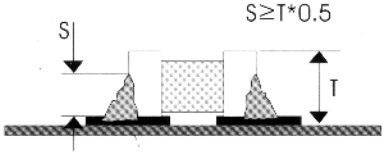
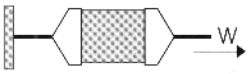
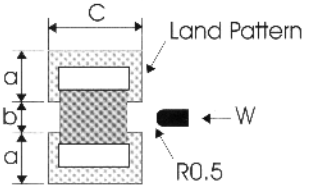
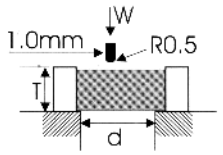
■ Reliability & Test Conditions

Items	Requirements			Test Conditions
	0402	0603	0805	
Operating temp. range	-55℃ ~ +125℃			
Storage temp. range	40℃ max., 70% RH max.			at packing condition
Resistance to solder heat	1. No damage such as cracks shoud be caused in chip element. 2. More than 75% of the terminal electrode shall be covered with new solder.			* Preheat Temperature : 100 ~ 150℃ * Preheat Time : 1 min. * Solder Temperature : 260 ± 10℃ * Dipping Time : 10 ± 0.5 Sec.
Solderability	1. More than 90% of the terminal electrode shall be covered with new solder.			* Preheat Temperature : 100 ~ 150℃ * Preheat Time : 1 min. * Solder Temperature : 230 ± 10℃ * Dipping Time : 3 ± 1 Sec.
Reflow soldering	1. More than 50% of the terminal electrode shall be covered with new solder. 2. Varistor voltage change : Within ±10% S≥T*0.5 			* Preheat Temperature : 150℃ * Preheat Time : 1 min. * Solder Temperature : 230℃ * Solder Time : 10 Sec. max.
Tensile strength (Terminal strength)	1. No mechanical damage			
			unit : kgf	W(kgf) min
W	-	1.0	2.0	
Flexure strength	1. No mechanical damage			
			unit : mm, kgf	
a	-	1.0	1.0	
b	-	0.8	1.0	
c	-	1.3	1.3	
W	-	1.0	4.0	

■ Reliability & Test Conditions

Items	Requirements 0402	0603	0805	Test Conditions
Bending strength	1. The body shall not be damaged by forces applied on the fight.			
			unit : mm (d), kgf (w)	
d	-	1.3	1.3	
W	-	2.0	3.0	
Drop	1. No mechanical damage			* Drop 10 times on a concrete floor from a height of 91cm.
Vibration	1. No mechanical damage			* Frequency : 10-55-10HZ * Amplitude : 1.52mm *Direction and time : x, y and z directions for 1 hour
Thermal shock (temperature cycle)	1. No mechanical damage 2. Varistor voltage change : Within ±10%			* Temperature : -40±3℃, +85±3℃ * Cycle : 30±3min. each 100 cycles then measured at room ambient temperature after placing for 24 hours
Heat load resistance				* Temperature : 85±2℃ * Applied voltage : DC bias voltage * Time : 1000 hours * Measured at room ambient temperature after placing for 24 hours
Low temperature resistance				* Temperature : -40±5℃ * Time : 1000 hours * Measured at room ambient temperature after placing for 24 hours
Humidity resistance				* Temperature : 40±2℃ * Humidity : 90 ~ 95% RH * Time : 500 hours * Measured at room ambient temperature after placing for 24 hours
Humidity load resistance				* Temperature : 40±2℃ * Humidity : 90 ~ 95% RH * Applied voltage : DC bias voltage * Time : 500 hours * Measured at room ambient temperature after placing for 24 hours

■ Reliability & Test Conditions

Items	Requirements 0402	0603	0805	Test Conditions
Maximum surge current	1. Varistor voltage change : Within ±10% IEC1000-4-5 standard 1.2/50㎲ - 8/20㎲ voltage - current combination pulse			* Temperature : 25 ± 5℃ * Humidity : 30~65% RH * Polarity : +, − * Number of hit : each 1 time * Surge pulse : 8/20㎲ pulse * Applied current : maximum surge current(Is)
Maximum surge energy	1. Varistor voltage change : Within ±10% IEC1000-4-5 standard 10/1000㎲ current pulse			* Temperature : 25 ± 5℃ * Humidity : 30~65% RH * Number of hit : 1 time * Surge pulse : 10/1000㎲ pulse * Applied energy : maximum surge energy(Ws)
ESD life	1. No mechanical damage 2. Varistor voltage change : Within ±10% ESD gun (IEC1000-4-2 standrd) C=150pF R=330Ω			* Discharge : Contact discharge * Voltage : 8,000V (level 4) * Polarity : +, − * Number : 10,000 times in 10 sec.
ESD test	1. No mechanical damage 2. Varistor voltage change : Within ±10% ESD gun (IEC1000-4-2 standrd) C=150pF R=330Ω			* Discharge : Air discharge * Voltage : 25,000V (Special level) * Polarity : +, − * Number : 10 times in 10 sec.