Vishay Draloric

LCA...

RoHS

COMPLIANT

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## **Standard Carbon Film Leaded Resistors**



- Securely bonded carbon film
- Good moisture resistance ( $\Delta R_{max.} \le \pm 1.5 \% R$ )
- Good long term stability ( $\Delta R_{max.} \le \pm 1.5 \% R$ , 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 <u>www.vishay.com/doc?99912</u>

STANDARD ELECTRICAL SPECIFICATIONS						
MODEL	SIZE	POWER RATING P <sub>70</sub> W	LIMITING ELEMENT VOLTAGE U <sub>max.</sub> V≅	TOLERANCE ± %	RESISTANCE RANGE Ω	E-SERIES
	0207	0.25	300	2	1 to 1M	E24
LOAUZUT	0207	0.55	500	5	0.22 to 5.1M	L24
1 CA0414	0414	0.6	500	2	1 to 1M	E24
LUA0414	0414	0.0	500	5	0.22 to 10M	L24

Notes

Coating: Light blue.

• Marking: Color coded. Additional blue color marking after second band.

TECHNICAL SPECIFICATIONS					
PARAMETER	UNIT	LCA0207	LCA0414		
Rated dissipation, P <sub>70</sub>	W	0.35	0.6		
Limiting element voltage, $U_{\text{max.}}$ <sup>(1)</sup>	V≅	≤ 300	≤ 500		
Limiting voltage, short-time	V≅	500	1000		
Insulation voltage, U <sub>ins</sub> (1 min)	V	> 700	> 700		
Thermal resistance	K/W	≤ 220	≤ <b>1</b> 40		
Insulation resistance	Ω	≥ 10 <sup>11</sup>			
Category temperature range	°C	- 55 to + 155			
Failure rate	10 <sup>-9</sup> /h	< 10			
Weight	g	0.21	0.68		

Note

<sup>(1)</sup> Rated voltage  $\sqrt{P \times R}$ .

1 For technical questions, contact: <u>filmresistorsleaded@vishay.com</u> Document Number: 20135

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### Notes

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

<sup>(1)</sup> 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
	5000	D5	1	5000	A5	1
LUAUZUI	5000	пJ	Ι	2000	A2	I
LCA0414	2000	R2	1	1000	A1	1

DIMENSIONS in millimeters						
$\begin{array}{c} 6 \text{ mm} \\ \hline \\ $						
MODEL	D <sub>max.</sub>	L	L <sub>1</sub>	В	d	е
LCA0207	2.4 <sub>- 0.3</sub>	6.1 <sub>- 0.5</sub>	8.1	53 ± 1	0.6	7.5
LCA0414	4.2 <sub>- 0.5</sub>	12.2 <sub>- 0.7</sub>	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.

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3 For technical questions, contact: <u>filmresistorsleaded@vishay.com</u> Document Number: 20135

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#### STABILITY NOMOGRAM, TYPICAL VALUES (For handling see General Information) 140 140 <mark>ට</mark> 120 120 0414 0207 ે <mark>9ü = f [9s]</mark> PARAMETER: 9u RISE 100 100 TEMPERATURE 80 80 °C °06 60 60 ,00 40 40 9 ü = f [P] 20 20 20 PARAMETER: SIZE 00 0 n 2.2 2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2 0 40 60 80 100 120 140 160 180 20 LOAD P [W] FILM TEMPERATURE 9s [°C] [%] after 1000 h 0.1 0.1 $\Delta R/R$ (t) = f [ $\Delta R/R$ (t = 1000 h)] PARAMETER: TIMÈ 100,000 100R $\Delta R/R$ lok 0.5 0.5 100K CHANGE 1 000 1 'n 5000 0 RESISTANCE 5 5 ∆*R*/*R* [t = 1000 h] = f [ϑs] PARAMETER: RESISTANCE VALUE 10 ⊑ 20 10 ) 100 120 140 160 180 FILM TEMPERATURE 9s [°C] 100 30 10 3 RESISTANCE CHANGE △*R/R* [%] 1 0.3 0.1 40 60 80 P[W] 1000 1000 POWER RATING P[W] POWER RATING 100 100 10 10 Secondary conditions: a) $P \le P_{70}$ (permissible constant $\vartheta u = 70 \ ^{\circ}C$ ) Шī 1 1 Secondary conditio **Ì**⊞ a) $P\vartheta$ b) $\vartheta u \le 70 \degree C$ c) $R \ge 10 \Omega$ Ħ b) 9u ≤ 70 °C c) $R \ge 10 \Omega$ d) $\hat{U}_{max.}$ see diagram below d) $\hat{U}_{max.}$ see diagram below 0.1 ∟ 10<sup>-5</sup> 0.1 L 10 10-5 **10**<sup>-4</sup> 10<sup>-3</sup> 10 10<sup>-2</sup> 10 10-3 10 10 10 10 10 SQUARE PULSE t<sub>i</sub> (s) PULSE RATING $\bar{P} \leq P_{70}$ SQUARE PULSE t<sub>i</sub> (s) PULSE RATING P **→ O** PULSE VOLTAGE Ü<sub>MAX.</sub> [V] 10K IMPEDANCE 10K 1K 0414 ТП 1K 0207 **100** Ω 100 ТЩ Secondary conditions a) P<sub>max.</sub> see diagram below b) 9u ≤ 70 °C . 10 Ω 0 10 10-5 10-4 10<sup>-3</sup> 10<sup>-2</sup> 10 10 10 10 100 0 1000 FREQUENCY IN MHz SQUARE PULSE t<sub>i</sub> (s) **MAXIMUM PULSE VOLTAGE HF CHARACTERISTICS LCA0207** Revision: 05-Jun-13 Document Number: 20135 4 For technical questions, contact: filmresistorsleaded@vishay.com THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000



PERFORMANCE CHARACTERISTICS					
TEST	CONDITIONS OF TEST	REQUIREMENTS ( <u>\\\\\\\R}) (1)</u>			
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	$\begin{array}{l} \leq \pm \ 3.0 \ \% \\ \leq \pm \ 8.0 \ \% \end{array}$			
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	$\leq$ ± 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	$\leq$ ± 1.5 %			
Damp heat steady state IEC 60115, 4.24	56 days; 40 °C; 90 % to 95 % RH; loaded with 0.01 P <sub>70</sub>	$\leq$ ± 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  $\Omega$  and 1 M $\Omega.$ 

### **APPLICABLE SPECIFICATIONS**

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



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