

ATTACHEMENT to DCR 110314 0402

§ 1.4.2 Component Type Variants and Range of Components

a) Modification of Resistance Range

Variant Number	Type	Style (Note 1)	Resistance Range R_n (Notes 2, 3)		Tolerance (\pm %) (Note 3)	Temperature Coefficient TC ($\pm 10^{-6}/^{\circ}\text{C}$) (Note 4)	Limiting Element Voltage (V)	Stability Class (\pm %) (Note 5)	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 6)	0.003
06	PHR	0805	10	0.75	0.01, 0.02, 0.05, 0.1	5, 10, 25	75	0.15	E2 (Note 6)	0.004

Variant Number	Type	Style (Note 1)	Resistance Range R_n (Notes 2, 3)		Tolerance (\pm %) (Note 3)	Temperature Coefficient TC ($\pm 10^{-6}/^{\circ}\text{C}$) (Note 4)	Limiting Element Voltage (V)	Stability Class (\pm %) (Note 5)	Terminal Material and Finish	Weight max (g)
			Min (Ω)	Max (M Ω)						
07	PHR	1206	10	3.5	0.01, 0.02, 0.05, 0.1	5, 10, 25	100	0.15	E2 (Note 6)	0.01
08	PHR	2010	10	6	0.01, 0.02, 0.05, 0.1	5, 10, 25	150	0.15	E2 (Note 6)	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

 Note 3: Delete the note 3.

 Note 4: Delete the note 4.

b) Introduction of Variants Style 0402

Variant Number	Type	Style (Note 1)	Resistance Range R_n (Notes 2, 3)		Tolerance (\pm %) (Note 3)	Temperature Coefficient TC ($\pm 10^{-6}/^{\circ}\text{C}$) (Note 4)	Limiting Element Voltage (V)	Stability Class (\pm %) (Note 5)	Terminal Material and Finish	Weight max (g)
			Min (Ω)	Max (M Ω)						
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 (Note6)	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:

Variant Number	Critical Resistance (k Ω)
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

 Note 6: Replace “Variants 05 to 08” by ‘Variants 05 to 08 and 15’

§ 1.5 MAXIMUM RATINGS

b) Introduction of Variants Style 0402

Characteristics	Variant Number	Style	Symbols	Limits	Units	Remarks
Rated Dissipation	01, 05, 09 02, 06, 10 03, 07, 11 04, 08, 12	0603 0805 1206 2010	P_n	100 125 250 500	mW	Note 1
	13, 14, 15	0402		50		
Limiting Element Voltage	01, 05	0603	U_L	35	V	-
	02, 06	0805		75		
	03, 07	1206		100		
	04, 08	2010		150		
	09	0603		50		
	10	0805		100		
11	1206	150				
12	2010	200				
13, 14	0402	30				
15	0402	40				
Rated Voltage	All	All	U_R	$\sqrt{P_n \times R_n}$	V	Note 2
Isolation Voltage	01, 05, 09 02, 06, 10 03, 07, 11 04, 08, 12	0603 0805 1206 2010	U_i	100 200 300 300	Vrms	-
	13, 14, 15	0402		50		
Operating Temperature Range	All	All	T_{op}	-55 to +155	°C	T_{amb}
Storage Temperature Range	All	All	T_{stg}	-55 to +155	°C	-
Soldering Temperature	01 to 04, 09 to 13, 15	All	T_{sol}	+260	°C	Notes 3, 4 

 Note 4: Replace “Variants 05 to 08” by ‘Variants 05 to 08 and 15’

§ 1.6 PHYSICAL DIMENSIONS

b) Introduction of Variants Style 0402

Variant Number	Style	Dimensions (mm)							
		A		B		C		D	
		Min	Max	Min	Max	Min	Max	Min	Max
13, 14, 15	0402	0.87	1.64	0.47	0.86	0.25	1.02	0.12	0.38

§ 2.1.1.2 Deviations from Qualification ...

b) Introduction of Variants Style 0402

(b) Replace “Variants 05 to 08” by ‘Variants 05 to 08 and 15’

§ 2.4 ROBUSTNESS ...

b) Introduction of Variants Style 0402

Deflection: 2mm (for Variants 01, 02, 03, 05, 06, 07, 09, 10, 11 , 13, 14, 15)

§ 2.6 INTERMEDIATE ...

b) Introduction of Variants Style 0402

Test Reference per ESCC No. 4001	Characteristics	Symbols	Limits		Units
			Min	Max	
Final Measurements	Change in Resistance	$\Delta R_A/R_A$	$\pm(0.1 + 0.05\Omega \times 100/R_n)$		%
	Insulation Resistance ($V_T=100V$)	R_I	1000	-	M Ω
Operating Life					
Initial Measurement (0 hour)	Resistance	R_A	Record Values		
Intermediate Measurements (1000 hours)	Change in Resistance	$\Delta R_A/R_A$	$\pm(0.1 + 0.05\Omega \times 100/R_n)$		%
	Change in Resistance	$\Delta R_A/R_A$			%
Intermediate/ Final Measurements (2000 hours)	Change in Resistance	$\Delta R_A/R_A$	$\pm(0.15 + 0.05\Omega \times 100/R_n)$		%
	Variants 01 to 08 , 13, 14		$\pm(0.25 + 0.05\Omega \times 100/R_n)$		
	Variants 09 to 12 , 15				
	Insulation Resistance ($V_T=100V$)	R_I	1000	-	M Ω
Final Measurements (8000 hours) (Note 2)	Change in Resistance	$\Delta R_A/R_A$	$\pm(1 + 0.05\Omega \times 100/R_n)$		%

NOTES:

1. Solderability is applicable to Variants 01 to 04 and 09 to 12 , 15 only.
2. Applicable to Failure Rate Endurance Testing only.