

Types covered by similarity: Tolerance (±%) = 0.02, 0.05, 0.1, 0.2, 0.5, 1%							Remarks: Will not be maintained. The qualification entry will be removed from the QPL by October 2014.																							
Procurement Specifications					Manufacturer		Nature of Approval	Supervising Authority	Date																					
Generic ESCC 4001 Detail ESCC 4001/011					VISHAY S.A. Division Sfernice Nice France		Qualification	CNES	Dec 1983																					
Characteristics: Variants 03, 04, 07 and 08 are qualified							Extension	CNES	Oct 1986																					
							Extension	CNES	Nov 1989																					
							Extension	CNES	Jul 1992																					
							Requalification	CNES	Apr 1994																					
							Extension	CNES	Sep 1996																					
							Extension	CNES	Jan 1999																					
							Extension	CNES	Jul 2001																					
							Extension	CNES	Nov 2003																					
							Extension	CNES	Apr 2006																					
							Extension	CNES	Sep 2008																					
							Extension	CNES	Nov 2010																					
							Extension	CNES	Aug 2012																					
							<table><tr><td>Style</td><td>Detail Spec.</td><td>Range (Ω)</td><td>Tol. (±%)</td><td>TC (±ppm/°C)</td><td>Power Rating (W)</td><td>Max. Voltage (V)</td></tr><tr><td>RNC 90 (RS92N)</td><td>4001/011</td><td>50 - 100k</td><td>0.02 0.05 0.5 1.0</td><td>±5, ≤ 125 °C ±10, ≤ 125 °C ±10, > 125 °C and ≤ 175 °C</td><td>0.5 @ 70 °C 0.3 @ 125 °C</td><td>300</td></tr></table>							Style	Detail Spec.	Range (Ω)	Tol. (±%)	TC (±ppm/°C)	Power Rating (W)	Max. Voltage (V)	RNC 90 (RS92N)	4001/011	50 - 100k	0.02 0.05 0.5 1.0	±5, ≤ 125 °C ±10, ≤ 125 °C ±10, > 125 °C and ≤ 175 °C	0.5 @ 70 °C 0.3 @ 125 °C	300			
							Style	Detail Spec.	Range (Ω)	Tol. (±%)	TC (±ppm/°C)	Power Rating (W)	Max. Voltage (V)																	
RNC 90 (RS92N)	4001/011	50 - 100k	0.02 0.05 0.5 1.0	±5, ≤ 125 °C ±10, ≤ 125 °C ±10, > 125 °C and ≤ 175 °C	0.5 @ 70 °C 0.3 @ 125 °C	300																								
Operating Temperature Range, (°C): -55 to +175																														
		RESISTORS, FILM, FIXED, NON-HERMETICALLY SEALED, BASED ON TYPE RNC 90					Current Validity of Qualification		Page																					
							Certificate	Valid Until	10-02																					
							116 M	September 2014	001																					

Types covered by similarity:		Remarks: Components under ESCC QML qualification. Refer to Technology Flow description in REF006. This certificate replaces certificate 265C.		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 4001 Detail ESCC 4001/023 ESCC 4001/025	VISHAY S.A. Division Sfernice Nice France	Qualification Extension Extension	CNES CNES CNES	Feb 2009 Feb 2011 Feb 2013
Characteristics: Refer to tables on the next page 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 Operating Temperature Range, (°C): -55 to +155 Lead material is E with either Type 2 or Type 4 finish				
	RESISTORS, FILM, FIXED, CHIP AND ARRAY, THIN FILM, BASED ON TYPES PHR; PFRR; PRAHR/CNWHR	Current Validity of Qualification		Page
		Certificate 287 C	Valid Until February 2015	10-09 002-A

Characteristics: Type PHR, Variants 01 to 08 are qualified

Detail Specification	Style	Critical R (k Ω)	Rated Dissipation (W)	Limiting Element Voltage (V)	Type Variant
4001/023	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

Style	Range (Ω)	Tolerance ($\pm\%$)	Temperature Coefficient ($\pm$ ppm/ $^{\circ}$ C)
0603; 0805; 1206; 2010	From 10 to <20	0.1	25
0603; 0805; 1206; 2010	From 20 to <50	0.1	10; 25
0603; 0805; 1206; 2010	From 50 to <100	0.05; 0.1	5; 10; 25
0603; 0805; 1206; 2010	From 100 to <250	0.02; 0.05; 0.1	5; 10; 25
0603; 0805; 1206; 2010	From 250 to <200K	0.01; 0.02; 0.05; 0.1	5; 10; 25
0805; 1206; 2010	From 200K to <250K	0.01; 0.02; 0.05; 0.1	5; 10; 25
1206; 2010	From 250K to <1M	0.01; 0.02; 0.05; 0.1	5; 10; 25
2010	From 1M to 3M	0.01; 0.02; 0.05; 0.1	5; 10; 25



RESISTORS,
FILM, FIXED, CHIP AND ARRAY, THIN FILM,
BASED ON TYPES PHR; PFRR; PRAHR/CNWHR

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Characteristics: Type PFRR, Variants 09 to 12 and 15 are qualified

Detail Specification	Style	Critical R (k Ω)	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 ($\pm\%$)	Temperature Coefficient TC($\pm 10^{-6}/^{\circ}\text{C}$)
0402; 0603; 0805; 1206; 2010	From 100 to $\leq 100\text{K}$	0.05; 0.1	10; 25
0603; 0805; 1206; 2010	From 100 to $\leq 261\text{K}$	0.05; 0.1	10; 25
0805; 1206; 2010	From 261K to $\leq 301\text{K}$	0.05; 0.1	10; 25
1206; 2010	From 301K to $\leq 1\text{M}$	0.05; 0.1	10; 25
2010	From 1M to 3M01	0.05; 0.1	10; 25

The Established Reliability Level R is evaluated according to the ESCC Basic Specification 26000.



RESISTORS,
FILM, FIXED, CHIP AND ARRAY, THIN FILM,
BASED ON TYPES PHR; PFRR; PRAHR/CNWHR

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Characteristics: Type PRAHR/CNWHR,, Variants 01 to 42 are qualified

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 ($\pm\%$)		Temperature Coefficient TC($\pm 10^{-6}$ / $^{\circ}\text{C}$)	
		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,
FILM, FIXED, CHIP AND ARRAY, THIN FILM,
BASED ON TYPES PHR; PFRR; PRAHR/CNWHR

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Types covered by similarity:				Remarks:																																													
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																																											
Generic ESCC 4001 Detail ESCC 4001/026		VISHAY S.A. Division Sfernice Nice France		Qualification Extension	CNES CNES	Oct 2011 Oct 2013																																											
Characteristics: Type CHPHR, Variants 01 to 10 are qualified. Type CHPFR, variants 11 to 20 are qualified. The qualified is range restricted as below: <table border="1"> <tr> <th>Style</th> <th>Critica R (KΩ)</th> <th>Rated Dissipation</th> <th>Limited Element Voltage (V)</th> <th>Type Variant</th> </tr> <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> </table> <table border="1"> <tr> <th>Style</th> <th>Range(Ω)</th> <th>Tol. (±%)</th> <th>TC(±ppm/°C)</th> </tr> <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 ≤ 10M</td> <td>2; 5</td> <td>200</td> </tr> </table> Operating Temperature Range, (°C): -55 to +155. Lead material is E with either Type 2 or Type 4 finish							Style	Critica R (KΩ)	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. (±%)	TC(±ppm/°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
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