

6.10.3 Chip

RESISTORS, FILM, FIXED, CHIP AND ARRAY, THIN FILM, BASED ON TYPES PHR; PFRR; PRAHR/CNWHR				287H	
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date	
Generic ESCC 4001 Detail ESCC 4001/023 4001/025	VISHAY S.A. Division Sfernice Nice France	Qualification	CNES	Feb 2009	
Remarks Components under ESCC QML qualification. Refer to Technology Flow description in REP006 .					
Qualified range:					
Type PHR, Variants 01 to 08, 13 and 14 are qualified					
Type PFRR, Variants 09 to 12 and 15 are qualified					
Type PRAHR/CNWHR, Variants 01 to 42 are qualified					
4001/023	PHR	High Stability and Precision Chip			
4001/023	PFRR	High Stability and Precision Chip with Established Reliability Level R			
4001/025	PRA/CNWHR	High Stability and Precision Surface Mount Array			
The Established Reliability Level R is evaluated according to the ESCC Basic Specification 26000.					
Lead material is E with either Type 2 or Type 4 finish. The terminal material and finish of some of these variants makes them unsuitable for solder assembly methods. They shall be assembled using glue or wire bond techniques. See Detail specifications.					
Operating Temperature Range, (°C): -55 to +155					
Type PHR:					
Detail Specification	Style	Critical R (kΩ)	Rated Dissipation (W)	Limiting Element Voltage (V)	Type Variant
4001/023	0402	18	0.050	30	13; 14
	0603	12.25	0.100	35	01; 05
	0805	45	0.125	75	02; 06
	1206	40	0.250	100	03; 07
	2010	45	0.500	150	04; 08

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Variant	Style	Resistance Range (Note 1)		Tolerance ($\pm\%$) (Note 2)	Temperature Coefficient ($10^{-6}/^{\circ}\text{C}$) (Note 2)	Weight (g)
		Min (Ω)	Max (M Ω)			
01, 05	0603	10	0.200 (0.160 for TC" $^{\circ}\text{C}$ ")	0.01; 0.02; 0.05; 0.1	± 5 ; ± 10 ; ± 25	0.003
02, 06	0805	10	0.250	0.01; 0.02; 0.05; 0.1	± 5 ; ± 10 ; ± 25	0.004
03, 07	1206	10	1.000	0.01; 0.02; 0.05; 0.1	± 5 ; ± 10 ; ± 25	0.01
04, 08	2010	10	3.000	0.01; 0.02; 0.05; 0.1	± 5 ; ± 10 ; ± 25	0.03
13, 14	0402	10	0.100 (0.067 for TC" $^{\circ}\text{C}$ ")	0.01; 0.02; 0.05; 0.1	± 5 ; ± 10 ; ± 25	0.002

Notes:

1.

Variant	Style	Critical Resistance (K Ω)
01 - 05	0603	12.25
02 - 06	0805	45
03 - 07	1206	40
04 - 08	2010	45
13 - 14	0402	18

2.

Resistance (Ω)	Available Tolerances ($\pm\%$)	Series
$10 \leq R < 50$	0.1	Any value in the resistance range
$50 \leq R < 100$	0.05 and 0.1	
$100 \leq R < 250$	0.02; 0.05 and 0.1	
$R \geq 250$	0.01; 0.02; 0.05 and 0.1	

Resistance (Ω)	Temperature Coefficient (ppm/ $^{\circ}\text{C}$)	Series
$10 \leq R < 20$	E: 25 (-55°C ; $+155^{\circ}\text{C}$)	Any value in the resistance range
$20 \leq R < 50$	Y: 10 (-55°C ; $+155^{\circ}\text{C}$)	
$20 \leq R < 50$	Z: 5 ($+22^{\circ}\text{C}$; $+70^{\circ}\text{C}$)	
$R \geq 50$	C: 5 (-55°C ; $+155^{\circ}\text{C}$)	

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Type PFRR:

Detail Specification	Style	Critical R (kΩ)	Rated Dissipation (W)	Limiting Element Voltage (V)	Type Variant
4001/023	0402	32	0.050	40	15
	0603	25	0.100	50	09
	0805	80	0.125	100	10
	1206	90	0.250	150	11
	2010	80	0.500	200	12

Style	Resistance Range (Ω)	Tolerance (±%)	Temperature Coefficient TC(±10 ⁻⁶ /°C)
0402; 0603; 0805; 1206; 2010	From 100 to ≤ 100K	0.05; 0.1	10; 25
0603; 0805; 1206; 2010	From 100 to ≤ 261K	0.05; 0.1	10; 25
0805; 1206; 2010	From 261K to ≤ 301K	0.05; 0.1	10; 25
1206; 2010	From 301K to ≤ 1M	0.05; 0.1	10; 25
2010	From 1M to 3M01	0.05; 0.1	10; 25

Type PRAHR/CNWHR:

Detail Specification	Style	Critical R (K Ω)	Rated Dissipation (W/resistor)	Limiting Element Voltage (V/resistor)	Type Variant	
					Same Ohmic Values	Different Ohmic Values
4001/025	PRA100	12.25	0.100	35	01 to 07	22 to 28
	PRA135	56.25	0.100	75	08 to 14	29 to 35
	PRA182	100	0.100	100	15 to 21	36 to 42

Style	Resistance Range (Ω)	Tolerance (±%)		Temperature Coefficient TC(±10 ⁻⁶ /°C)	
		Absolute	Relative	Absolute	Relative
PRA100; PRA135; PRA182	From 100 to 200K	0.1; 0.5; 1	0.05; 0.1	10	3; 5
PRA135; PRA182	From 200K to 250K	0.1; 0.5; 1	0.05; 0.1	10	3; 5
PRA182	From 250K to 1M	0.1; 0.5; 1	0.05; 0.1	10	3; 5

Number of Resistors per Array: 2 to 8

RESISTORS, FIXED, CHIP, THICK FILM, BASED ON TYPE CHP				314F																																														
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<p>Qualified range:</p> <p>Type CHPHR, variants 01 to 10 are qualified.</p> <p>Type CHPFR, variants 11 to 20 are qualified.</p> <p>The qualified range is restricted as below:</p> <table border="1"> <thead> <tr> <th>Style</th> <th>Critical R (KΩ)</th> <th>Rated Dissipation</th> <th>Limited Element Voltage (V)</th> <th>Type Variant</th> </tr> </thead> <tbody> <tr> <td>0603</td> <td>25</td> <td>0.100</td> <td>50</td> <td>01, 06, 11, 16</td> </tr> <tr> <td>0805</td> <td>50</td> <td>0.200</td> <td>100</td> <td>02, 07, 12, 17</td> </tr> <tr> <td>1206</td> <td>160</td> <td>0.250</td> <td>200</td> <td>03, 08, 13, 18</td> </tr> <tr> <td>2010</td> <td>180</td> <td>0.500</td> <td>300</td> <td>04, 09, 14, 19</td> </tr> <tr> <td>2512</td> <td>112.5</td> <td>0.800</td> <td>300</td> <td>05, 10, 15, 20</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Style</th> <th>Range(Ω)</th> <th>Tol. ($\pm\%$)</th> <th>TC(\pmppm/$^{\circ}$C)</th> </tr> </thead> <tbody> <tr> <td>0603;0805;1206;2010;2512</td> <td>From 1 to < 10</td> <td>2; 5</td> <td>200</td> </tr> <tr> <td>0603;0805;1206;2010;2512</td> <td>From 10 to < 1M</td> <td>1; 2; 5</td> <td>100; 200</td> </tr> <tr> <td>0603;0805;1206;2010;2512</td> <td>From 1M to \leq 10M</td> <td>2; 5</td> <td>200</td> </tr> </tbody> </table> <p>Lead material is E with either Type 2 or Type 4 finish</p> <p>Operating Temperature Range ($^{\circ}$C): -55 to +155</p>					Style	Critical R (K Ω)	Rated Dissipation	Limited Element Voltage (V)	Type Variant	0603	25	0.100	50	01, 06, 11, 16	0805	50	0.200	100	02, 07, 12, 17	1206	160	0.250	200	03, 08, 13, 18	2010	180	0.500	300	04, 09, 14, 19	2512	112.5	0.800	300	05, 10, 15, 20	Style	Range(Ω)	Tol. ($\pm\%$)	TC(\pm ppm/ $^{\circ}$ C)	0603;0805;1206;2010;2512	From 1 to < 10	2; 5	200	0603;0805;1206;2010;2512	From 10 to < 1M	1; 2; 5	100; 200	0603;0805;1206;2010;2512	From 1M to \leq 10M	2; 5	200
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