Specifications

Products Name	SMT High Voltage Metal Thick Film Chip Resistor
Product Series	LRT****V
Classification	Generic Specification

YOKOHAMA
ELECTRONIC DEVICES
Y. E. D

SMT High Voltage Metal Thick Film Chip Resistor Specification

Scope

This specification applies to SMT High Voltage Metal Thick Film Low Ohmic Chip Resistor

Part Number

LRT	6432	V	W	625		F
Part Series	**Size** 5025(2010) 6432(2512)	**Characteristic** V: High Voltage Handling	**Termination** W: With Side Termination	**Resistance**		**Tolerance** F: ±1% J: ±5%
				E24 series	3digits	

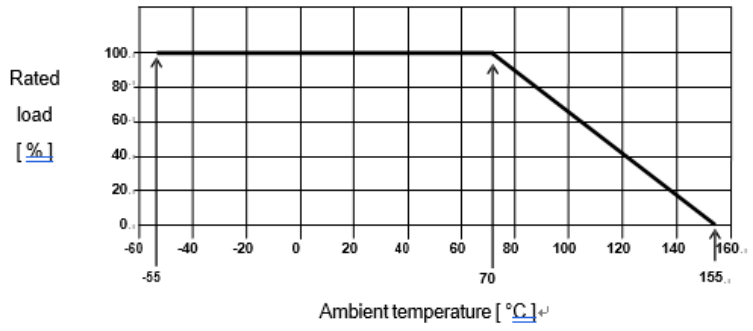
Electrical Specification

Size	Rated power (W) Jumper: Rated Current(A)	Range of resistance(Ω)	Tolerance (Nominal Resistance Series)	TCR	Max. Operating Voltage(V)	Max. Overload Voltage(V)
5025	0.5	1-10M	F: ±1%, J: ±5% (E-24)	±100ppm/deg.C	2000	3000
6432	1				3000	4000

<Ratings>

Parameter	Specification
Rated Ambient temperature	+70 deg. C Refer to Derating curve, Figure-1
Rated Operating Temperature Range	-55~+155 deg. C
Rated Voltage	$\sqrt{\text{Power x Resistance}}$ (V)

Figure-1



Structure/Dimensions/Marking

<Structure>

This part has a structure that metal glazed resistor is formed on ceramic substrate with the termination layers interconnected, and the passivation coated (See figure-2) under construction and composition as shown in the chart in the below (See Figure-3).

Figure-2

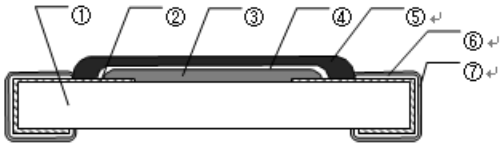


Figure-3

Symbol	Construction	Composition
①	Substrate	Al2O3(96%)
②	Inner Electrode	Ag-Pd Thick Film
③	Resistor	Ru-O2 Thick Film
④	Protection coating	Glass passivation
⑤	2nd Side Electrode	Ni plating
⑥	3rd Side Electrode	Sn plating

<Dimension>

Figure-4

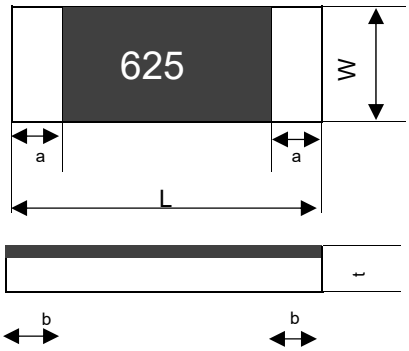


Figure-5

Size	Dimension (mm)				
	L	W	a	b	t
5025	5.0±0.2	2.50±0.15	0.6±0.2	0.5±0.3	0.6±0.1
6432	6.3±0.2	3.2±0.2	0.7±0.2	0.7±0.2	0.6±0.1

<Marking>

E24 series : 3 digits

Example) 103 : 10×10^3 = 10,000(Ω) = 10k(Ω)

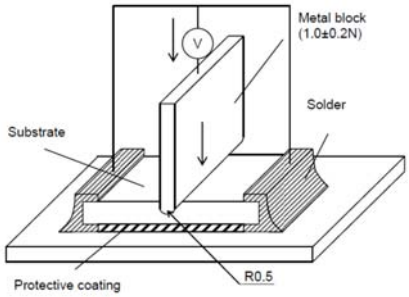
Reliability Characteristics

Figure-6

Item	Condition		Specification
Short Time Overload	Loading power＝2.5 times x the rated voltage Loading time＝5sec.		±2.0%
High Temp. Exposure	Thermostatic Chamber＝155±3 deg. C Retention time＝1000 h $\pm^{48}_{0}$ Hrs.		±1.0%
Low Temp. Exposure	Thermostatic Chamber=-55±3 deg. C Retention time＝1000 h $\pm^{48}_{0}$ hrs.		±1.0%
Temp./Humidity Biased Test	Thermostat Chamber＝40℃±2 deg. C 90～95％RH Loading voltage＝Rated voltage A cycle＝90min. on～30mi. off Retention time cycled＝1000 h $\pm^{48}_{0}$ hrs.		±3.0%
Thermal Cycle	A series of dwell time at each stage in the below cycles; Stage 1＝-55℃±3 deg. C for 30min. Stage 2＝RT within 3 min. Stage 3＝+155±3 deg. C for 30min. Stage4＝RT within 3 min.	100 cycles	±1.0%
Load Life	Thermostat Chamber＝70±3 deg. C Loading voltage＝Rated voltage Retention time＝90min. on～30min.off 1000 h $\pm^{48}_{0}$ hrs.		±3.0%
Solderability	Solder Temp.＝245±5 deg. C Soaking time＝3±0.5sec. Pre-conditioning＝immersing in flux for 1～2sec. Flux＝IPA solution with 25% weight ratio of rosin solvent		New soldered coverage takes up 95% of terminations
Soldering Heat Resistance	Solder Temp.＝260±5 deg. C（Molten solder） Soaking time＝10±1sec.		No solder leach observed
Board Flex	A distance between two supporting points： 90mm Flex depth： 1mm Board：Glass Epoxy t =1.6mm Retention time＝10±1sec.		±1.0%
Insulation	Applied voltage：DC100V±15V under the setup shown in the below for 1min and measure resistance. (from termination to substrate)		1,000MΩ or over

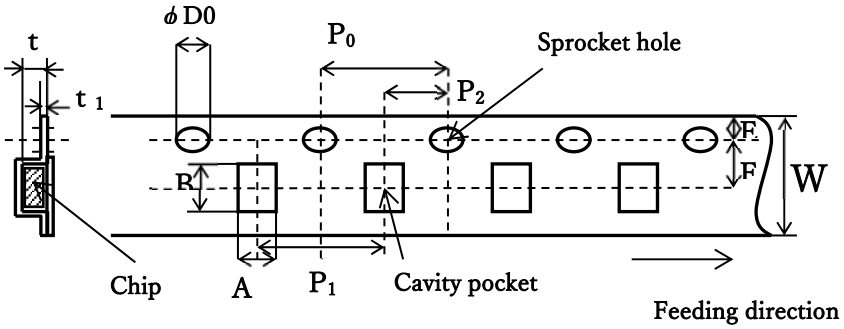
Dielectric withstanding	With 400V to be applied under the setup shown in the below for 60±5s.	No damage by flash-over, burnout and dielectric breakdown. leak current: ≦2mA

Figure-7 Measurement Setup for insulation resistance/dielectric withstanding voltage



Packaging

Figure-8 Carrier tape Embossed plastic taping



Size	A	B	W	F	E	P_1	P_2	P_0	D_0	t_1	t_2
5025	2.90±0.10	5.40±0.10	12.00±0.20	5.50±0.05	1.75±0.10	4.00±0.10	2.00±0.05	4.00±0.10	1.55±0.05	1.10max	0.25max
6432	3.40±0.10	6.60±0.10									

Remark: Pitch tolerance over any 10 pitches of P0 is ±0.2mm. (Unit: mm)

Figure-9 Finish Specification of Leading end

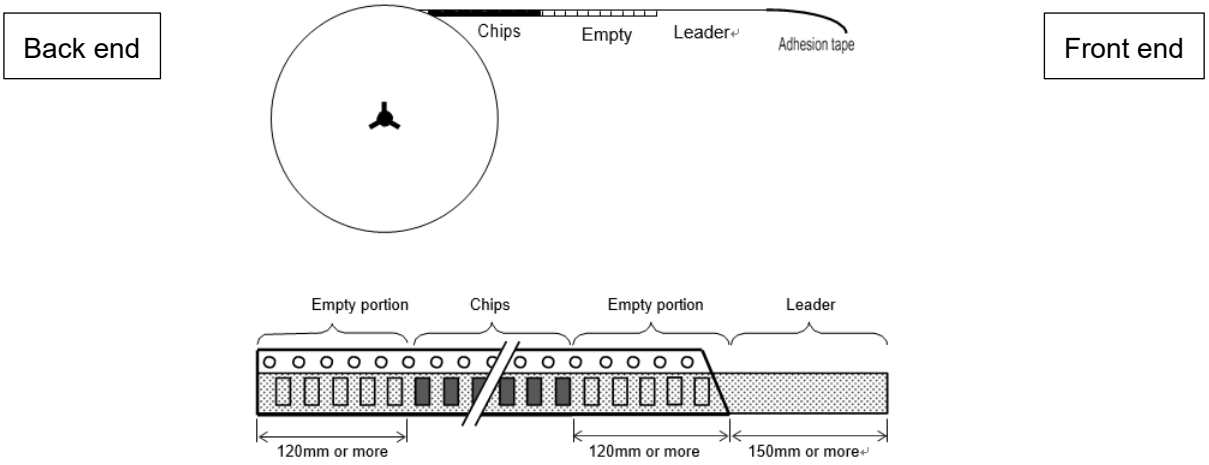


Figure -10 Cover Tape Peel-off Strength

F = Peel-off Strength： 0.1-1.0N (10-100gf)

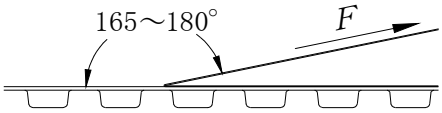
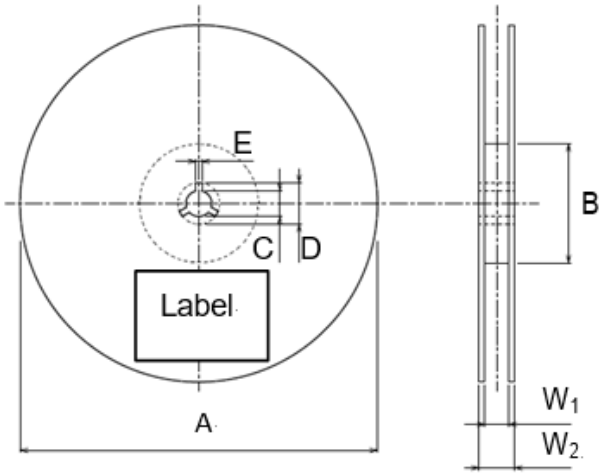


Figure-11 Reel Configuration(Plastic Reel)



Material: Plastic

Denote	6432
SPQ	4000
ϕ A	180±3.0
ϕ B	60.0±1.0
ϕ C	13.0±0.2
ϕ D	21.0±0.8
E	2.0±0.5
W1	13.0±0.3
W2	15.4±0.1

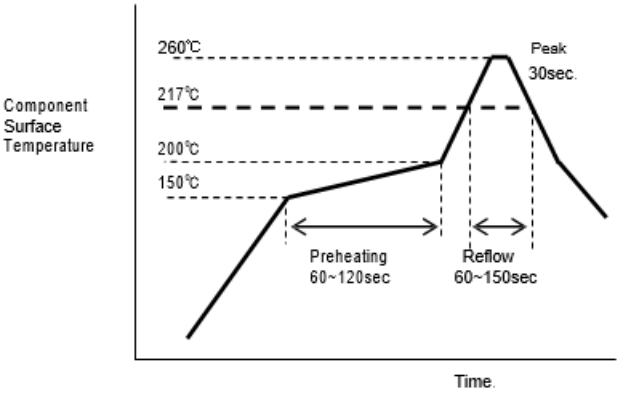
(Unit: mm)

Figure-12 Labelling

LRT6432VW625F	←	Part number
QUANTITY 4,000pcs	←	Quantity
INSPTECTED F	←	Manufacturing Month
Y.E.D. CO., LTD.	←	Manufacture
70223408	←	Lot number
MADE IN JAPAN	←	Country of origin

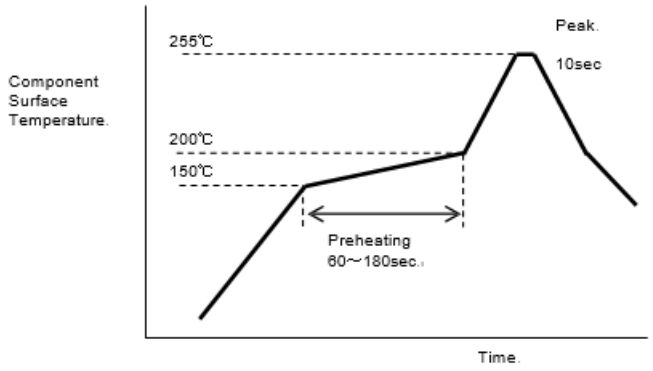
Soldering Temperature Profile

Figure-13 **Reflow profile (max. 3 cycles)**



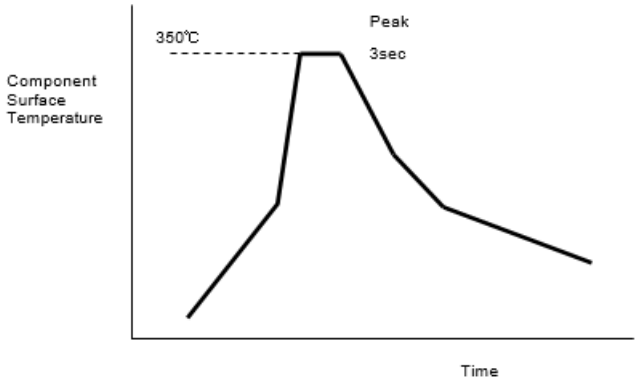
	Lead-free solder Sn-3.0Ag-0.5Cu
Preheat.	150～200°C, 60～120sec.
Reflow	Min. 217°C, 60～150sec
Peak.	255~260°C, 30sec Max.

Figure-14 **Flow profile (max. 3 cycles)**



	Lead-free solder Sn-3.0Ag-0.5Cu
Preheat	150~200deg.C, 60~180sec.
Peak.	Max.255℃, 10sec or less

Figure-15 **Soldering iron condition**



	Lead-free solder Sn-3.0Ag-0.5Cu.
Soldering iron	Max.350deg. 3sec

Storage

The products should be kept packed and stored at temperature of 15~35°C and a humidity 25~85%RH. The products should not be left in the place affected by direct sunlight and harmful gas (chlorine, sulfur, etc.).
Warranty period: 1 year after shipping date.

***** E&OE *****