SOLITRONICS ENGINEERING LTD.

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Date: 19th June, 1997 **RESISTOR SPECIFICATIONS** Data Sheet: WELDABLE-LEAD CARBON FILM FIXED RESISTOR SEL-RGD-1003-(1) 1. FEATURES Weldable-Leads High quality at competitive prices Meet JIS-C-5202 & USA MIL-R-22684B specifications Flame retardant type available on request Automatically insertable, also available pre-cut and formed for Panasert/Avisert Can be bulk-packed, tape/box or tape/reel Resistor with special weldable-leads and 38mm lead length available on request Too low or too high ohmic value can be supplied only case by case Tolerance available: $\pm 5\%$, $\pm 2\%$, $\pm 1\%$ DIMENSION 2. ød øD Sub-Miniature-Size Resistor **Miniature-Size Resistor** Dimension (mm) Dimension (mm) Style Style +0.02 d ^{+0.02} -0.02 Rating Rating d H ± 3 L D L D $H \pm 3$ -0.02 0.50ø CP-12 1/8W 0.50ø CP-33S 1/3W 6.5±0.5 2.5 Max 3.5±0.2 1.5±0.2 28±3.0 28±3.0 CP-12S 1/6W 3.5±0.2 1.5±0.2 0.50ø 28±3.0 CP-33S-38 1/3W 6.5±0.5 2.5 Max. 0.50ø 38±3.0 CP-33 CP-25S 1/4W 1/3W 9.0±1.0 3.0 Max. 3.5 ± 0.5 1.5±0.2 0.50ø 28±3.0 0.50ø 35±3.0 CP-25 1/4W 6.5±0.5 2.5 Max. 0.50ø 28±3.0 CP-50S 1/2W 9.0±1.0 3.0 Max. 0.50ø 35±3.0 CP-25-38 1/4W 6.5±0.5 2.5 Max. 0.50ø 38±3.0 3. VOLTAGE & RATING

Max. Resistance Max. Style **Rating Wattage** Working Voltage Overload Voltage Range CP-12 1/8W 200V 400V 1Ω - 1MegΩ CP-12S CP-25S CP-25 500V 1/4W 250V $1\Omega - 10 Meg \Omega$ CP-33 CP-33S 1Ω - 10MegΩ 1/3W 300V 600V CR-50-S 1/2W 350V 700V 1Ω - 10MegΩ

4. OTHER PHYSICAL PROPERTIES

Derating Curve

100

60

40 Pecent

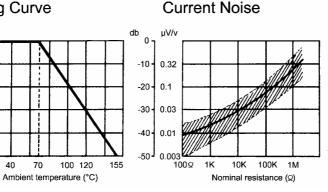
20

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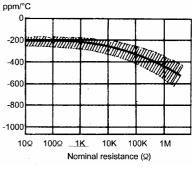
20

(%) 80

rated load



Temp Coefficient



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Data Sheet:

RESISTOR SPECIFICATIONS

Date: 19th June, 1997

WELDABLE-LEAD CARBON FILM FIXED RESISTOR

SEL-RGD-1003-(2)

5. PERFORMANCE SPECIFICATION

RANGE T.C.R. Natural resistance change per temp. degree certifigrade. JIS-C 5202 5.2 1E – 91K 0 – -450ppm/°C Resistance change per temp. degree certifigrade. JIS-C 5202 5.2 1.1M – 10M -800 – -1500ppm/°C R: Resistance value at room temp. Plus 100°C (b) Resistance value at room temp. Plus 100°C (c) Resistance value at room temp. Room temp. Plus 100°C (c) Resistance value at room temp. Room temp. 10 - 15 minutes r	Characteristics	Limits			Test Methods		
T.C.R. JIS-C 5202 5.21E = 91K 100K - 1M 1.1M - 10M0450ppm/°C 0700ppm/°C -8001500ppm/°C C $\frac{R_2 - R_1}{R_1(r_2 - t)} \times 10^6 (ppm/°C)$ R; Resistance value at room temp patus 100°C (k) Test Pattern: Room temp, Room temp, 100°C Resistance value at room temp. patus 100°C (k) Test Pattern: Room temp, Room temp, 100°C Resistance value at room temp. patus 100°C (k) Test Pattern: Room temp, Room temp, 100°C CTemperature cycling JIS-C-5202 7.4No evidence of flashover mechanical damage.Resistance value at room temp. patus 100°C (k) Test Pattern: Room temp, Room temp, 100°C CTemperature cycling JIS-C-5202 7.4Resistance change rate is $\pm (1\% + 0.05\Omega)$ Max, with n evidence of mechanical damage.Temperature Time 155°C ± 3°C 300 minutes 2 Room temp, 10 - 15 minutes 3 + 115°C ± 2°C 300 minutes 3 + 115°C ± 2°C 300 minutes 3 + 115°C ± 2°C 300 minutesShort-time overload JIS-C-5202 5.9Resistance change rate is $\pm (1\% + 0.05\Omega)$ Max, with Resistance valueResistance change after the application of a potential of 2.5 times RCWV for 5 seconds.Load Life in humidity JIS-C-5202 7.10Normal typeLess than 100K(2) ± 2% Seconds man topic at 10%Resistance value ARR Resistance valueLoad life JIS-C-5202 7.10Normal typeLess than 100K(2) ± 2% Seconds man topic at 20% Seconds man topic at 20% Seconds man topic at 20% Flame retardant typeResistance tange after 1,000 hours operating at RCWV with duty cycle of 1.5 hours on", 0.5 hour off at 70°C ± 2% ambient.Load life JIS-C-5202 5.6Insulation resistance flame retardant typeLess than 100K(1) ± 2% Seconds.Resistance tange after 1,000 hours operating at <td></td> <td colspan="2">RANGE T.C.R</td> <td></td> <td colspan="3" rowspan="2"></td>		RANGE T.C.R					
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JIS-C 5202 (10K - 1M10K - 700ppm/°C - 700ppm/°C $R_2 - R_1 + 10^6 (ppm/°C)$ $R_1(Resistance value at room temp. parture (t1)R_2. Resistance value at room temp. Public 100°C (t1)R_2. Resistance value at room temp. Room temp. + 100°CDelectric withstandingvoltageJIS-C-5202J.S-C-5202S.7No evidence of flashover mechanical damage.Resistance value at room temp. Room temp. + 100°CResistor value at room temp. Room temp. + 100°CRoom temp 10 - 15 minutes3 + 155°C ± 2°C3 0 minutesTemperature cyclingJIS-C-5202S.5Resistance change rate is ± (1% + 0.05Ω) Max. withResistance change atter the applicationo evidence of mechanical damage.Resistance change atter is a 100°C + 10°C1 - 15 minutes3 + 155°C ± 2°C - 300 minutes4 Room temp 10 - 15 minutes3 + 155°C ± 2°C - 300 minutesLoad Life in humidityJIS-C-5202 5.9Nomat typeLess than 100K ± 9%100KQ or more ± 10%Resistance change after 1.000 hours operating atRCWV with duy cycle of 1.5 hours on', 0.5 houron', 0.5 hour off at rO°C ± 2% ambient.Load lifeJIS-C-5202 7.10Nomat typeLess than 10K ± 5%100KQ or more ± 10%Resistance change after 1.000 hours operating atRCWV with duy cycle of 1.5 hours on', 0.5 houron', 0.5 hour off at rO°C ± 2% ambient.Terminal strengthJIS-C-5202 5.6Nomat typeLess than 10K ± 5%100KQ or more ± 10%I$		1F - 91K	0450ppm/°C				
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1.100 1000 1000 C (k) Pielectric withstanding votage using or insulation breakdown. Test Pattern Room temp. Room temp. Puls 100°C (k) JS-C-5202 5.7 No evidence of fitashover mechanical damage, arcing or insulation breakdown. Resistance change after continuous five cycles for duly cycle specified in the above list for 60 +10 / -0 seconds. Temperature cycling JJS-C-5202 7.4 Resistance change rate is ± (1% + 0.05Ω) Max. with in evidence of mechanical damage. Step Temperature interesting interest		100K – 1M 0 – -700ppm/		n/°C			
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$ \begin{array}{c} \mbox{Terminal strength} JIS-C-5202 7.4 \\ \mbox{If e and the definition of the longer rate is $\pm (1\% + 0.05\Omega) Max. with $$ 1 & -55\% \pm 3^{\circ}C & 30 minutes $$ 2 & Room termp. 10 - 15 minutes $$ 1 & 4 Room termp. 10 - 15 minutes $$ 1 & 4 Room termp. 10 - 15 minutes $$ 1 & 4 Room termp. 10 - 15 minutes $$ 1 & 4 Room termp. 10 - 15 minutes $$ 1 & 4 Room termp. 10 - 15 minutes $$ 1 & 4 Room termp. 10 - 15 minutes $$ 1 & 4 Room termp. 10 - 15 minutes $$ 1 & 0 Resistance change after the application $$ 1 & 0 Resistance value $$ 1 & 0 Room termp. 10 - 15 minutes $$ 1 & 0 Room term terminal $$ 1 & 0 Room term ter$							
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Load Life in humidity JIS-C-5202 5.9 Normal type Less than 100KΩ ± 3% 100KΩ or more ± 5% 100KΩ or more ± 5% 100KΩ or more ± 10% Resistance change after 1,000 hours operating at RCWV with duty cycle of 1.5 hours "on", 0.5 hour "off" in a humidity test chamber controlled at 40°C ± 2°C and 90 to 95% relative humidity. Load life JIS-C-5202 7.10 Resistance value AR/R Insulation resistance JIS-C-5202 5.6 Normal type Less than 56KΩ ± 2% 56KΩ or more ± 3% 100KΩ or more ± 3% 00°, 0.5 hour "off" at 70°C ± 2% ambient. Insulation resistance JIS-C-5202 5.6 Insulation resistance is 10,000 MΩ Min. Resistors shall be clamped in the trough of 90° metallic V-block and shall be tested at DC, potential respectively specified in the above list for 60 +10/-0 seconds. Terminal strength JIS-C-5202 6.1 No evidence of mechanical damage. Direct load: Twist test: Terminal leads shall be bent through 90° at a point of about 6mm from the body of the resistor and shall be rotated through 360° about the original axis of the bent terminal leads. Resistance to soldering heat JIS-C-5202 6.5 Resistance change rate is ± (1% + 0.05Ω) Max. with solderability JIS-C-5202 6.5 Permanent resistance change when leads the original accord with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes.	JIS-C-5202 5.5				of a potential of 2.5 times RCWV for 5 seconds.		
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JIS-C-5202Sign methodLess than 100K $\pm 5\%$ $100K\Omega \text{ or more}$ $\pm 10\%$ $\pm 2°C$ and 90 to 95% relative humidity.Load life JIS-C-5202Resistance value AR/R $Resistance valueAR/RResistance valueAR/RResistance to solve the terminal typePermanent resistance change after 1,000 hoursoperating at RCWV with duty cycle of 1.5 hours"on", 0.5 hour "off" at 70°C \pm 2\% ambient.Insulation resistanceJIS-C-5202Insulation resistance is 10,000 M\Omega Min.Resistors shall be clamped in the trough of 90°metallic V-block and shall be tested at DC. potentialrespectively specified in the above list for 60 +10/-0seconds.Terminal strengthJIS-C-5202No evidence of mechanical damage.Direct load:Resistance to a 2.5kg direct load for 10 seconds inthe direction of the longitudinal axis of the terminalleads.Resistance tosoldering heatJIS-C-5202Resistance change rate is \pm (1\% + 0.05\Omega) Max. withno evidence of mechanical damage.Permanent resistance change when leadsimmersed to 3.2 - 4.8mm from the body in 350°C\pm 0.5 seconds.Resistance tosolderabilityJIS-C-520295% coverage Min.95% coverage Min.The area covered with a new, smooth, clean, shinyand continuous surface free from concentratedpinholes.$		Normal type					nours "on", 0.5 hour
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Test temp. of solder: 235° C $\pm 5^{\circ}$ C					pinholes.		
	010-0-0202 0.0						
Dwell time in solder: 3 + 0.5/–0 seconds					Dwell time in solder: 3 + 0.5/-0 seconds		

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