

# FrelTec GmbH

Mathildenstr. 10A  
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Germany

## Surge Leaded Resistor

## SMD

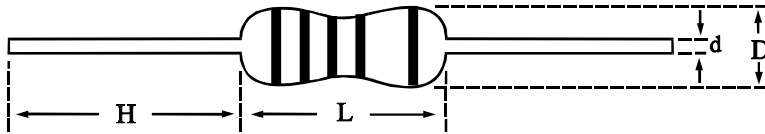
## SPECIFICATION

Part  
Number

05A	06*	1001*	F*	A05	H	C
Type	Size	Value	Tolerance	Packing	TCR	Power Rating
05A: Surge Leaded Resistor	0623 : 6,3x2,3	The last digit is the multiplier which denotes the number of zero following E24-Series is first digit "0"  Example: 97R6= 97,6Ohm 9760 = 976Ohm 1001 = 1kOhm	M : $\pm 20\%$	A05: Ammo Pack for 5k pc for 0623 size	H : $\pm 300\text{ppm}/^{\circ}\text{C}$  * not all combination is possible	E: 1/4W
	0932 : 9,0x3,2		K : $\pm 10\%$	A01: Ammo Pack for 1k pc for 0932 to 1550 size		H: 1/2W
	1145 : 11,5x4,5		J : $\pm 5\%$	A0A: Ammo Pack for 500 pc for 1765 size		J: 1W
	1550 : 15,5x5,0					L: 2W
	1765 : 17,5x6,5					M: 3W

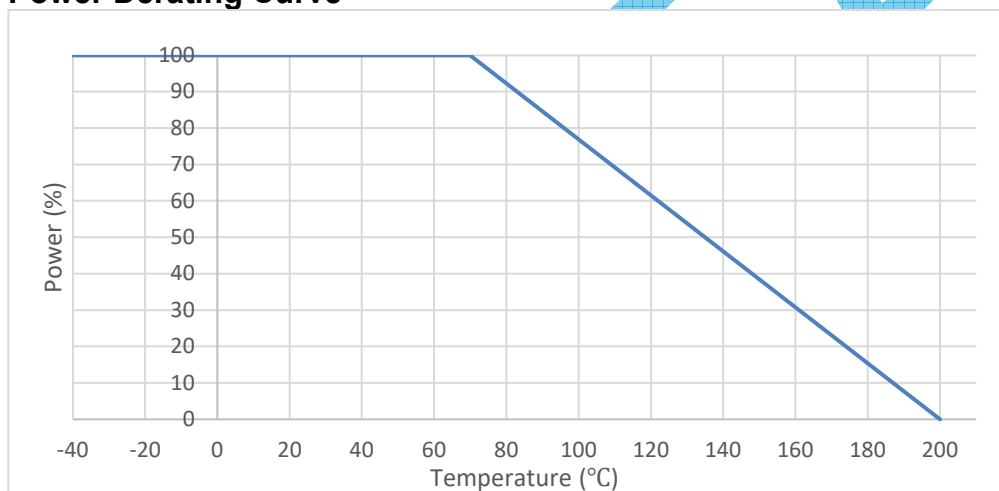
All products according to RoHS (2015/863/EU)

## Dimensions

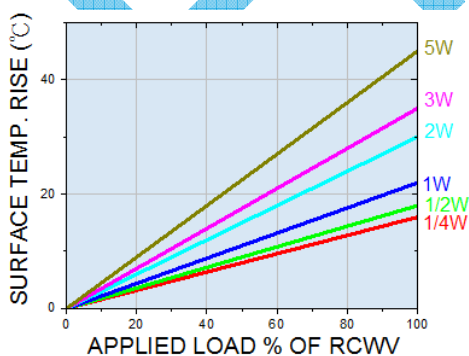


Size	L	L	H	d
0623	6,3±0,5	2,3±0,3	28±3,0	0,55±0,03
0932	9,0±0,5	3,2±0,5	26±3,0	0,65±0,03
1145	11,5±1,0	4,5±0,5	35±3,0	0,78±0,03
1550	15,5±1,0	5,0±0,5	32±3,0	0,78±0,03
1765	17,5±1,0	6,5±0,5	35±3,0	0,78±0,03

## Power Derating Curve



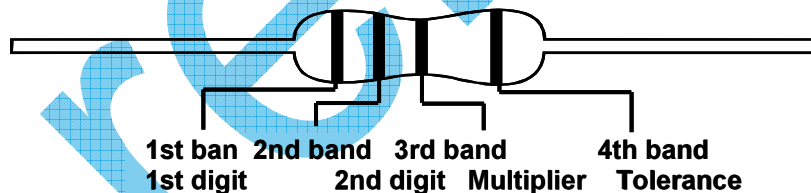
## Hot-Spot Temperature



**05A Series****GENERAL PURPOSE CHIP RESISTORS**

Size	Power Rating at 70°C	Operating Temp. Range	Max. Working Voltage	Max. Overload Voltage	Dielectric Withstanding Voltage	Temperature Coefficient [TCR; ppm/°C]	Max. Anti Surge	Resistance Range [Ω]	
								±5% ±10%	±20%
0623	1/4W	-40°C ~ 200°C	200V	300V	300V	±300	1kV	10Ω~10kΩ	3,3Ω~9,9Ω
0932	1/2W		200V	300V	500V		3kV		
1145	1W		200V	400V	500V		3 Ω~6 Ω=10kV 7 Ω~10 Ω=7kV 11 Ω~10k Ω=5kV		
1150	2W		300V	600V	500V		10kV		
1765	3W		400V	800V	500V		10kV		

Resistor body color : 1/4W~2W Brown ;3W Grey  
 RCWV(Rated continuous working voltage)=  $\sqrt{(P \cdot R)}$

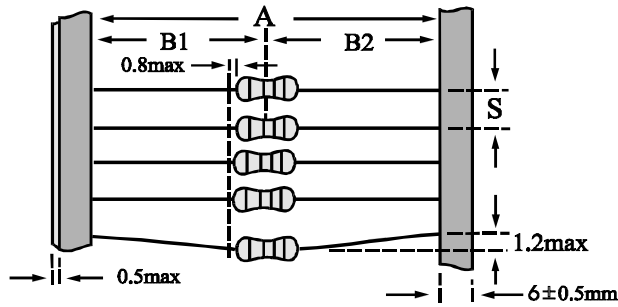
**Marking & Resistance Tolerance**

Cold	Digit	Multiplier	Tolerance	
Without	-	-	±20,0%	M
Silver	-	10 <sup>-2</sup>	±10,0%	K
Gold	-	10 <sup>-1</sup>	±5,0%	J
Black	0	10 <sup>0</sup>	-	-
Brown	1	10 <sup>1</sup>	-	-
Red	2	10 <sup>2</sup>	-	-
Orange	3	10 <sup>3</sup>	-	-
Yellow	4	10 <sup>4</sup>	-	-
Green	5	10 <sup>5</sup>	-	-
Blue	6	10 <sup>6</sup>	-	-
Violet	7	10 <sup>7</sup>	-	-
Grey	8	10 <sup>8</sup>	-	-
White	9	10 <sup>9</sup>	-	-

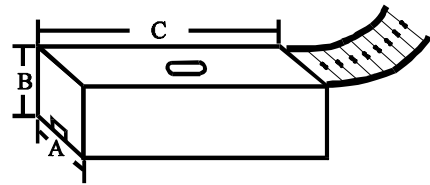
±20%	E-24	1,0	1,1	1,2	1,3	1,5	1,6	1,8	2,0	2,2	2,4	2,7	3,0	3,3	3,6	3,9	4,3	4,7	5,1	5,6	6,2	6,8	7,5	8,2	9,1
±10%																									
±5%																									

### SMD

#### Packing Methods



#### Ammo Packing



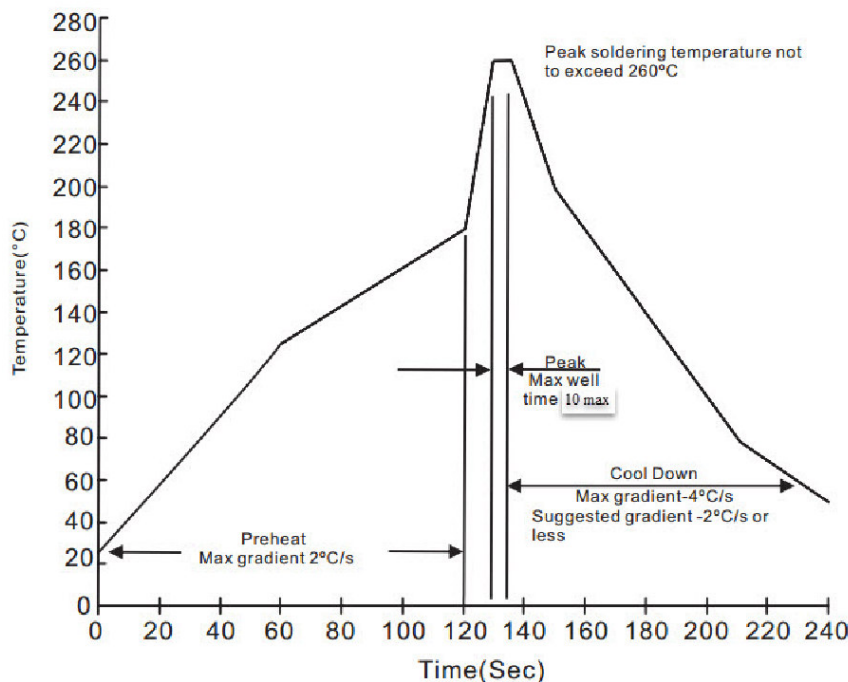
Packaging Type	Packing Methods			Ammo Packing		
	A	B1-B2 Max	S	A	B	C
0623	52+1/-0	1,2	5±0,3	79±2	100±3	257±5
	26+0,5/-0	1,0		52±2	109±3	252±5
0932	52+1/-0	1,2	5±0,3	79±2	58±3	257±5
1145	73+1/-0	1,5	5±0,3	103±2	82±3	262±5
	52+1/-0			81±2	85±3	256±5
1550	73+1/-0	1,5	10±0,8	103±2	96±3	265±5
	52+1/-0			82±2	108±3	258±5
1765	73+1/-0	1,5	10±0,8	103±2	82±3	262±5

in mm

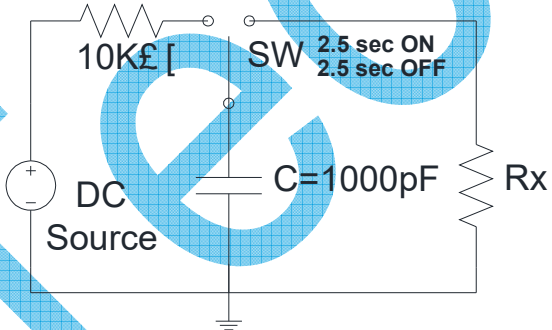
#### Stock period

The performance of these products, including the solderability, is guaranteed for 24 month, provided that they remain packed as they were when delivered and stored at a temperature of 25°C ± 3°C and a relative humidity less than 80%RH

#### Lead free temperature profile wave-soldering



## Environmental Characteristics

Item	Requirement	Test Method
Short Time Overload	$\pm(1.0\%+0.05\Omega)$	Rated voltage*2,5 or Max. overload voltage for 5 seconds
Temperature Coefficient (T.C.R)	$\pm 300\text{ppm}$	Resistance value at room temperature and room temperature+100°C
Moisture Resistance	$\pm(5.0\%+0.05\Omega)$	40 $\pm$ 2°C, 90~95% R.H. for 1000 hrs with 1,5 hrs "ON" and 0,5 hrs OFF"
Anti Surge Characteristics	1/4W=1KV 1/2W=3KV 1W=3 $\Omega$ ~6 $\Omega$ =10KV 7 $\Omega$ ~10 $\Omega$ =7KV 11 $\Omega$ ~10K $\Omega$ =5KV 2W/3W=10KV $\pm(20\%+0,05\Omega)$	Discharge test: Max Anti Surge 1000pF capacitor discharge pulse 50 time. (1 pulse/5sec. max) 
Resistance To Soldering Heat	$\pm(1,0\%+0,05\Omega)$	260°C $\pm$ 5°C for 10 $\pm$ 1 seconds or 350°C $\pm$ 10°C for 3,5 $\pm$ 0,5 seconds
Terminal Strength	Tensile: $\geq 2,5\text{kg}$	Direct Load for 10 sec. In the direction off the terminal leads
Load Life	$\pm(5,0\%+0,05\Omega)$	1000 hours at rated voltage, 40°C 1,5 hrs "ON" and 0,5 hrs OFF"

Reference Standards:IEC 60115-1

RCWV (Rated continuous working voltage)=  $\sqrt{P \cdot R}$ 

The 05A series parts are Non-inductive

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