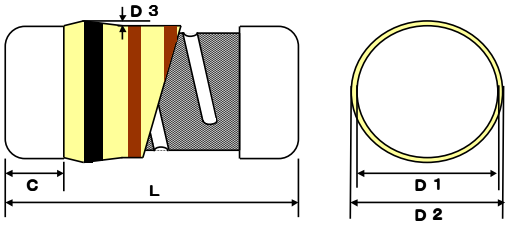
Details of the change

Current product used	Power rating	Dimension						Proposed product	Power rating	Dimension				
		L	D1	D2	C	D3				L	D1	D2	C	D3
RD412B	0.125W	3.5 ±0.2	1.45 ±0.1	1.55 Max	0.5~ 1.15	0.10 Max	⇒	RD412ES	0.25W	3.5 ±0.2	1.40 ±0.1	1.55 Max	0.5~ 0.9	0.10 Max
RN412B							⇒	RN412ES						
CC12	2A						⇒	CC12M	2A					

Dimension and external appearance

Dimensions of the finished products will be changed to specifications.

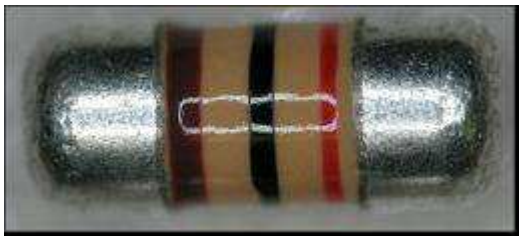
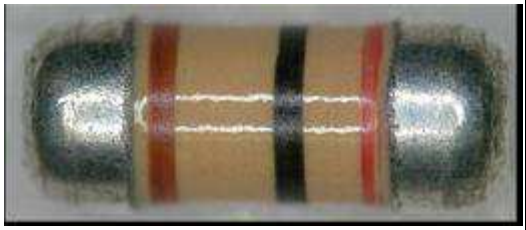
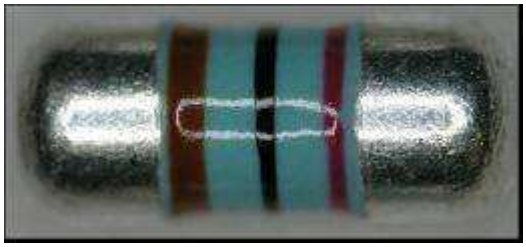
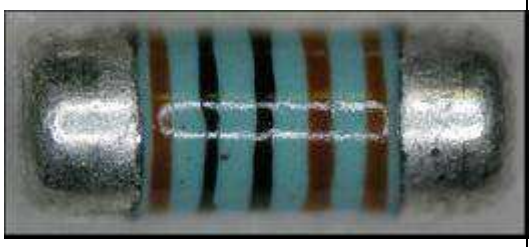
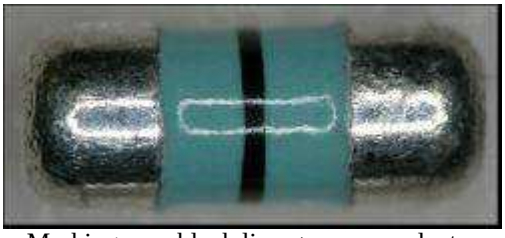
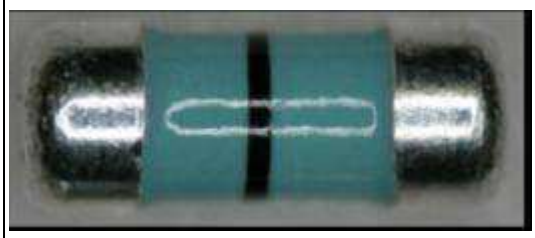


		Before change	After the change
Size		2B	2ES
Dimension	D1	1.45±0.1	1.40±0.1
	C	0.5~1.15	0.5~0.9

Construction of terminal plating

Plating will be changed from two-layered to three-layered.

		Before change	After the change
Size		2B	2ES
Construction of terminal plating	Base material	Fe	Fe
	Base coat 1	Cu	Cu
	Base coat 2	–	Ni
	Surface material	Sn	Sn

	Before change (size 2B)	After the change (size 2ES)
External Appearance	**2B RD412B 1kΩ J**	**2ES RD412ES 1kΩ J**
		
	Marking: in the order of brown, black and red →102→1k	Marking: in the order of brown, black and red →102→1k
External Appearance	**2B RN412B 1kΩ F50**	**2ES RN412ES 1kΩ F50**
		
	Marking: in the order of brown, black and red →102→1k	Marking: in the order of brown, black, black, brown and brown→1001F→1k
External Appearance	**2B CC12**	**2ES CC12M**
		
	Marking: one black line→cross-conductor	Marking: one black line→cross-conductor

Specification comparison between being-replaced product and replacing product [RD412B→RD412ES]

	Classification		Current product	Product after the change
	Product name		RD412B	RD412ES
General Specification	Power rating		0.125W	0.25W
	Dimension	L	3.5±0.2	←
		D1	1.45±0.1	1.40±0.1
		D2	1.55Max	←
		C	0.5~1.15	0.5~0.9
		D3	0.10Max	←
	Resistance range		2.2~1M	←
	Resistance tolerance		G,J	←
	Max. working voltage		200V	←
	Max. overload voltage		400V	←
	Rated ambient temperature		70℃	←
	Operating temperature range		-55～+155℃	←
Performance	TCR		*Set by resistance	←
	Overload (short time)		±(1.00%+0.05R)	←
	Intermittent overload		±(1.00%+0.05R) Rated voltage×4	±(1.00%+0.05R) Rated voltage×3 *1
	Resistance to soldering heat		±(1.00%+0.05R)	←
	Rapid change of temperature		±(1.00%+0.05R)	←
	Moisture resistance		±(5.00%+0.05R)	←
	Rated load		±(2.00%+0.05R)	←

*1 Although endurance to intermittent overload of the proposed products decreases to rated voltage×3, they exhibit higher endurance to voltage than the current one, because power rating is assured as 0.25W. (Wattage applied during intermittent overload: current type 2B: 2W, the proposed type 2ES: 2.25W)

RN412B→RN412ES

	Classification		Current product			Product after the change				
	Product name		RN412B			RN412ES				
General Specification	Power rating		0.125W			0.25W				
	Dimension	L	3.5±0.2			←				
		D1	1.45±0.1			1.40±0.1				
		D2	1.55Max			←				
		C	0.5~1.15			0.5~0.9				
		D3	0.10Max			←				
	Resistance tolerance		C	D	F	B	C	D	F	J
	Resistance range		100~ 100k	100~ 604k	10~ 604k	43~ 511k	100~ 100k	100~ 604k	1~ 5.11M	0.22~ 0.91
	Max. working voltage		150V			200V				
	Max. overload voltage		300V			400V				
	Rated ambient temperature		70℃			←				
	Operating temperature range		-55～+155℃			←				
Resistance			—			10～332kΩ	1～<10	0.22～<1	>332k～5.11M	
Performance	TCR		±25ppm, ±50ppm			←				
	Overload (short time)		±(0.50%+0.05R)			±(0.05%+0.05R)	±(0.10%+0.05R)	±(0.25%+0.05R)	±(0.50%+0.05R)	
	Intermittent overload		±(0.50%+0.05R) Rated voltage×4			±(0.50%+0.05R) Rated voltage×3 *1			±(1.00%+0.05R) Rated voltage×3 *1	
	Resistance to soldering heat		±(0.50%+0.05R)			±(0.05%+0.05R)	±(0.10%+0.05R)	±(0.25%+0.05R)	±(0.50%+0.05R)	
	Rapid change of temperature		±(0.50%+0.05R)			±(0.05%+0.05R)	±(0.10%+0.05R)	±(0.25%+0.05R)	±(0.50%+0.05R)	
	Moisture resistance		±(1.00%+0.05R)			±(0.25%+0.05R)	±(0.50%+0.05R)	±(1.00%+0.05R)	±(2.00%+0.05R)	
	Rated load		±(1.00%+0.05R)			±(0.25%+0.05R)			±(0.50%+0.05R)	

*1 Although endurance to intermittent overload of the proposed products decreases to rated voltage×3, they exhibit higher endurance to voltage than the current one, because power rating is assured as 0.25W. (Wattage applied during intermittent overload: current type 2B: 2W, the proposed type 2ES: 2.25W)

CC12 →CC12M (Jumper)

	Classification		Current product	Product after the change
	Product name		CC12	CC12M
General Specification	Rated power		2A	←
	Dimension	L	3.5±0.2	←
		D1	1.45±0.1	1.40±0.1
		D2	1.55Max	←
		C	0.5~1.15	0.5~0.9
		D3	0.10Max	←
	Resistance value		20mΩ	←
	Resistance tolerance		—	—
	Max. working voltage		—	—
	Max. overload voltage		—	—
	Rated ambient temperature		70℃	←
	Operating temperature range		-55～+155℃	←
Performance	TCR		—	—
	Overload (short time)		—	—
	Resistance to soldering heat		20mΩ and below	←
	Rapid change of temperature		20mΩ and below	←
	Moisture resistance		20mΩ and below	←
	Rated load		20mΩ and below	←