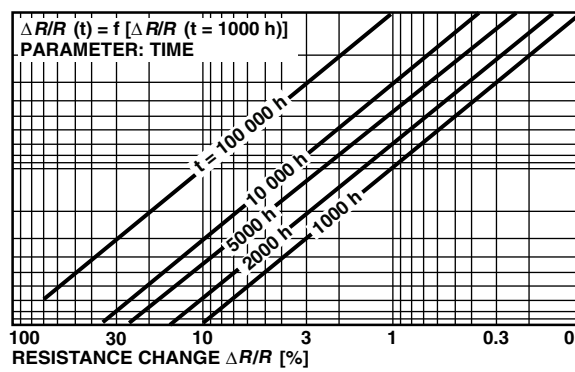
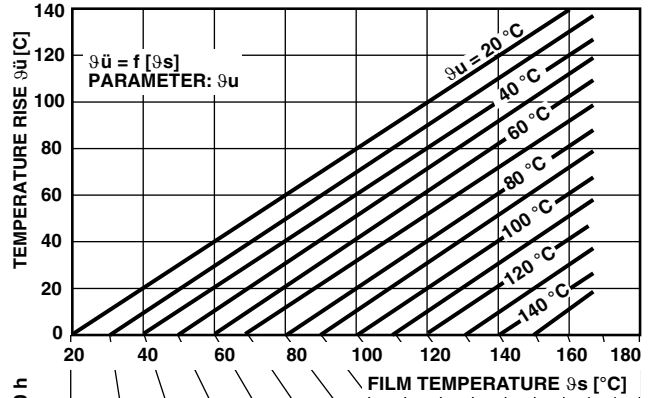
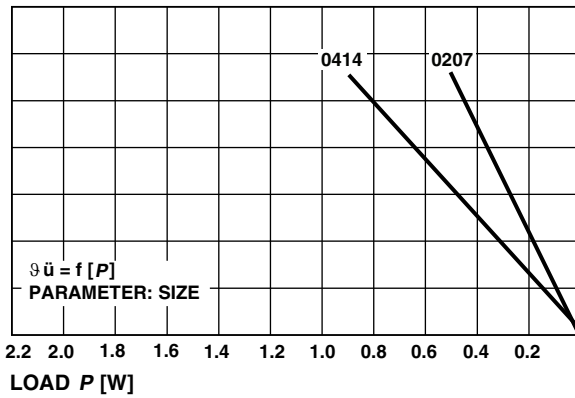


ENDURANCE

at upper category temperature, 155 °C 1000 h



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





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
<ul style="list-style-type: none"> • CECC 40101-806 • EN 140100; EN 60115-1



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