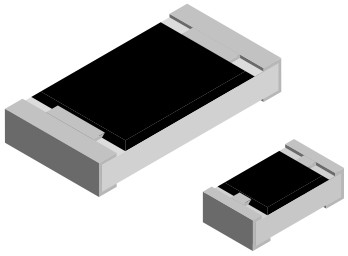
Lead (Pb)-bearing Thick Film, Rectangular High Value Chip Resistor



FEATURES

- High resistance values (up to 470M)
- Suitable for voltage dividers and hybrids
- SnPb contacts on Ni barrier layer
- Metal glaze on high quality ceramic
- Protective overglaze

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE		POWER RATING	LIMITING ELEMENT	TEMP. COEFF.	TOLERANCE	RESISTANCE	E-SERIES
	INCH	METRIC	$P_{70\,°C}$ W	VOLTAGE MAX. V≅	ppm/K	%	RANGE Ω	
D11/CRCW0603-HR	0603	1608	0.10	75	± 500	± 5	11M - 470M	24
D12/CRCW0805-HR	0805	2012	0.125	150	± 500	± 5	11M - 470M	24
D25/CRCW1206-HR	1206	3216	0.25	200	± 500	± 5	11M - 470M	24

Notes:
- These resistors do not feature a limited lifetime when operated within the permissible limits. However, resistance value drift increasing over operating time may result in exceeding a limit acceptable to the specific application, thereby establishing a functional lifetime.
- Marking and packaging: See appropriate catalog or web pages
- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	D11 CRCW0603-HR	D12 CRCW0805-HR	D25 CRCW1206-HR
Rated Dissipation at 70 °C (2)	W	0.1	0.125	0.25
Limiting Element Voltage	V≅	75	150	200
Voltage Coefficient	%/V	< 100M: < 0.1/> 100M: < 0.3		
Insulation Voltage (1 min)	V_{peak}	> 100	> 200	> 300
Thermal Resistance (1)	K/W	≤ 550	≤ 440	≤ 220
Insulation Resistance	Ω	> 10^9		
Category Temperature Range	°C	- 55 to + 125 (+ 155)		
Weight/1000 pieces	g	2	5.5	10

Notes:
(1) Measuring conditions in acc. to EN 140401-802
(2) The power dissipation on the resistor generates a temperature rise against the local ambient, depending on the heat flow support of the printed-circuit board (thermal resistance). The rated dissipation applies only if the permitted film temperature of 155 °C is not exceeded.

PART NUMBER AND PRODUCT DESCRIPTION

PART NUMBER: CRCW060314M0JPTBHR (3)

C	R	C	W	0	6	0	3	1	4	M	0	J	P	T	B	H	R

MODEL/SIZE	VALUE	TOLERANCE	TCR	PACKAGING (4)	SPECIAL
CRCW0603 **CRCW0805** **CRCW1206**	**M** = Million	**J** = ± 5 %	**P** = ± 500 ppm/K	**TA, TB** **TC, TI** **TL**	up to 2 digits **HR** = High Value

Product Description: CRCW0603 146 J 500 RT5

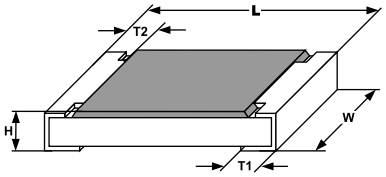
CRCW0603	146	J	500	RT5
MODEL	RESISTANCE VALUE	TOLERANCE	TCR	PACKAGING (4)
CRCW0603 CRCW0805 CRCW1206	686 = 68 MΩ 227 = 220 MΩ ± 5 % = 2 sig. digits plus multiplier	J = ± 5 %	± 500 ppm/K	RT1, RT5 RT6, RG1 R20

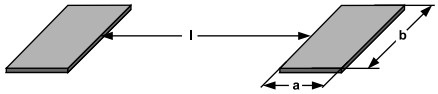
Notes:
(3) Preferred way for ordering products is by use of the PART NUMBER
(4) Please refer to table PACKAGING, see next page

For technical questions in Europe, contact: ff1bresistors@vishay.com
For technical questions in Americas/Asia, contact: ff2aresistors@vishay.com
Document Number: 20011
Revision: 14-Feb-08

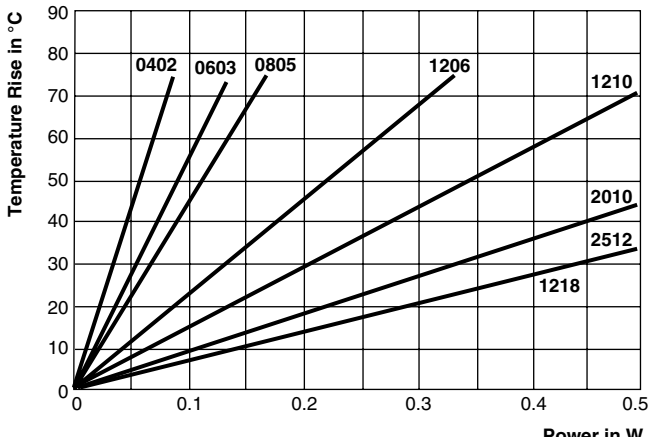
PACKAGING								
MODEL	REEL							
	TAPE WIDTH	DIAMETER	PITCH	PIECES/REEL	PACKING CODE			
					PART NUMBER		PRODUCT DESC.	
					PAPER	BLISTER	PAPER	BLISTER
D11/CRCW0603-HR	8 mm	180 mm/7"	4 mm	5000	TA	TI	RT1	RG1
		285 mm/11.25"		10 000	TB		RT5	
		330 mm/13"		20 000	TC	TL	RT6	R20
D12/CRCW0805-HR	8 mm	180 mm/7"	4 mm	5000	TA	TI	RT1	RG1
		285 mm/11.25"		10 000	TB		RT5	
		330 mm/13"		20 000	TC	TL	RT6	R20
D25/CRCW1206-HR	8 mm	180 mm/7"	4 mm	5000	TA	TI	RT1	RG1
		285 mm/11.25"		10 000	TB		RT5	
		330 mm/13"		20 000	TC	TL	RT6	R20

DIMENSIONS

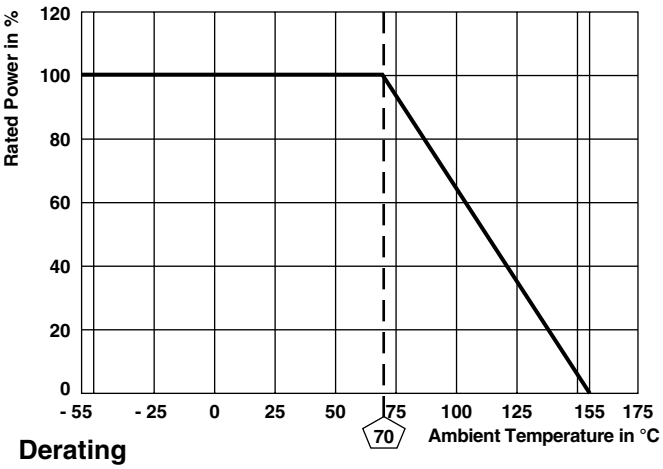




SIZE		DIMENSIONS [in millimeters]					SOLDER PAD DIMENSIONS [in millimeters]					
							REFLOW SOLDERING			WAVE SOLDERING		
INCH	METRIC	L	W	H	T1	T2	a	b	l	a	b	l
0603	1608	$1.55^{+0.10}_{-0.05}$	0.85 ± 0.1	0.45 ± 0.05	0.3 ± 0.2	0.3 ± 0.2	0.5	0.9	1.0	0.9	0.9	1.0
0805	2012	$2.0^{+0.20}_{-0.10}$	1.25 ± 0.15	0.45 ± 0.05	$0.3^{+0.20}_{-0.10}$	0.3 ± 0.2	0.7	1.3	1.2	0.9	1.3	1.3
1206	3216	$3.2^{+0.10}_{-0.20}$	1.6 ± 0.15	0.55 ± 0.05	0.45 ± 0.2	0.4 ± 0.2	0.9	1.7	2.0	1.1	1.7	2.3



Temperature Rise



Derating

TEST PROCEDURES AND REQUIREMENTS

EN 60115-1		
TEST (clause)	**CONDITIONS OF TEST**	**REQUIREMENTS PERMISSIBLE CHANGE ($\Delta R/R$)**
		STABILITY CLASS 2 OR BETTER
	Stability for product types: **D../CRCW...-HR**	11 MΩ to 470 MΩ
Resistance (4.5)	-	± 5 %
Temperature coefficient (4.8.4.2)	20/- 55/20 °C and 20/125/20 °C	± 500 ppm/K
Overload (4.13)	$U = 2.5 \times (P_{70} \times R)^{1/2}$ $\leq 2 \times U_{max.}$; Duration: according the style	± (0.5 % R + 0.05 Ω)
Solderability (4.17.5)	Aging 4 h at 155 °C, dryheat solder bath method; 235 °C; 2 s visual examination	Good tinning (≥ 95 % covered) no visible damage
Resistance to soldering heat (4.18.2)	Solder bath method; (260 ± 5) °C; (10 ± 1) s	± (0.5 % R + 0.05 Ω)
Rapid change of temperature (4.19)	30 min at LCT = - 55 °C; 30 min at UCT = 125 °C; 5 cycles	± (0.5 % R + 0.05 Ω)
Damp heat, steady state (4.24)	(40 ± 2) °C; 56 days; (93 ± 3) % RH	± (2 % R + 0.1 Ω)
Climatic sequence (4.23)	16 h at UCT = 125 °C; 1 cycle at 55 °C; 2 h at LCT = - 55 °C; 1 h/1 kPa at 15 °C to 35 °C; 5 cycles at 55 °C $U = (P_{70} \times R)^{1/2}$ $U = U_{max.}$; whichever is less severe	± (2 % R + 0.1 Ω)
Endurance at 70 °C (4.25.1)	$U = (P_{70} \times R)^{1/2}$ $U = U_{max.}$; whichever is less severe 1.5 h ON; 0.5 h OFF; 70 °C; 1000 h	± (2 % R + 0.1 Ω)
Extended endurance (4.25.1.8)	Duration extended to 8000 h	± (4 % R + 0.1 Ω)
Endurance at upper category temperature (4.25.3)	UCT = 125 °C; 1000 h	± (2 % R + 0.1 Ω)

APPLICABLE SPECIFICATIONS

• EN 60115-1	Generic Specifications
• EN 140400	Sectional Specification
• EN 140401-802	Detail Specifications
• IEC 60068-2-x	Variety of environmental test procedures
• IEC 60286-3	Packaging of SMD components

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