

1. GENERAL

1.1 SCOPE

This specification details the ratings, physical and electrical characteristics and test and inspection data for the component type variants and/or the range of components specified below. It supplements the requirements of, and shall be read in conjunction with, the ESCC Generic Specification listed under Applicable Documents.

1.2 APPLICABLE DOCUMENTS

The following documents form part of this specification and shall be read in conjunction with it:

- (a) ESCC Generic Specification No. 4001.

1.3 TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS

For the purpose of this specification, the terms, definitions, abbreviations, symbols and units specified in ESCC Basic Specification No. 21300 shall apply.

1.4 THE ESCC COMPONENT NUMBER AND COMPONENT TYPE VARIANTS

1.4.1 The ESCC Component Number

The ESCC Component Number shall be constituted as follows:

Example (for type PHR): 4001023012490P9

- Detail Specification Reference: 4001023
- Component Type Variant Number: 01 (01 to 08 as required)
- Characteristic code: Resistance Value (249Ω): 2490 (as required)
- Characteristic code: Resistance Tolerance (±0.02%): P (as required)
- Characteristic code: Temperature Coefficient (±5x10⁻⁶/°C): 9 (as required)

, 13 and 14

Example (for type PFRR): 400102309R2490W1

- Detail Specification Reference: 4001023
- Component Type Variant Number: 09 (09 to 12 as required)
- Failure Rate Level Letter: R (as applicable; see Note 1)
- Characteristic code: Resistance Value (249Ω): 2490 (as required)
- Characteristic code: Resistance Tolerance (±0.05%): W (as required)
- Characteristic code: Temperature Coefficient (±10x10⁻⁶/°C): 1 (as required)

and 15

NOTES:

1. Failure rate level letter shall be as defined in ESCC Basic Specification No. 26000. When a failure rate level is not applicable the letter shall be omitted.

1.4.1.1 Characteristics and/or Ratings Codes

Characteristics and/or ratings to be codified as part of the ESCC Component Number shall be as follows:

- (a) Resistance Value expressed by means of the following codes in accordance with ESCC Basic

Specification No. 21700. The unit quantity shall be ohm (Ω):

Resistance Value (Ω)	Code
XX.X	XXRX
XXX	XXX0
XXX 10^1	XXX1
XXX 10^2	XXX2
XXX 10^3	XXX3
XXX 10^4	XXX4

(b) Resistance Tolerance expressed by the following codes in accordance with ESCC Basic Specification No. 21700:

Tolerance (\pm %)	Code Letter
0.01	L
0.02	P
0.05	W
0.1	B

(c) Temperature Coefficient expressed by the following codes:

Temperature Coefficient ($\pm 10^{-6}/^{\circ}\text{C}$)	Code	Remarks
5	0	over T_{amb} +22$^{\circ}\text{C}$ to +70$^{\circ}\text{C}$
10	1	
25	2	
5	9	over T_{amb} +55$^{\circ}\text{C}$ to +155$^{\circ}\text{C}$

See Para. 1.4.2

1.4.2

Component Type Variants and Range of Components

The component type variants and range of components applicable to this specification are as follows:

See Para. 1.4.2

Variant Number	Type	Style (Note 1)	Resistance Range R_n (Note 2)		Tolerance (\pm %)	Temperature Coefficient TC ($\pm 10^{-6}/^{\circ}\text{C}$)	Limiting Element Voltage (V)	Stability Class (\pm %) (Note 3) 4	Terminal Material and Finish	Weight max (g)
			Min (Ω)	Max (M Ω)						
01	PHR	0603	10	0.5	0.01, 0.02, 0.05, 0.1	5, 10, 25 *	35	0.15	E4	0.003
02	PHR	0805	10	0.75	0.01, 0.02, 0.05, 0.1	5, 10, 25 *	75	0.15	E4	0.004
03	PHR	1206	10	3.5	0.01, 0.02, 0.05, 0.1	5, 10, 25 *	100	0.15	E4	0.01
04	PHR	2010	10	6	0.01, 0.02, 0.05, 0.1	5, 10, 25 *	150	0.15	E4	0.03
05	PHR	0603	10	0.5	0.01, 0.02, 0.05, 0.1	5, 10, 25 *	35	0.15	E2 (Note 4)	0.003
06	PHR	0805	10	0.75	0.01, 0.02, 0.05, 0.1	5, 10, 25 *	75	0.15	E2 (Note 4)	0.004

* (Note 3)

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Variant Number	Type	Style (Note 1)	Resistance Range R _n (Note 2)		Tolerance (± %)	Temperature Coefficient TC (± 10 ⁻⁶ /°C)	Limiting Element Voltage (V)	Stability Class (± %) (Note 3) 4	Terminal Material and Finish	Weight max (g)
			Min (Ω)	Max (MΩ)						
07	PHR	1206	10	3.5	0.01, 0.02, 0.05, 0.1	5, 10, 25 *	100	0.15	E2 (Note 4)	0.01
08	PHR	2010	10	6	0.01, 0.02, 0.05, 0.1	5, 10, 25 *	150	0.15	E2 (Note 4)	0.03
09	PFRR	0603	100	0.5	0.05, 0.1	10, 25	50	0.25	E4	0.003
10	PFRR	0805	100	0.75	0.05, 0.1	10, 25	100	0.25	E4	0.004
11	PFRR	1206	100	3.5	0.05, 0.1	10, 25	150	0.25	E4	0.01
12	PFRR	2010	100	6	0.05, 0.1	10, 25	200	0.25	E4	0.03
13	PHR	0402	10	0.15	0.01, 0.02, 0.05, 0.1	5, 10, 25 *	30	0.15	E4	0.002
14	PHR	0402	10	0.15	0.01, 0.02, 0.05, 0.1	5, 10, 25 *	30	0.15	E2 (Note 4)	0.002
15	PFRR	0402	100	0.15	0.05, 0.1	10, 25	40	0.25	E4	0.002

NOTES:

1. See Physical Dimensions.
2. Critical resistance is as follows:

* (Note 3)

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Any resistance value in the resistance range, to 3 significant figures, is available.

Variant Number	Critical Resistance (kΩ)
01, 05	12.25
02, 06	45
03, 07	40
04, 08	45
09	25
10	80
11	90
12	80
13, 14	18
15	32

4. Stability class refers to the limit of Change in Resistance, after 2000 hour Operating Life, specified in Intermediate and End-Point Electrical Measurements.
5. Variants 05 to 08 and 14 are not suitable for solder assembly methods. They shall be assembled using glue or wire bond techniques.
3. All PHR types have two ± 5 × 10⁻⁶/°C Temperature Coefficient options, defined below.

1.5

MAXIMUM RATINGS

The maximum ratings shall not be exceeded at any time during use or storage.

Maximum ratings shall only be exceeded during testing to the extent specified in this specification and when stipulated in Test Methods and Procedures of the ESCC Generic Specification.

TC Code 0: ± 10 × 10⁻⁶/°C from -55°C to +22°C;
 ± 5 × 10⁻⁶/°C between +22°C and +70°C;
 ± 10 × 10⁻⁶/°C between +70°C and +155°C.
 TC Code 9: ± 5 × 10⁻⁶/°C from -55°C to +155°C.