Axial Vitreous Wirewound Resistors

FEATURES

- Complete welded construction
- Vitreous coating
- Enhanced humidity protection
- TCR 100 ppm/K to 180 ppm/K
- CECC 40201-801 approved version available
- 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?99912

RoHS COMPLIANT

HALOGEN FREE

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE	POWER RATING W $P_{40\,°C}$	LIMITING VOLTAGE V	RESISTANCE RANGE (1) Ω TCR = 100 ppm/K to 180 ppm/K	TOLERANCE (2) ± %
G202	0414	4	200	0.10 to 10.0K	2, 5, 10
G204	0719	7	350	0.10 to 39.0K	
G206	0933	13	500	0.15 to 68.0K	
G207	0947	17	650	0.20 to 120K	

Notes

(1) Resistance value to be selected for ± 10 % tolerance from E12 and for ± 5 % and ± 2 % from E24

(2) 1 % (special version) on request

PART NUMBER AND PRODUCT DESCRIPTION

Part Number: G240719339023J4B000

G	2	4	0	7	1	9	3	3	9	0	2	J	4	B	0	0	0

MODEL	TCR/MATERIAL	VALUE	TOLERANCE CODE	PACKAGING CODE	SPECIAL
G220414 = G202 **G240719** = G204 **G260933** = G206 **G270947** = G207	**3** = Class 3 WM 110 100 to 180 ppm/K	**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** = $*10^{3}$	**F** = ± 1.0 % (special version) **G** = ± 2.0 % **J** = ± 5.0 % **K** = ± 10.0 %	See Packaging table	**000** = Standard **3 digit code** = Special version (contact marketing)

Product Description: G204 39K 5 % AB G73

G204	39K	5 %	AB G73
MODEL	VALUE	TOLERANCE CODE	PACKAGING DESCRIPTION (3)

ELECTRICAL SPECIFICATIONS FOR PARTS QUALIFIED ACCORDING TO CECC 40201-801

MODEL	STYLE ACC. TO CECC40201-801	POWER RATING W $P_{25\,°C}$	POWER RATING W $P_{70\,°C}$	LIMITING VOLTAGE V	RESISTANCE RANGE Ω TCR = 100 ppm/K to 180 ppm/K	TOLERANCE (1) ± %
G202	FDG	3.5	3.0	100	0R10 to 10K0	5
						2
G204	FDK	6.5	5.5	200	0R10 to 39K0	5
					0R10 to 22K0	2
G206	FDP	11.5	10	350	0R15 to 68K0	5
					0R15 to 33K0	2

Note

(1) Resistance value to be selected for ± 5 % and ± 2 % from E24

PART NUMBER AND PRODUCT DESCRIPTION FOR CECC 40201-801 QUALIFIED PART

Part Number: FDPCEE031809JLA000

F	D	P	C	E	E	0	3	1	8	0	9	J	L	A	0	0	0

MODEL	TCR/MATERIAL	VALUE	TOLERANCE CODE	PACKAGING CODE	SPECIAL
FDGCEE0 = G202 (2) **FDKCEE0** = G204 (2) **FDPCEE0** = G206 (2) **FDGCEE7** = G202 (3) **FDKCEE7** = G204 (3) **FDPCEE7** = G206 (3)	**3** = Class 3 WM 110 100 to 180 ppm/K	**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** = $*10^{3}$	**G** = ± 2.0 % **J** = ± 5.0 %	See Packaging table	**000** = Standard

Product Description: G206 18R 5 % LA CECC 40201-801S FDP E0

G206	18R	5 %	LA	CECC 40201-801S FDP E0
MODEL	VALUE	TOLERANCE CODE	PACKAGING DESCRIPTION	VARIANT

Notes

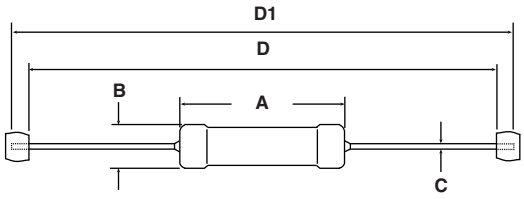
(2) E0 = Without failure rate level.

(3) E7 = With failure rate level.

PACKAGING TABLE

MODEL	TAPE/LEAD LENGTH (mm)	AMMO PACK			REEL			LOOSE		
		PCS	PACKAGING CODE	PACKAGING DESCRIPTION	PCS	PACKAGING CODE	PACKAGING DESCRIPTION	PCS	PACKAGING CODE	PACKAGING DESCRIPTION
G202	53	500	2C	AC G53	1000	D1	R1 R53			
	73	500	4C	AC G73	1000	F1	R1 R73			
G204	73	250	4B	AB G73	500	FC	RC R73			
	88	250	7B	AB G88	500	IC	RC R88			
		250	8B	AB G88 CL						
	98							50	LD	LD
								200	LJ	LJ
G206	107							100	LA	LA
G207	120							100	LA	LA

DIMENSIONS



For packaging dimensions see separate packaging dimensions page.

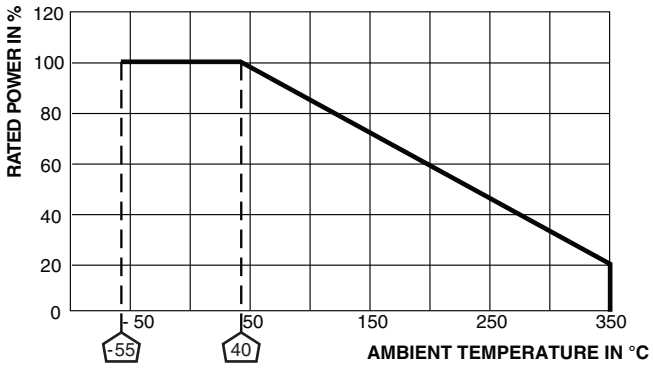
MODEL	DIMENSIONS in millimeters [inches]					MASS (g)
	$A_{max.}$	$B_{max.}$ (1)	C (2)	D	D1	
G202	13 [0.512]	5.7 [0.224]	0.8 [0.031]	53 ± 1 [2.087 ± 0.039]		1
G204	19.3 [0.760]	8.5 [0.335]	0.8 [0.031]	73 ± 1 [2.874 ± 0.039]		2.2
G206	32.3 [1.272]	9.8 [0.386]	0.8 [0.031]		107 ± 2 [4.213 ± 0.079]	6.5
G207	49.3 [1.941]	10.5 [0.413]	0.8 [0.031]		120 ± 2 [4.724 ± 0.079]	10

Notes

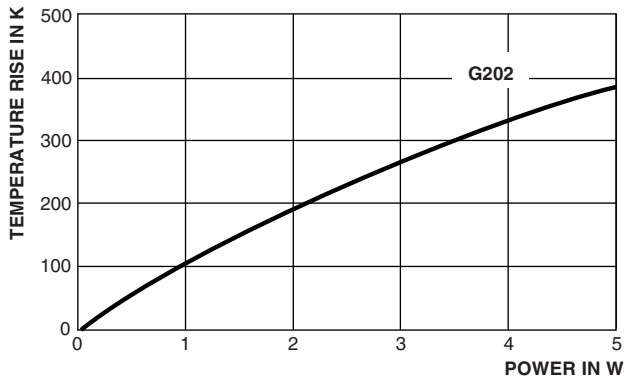
(1) The body diameter should be increased by 1 mm [0.039"] for ohmic values ≤ 10 Ω

(2) C according to IEC 60301

DERATING



TEMPERATURE RISE



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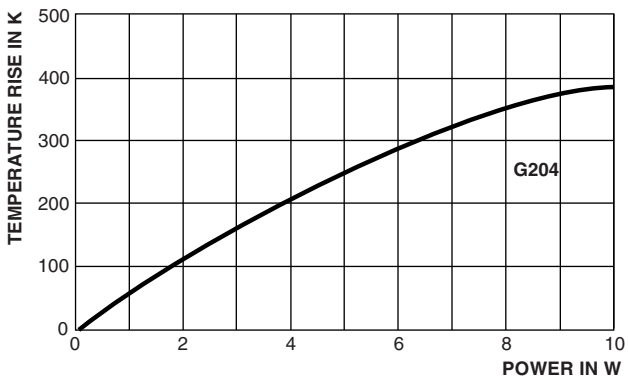

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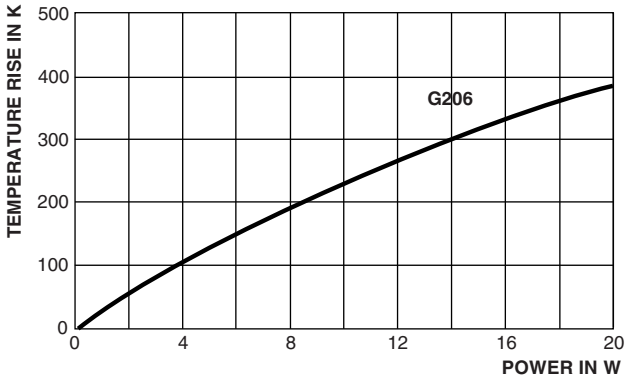

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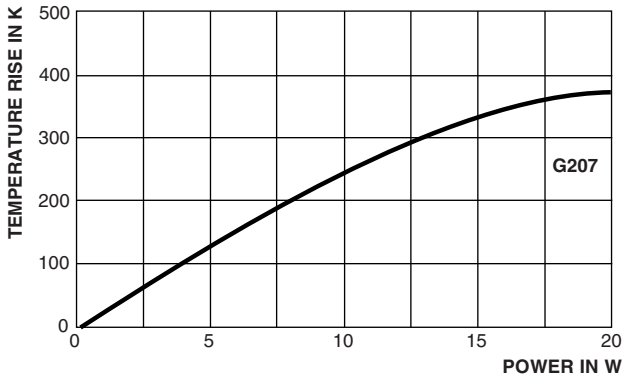

TEST PROCEDURES AND REQUIREMENTS

EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE		REQUIREMENTS PERMISSIBLE CHANGE (ΔR)
4.7	-	Voltage proof	V-block-method; $U = U_{ins}$; 60 s		No flashover or breakdown
			Model	U_{ins} (V)	
			G202/FDG	300	
			G204/FDK	400	
			G206/FDP	500	
			G207	650	
4.8.4.2	-	Temperature coefficient	At (20/- 55/20) °C and (20/200/20) °C		100 ppm/K to 180 ppm/K
4.13	-	Short time overload	Overload voltage = $\sqrt{10}$ x rated voltage		± (1.0 % R + 0.05 Ω) no visible damage
			Model	Duration (s)	
			G202/FDG	5	
			G204/FDK	6	
			G206/FDP	10	
			G207	10	
4.16	21 (Ua_1) 21 (Ub) 21 (Uc)	Robustness of terminations	Tensile, bending and torsion		± (1.0 % R + 0.05 Ω), no visible damage
4.17.2	20 (Ta)	Solderability	Solder bath method; SnPb40; non-activated flux (235 ± 5) °C; (2 ± 0.2) s		Good tinning (≥ 95 % covered, no visible damage)
			Solder bath method; SnAg3Cu0.5; non-activated flux; (245 ± 5) °C; (3 ± 0.3) s		
4.18.2	20 (Tb, Method 1A)	Resistance to soldering heat	Unmounted components; (260 ± 3) °C; (10 ± 1) s		± (1.0 % R + 0.05 Ω), no visible damage
4.19	14 (Na)	Rapid change of temperature	30 min at LCT = - 55 °C 30 min at UCT = 200 °C 5 cycles		± (1.0 % R + 0.05 Ω), no visible damage
4.21	27 (Ea)	Shock	Acceleration: 981 m/s^2 Pulse Duration: 11 ms Wave Form: Half sine 3 successive shocks to be applied in each perpendicular direction		± (1.0 % R + 0.05Ω), no visible damage

TEST PROCEDURES AND REQUIREMENTS				
EN 60115-1 CLAUSE	**IEC 60068-2 TEST METHOD**	**TEST**	**PROCEDURE**	**REQUIREMENTS PERMISSIBLE CHANGE (ΔR)**
4.22	6 (B4)	Vibration	6 h; 10 Hz to 2000 Hz 1.5 mm or 196 m/s^2	± (1.0 % R + 0.05 Ω), no visible damage
4.23		Climatic sequence		± (5.0 % R + 0.05 Ω)
4.23.2	2 (Ba)		Dry heat 200 °C; 16 h	
4.23.3	30 (Db)		Damp heat, cyclic 55 °C; 24 h; 90 % to 100 % RH; 1 cycle	
4.23.4	1 (Aa)		Cold - 55 °C; 2 h	
4.23.5	13 (M)		Low air pressure; 1.0 kPa; 2 h; 15 °C to 35 °C	
4.23.6	30 (Db)		Damp heat, cyclic 55 °C; 5 days; 95 % to 100 % RH; 5 cycles	
4.25.2	-	Endurance at RT °C	P_{RT}, 1000 h (P_{RT} = P_{25} for CECC qualified model and P_{40} for commercial model) U = 1.5 h on; 0.5 h off	± (5.0 % R + 0.05 Ω)
			P_{RT}, 8000 h	± (8.0 % R + 0.05 Ω)
4.25.3	-	Endurance at upper category temperature	UCT = 200 °C acc. to CECC40201-801; load 54 % P_{70}; 1000 h U = 1.5 h on; 0.5 h off	± (5.0 % R + 0.05 Ω)
4.24	78 (Cab)	Damp heat, steady state	(40 ± 2) °C; 56 days; (93 ± 3) % RH	± (5.0 % R + 0.05 Ω)

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