Specification. No.	Rev. Symbol	Page	Distribution No.
MOS－D－0002	V	0／10	

Specification

For Miniature Paint Insulated Fixed Metal Oxide Film Resistors, Flame Proof

Model MOS

HOKURIKU ELECTRIC INDUSTRY CO,. LTD.

COMPONENTS DIVISION・FILM RESISTOR FACTORY

Established Date	Revised Date	Applied Date
OCT. 2. 1978	12. DEC. 2011	12. DEC. 2011

To be kept at	Approved by	F. Maeda
Engineering Section	Checked by	S. Takasaki
	Drawn up by	M. Haruta

FORM No. 042B

REVISION RECORD

☐REGULATION ☐STANDARD ☐SPECIFICATION ☐DRAWING

REGULATION·STANDARD·SPECIFICATION·DRAWING No.			TITLE		
MOS－D－0002			Miniature Paint Insulated Fixed Metal Oxide Film Resistors, Flame Proof		
DATE	Rev. No.	CONTENT	REASON	ISSUED	CHECKED
1998. 09. 04	A	check whole page Change Spec. No. on ISO REGULATION MOS-D-0002	check whole page	T. Matsu-kawa	T. Naka-yama
1999. 09. 24	B	SHEET No. 2/10 5. Dimensions and Constructions 1) Dimensions MOS1 body length:L 9. 5±1. 0 → 9. 0±1. 0 MOS3 body length:L 16. 0±1. 5 → 15. 0±1. 5 MOS3 body dia:D 6. 0±1. 0 → 5. 5±1. 0	check Dimensions	H. Taka-saki	H. Waka-bayashi
2000. 09. 07	C	SHEET No. 9/10 9. Packaging 3) taping box dimension Alter a RY box dimension MOS1/2, 1, 2 (mm) H 155±5 W 50±5 L 340±5 ↓ MOS1/2, 1 MOS2 (mm) H 155±5 100±5 W 50±5 50±5 L 340±5 340±5	Check Dimension MOS2W RY taping box	S. Taka-saki	H. Waka-bayashi
2001. 01. 25	D	SHEET No. 10/10 An addition to item, "10. Producing district and factory name" 10. Notes → 11. Notes	Expansion of Producing district	S. Taka-saki	H. Waka-bayashi
2002. 03. 05		SHEET No. 4/10 6. Characteristics and Test method No. 11 Dielectric withstanding voltage test voltage 350V ↓ 1/2W : 250V 1～3W : 350V	訂正		
2002. 08. 06	E	SHEET No. 4/10 6. Characteristics and Test method No. 7 solderability Characteristics 90% min. → 95% min. SHEET No. 10/10 10. Producing district and factory name (Domestic factory) PASSIVE COMPONENTS DIVISION ↓ COMPONENTS DIVISION	見直しにより 組織変更により	S. Taka-saki	S-Araki
2003. 02. 5	F	SHEET No. 10/10 HOKURIKU (DONGGUAN) Co., Ltd. & HOKURIKU ELECTRIC INDUSTRY CO., LTD. FILM RESISTORS FACTORY·FURUKAWA MANUFACTURING SECTION ↓ HOKURIKU (DONGGUAN) Co., Ltd. & OEM in Domestic factory	生産拠点の見直し	waka-bayashi	T. Naka-yama

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2003. 02. 17	G	SHEET No. 1/10 3． table 1. Ratings Operating temperature range -25～+150℃ →-55～+200℃ Fig 1. Derating curve Ambient temperature/℃ -25～+150℃ →-55～+200℃ SHEET No. 4/10 table 4. Characteristics No.2. Temperature coefficient of resistance Measured by changing resistance valueat at +25℃ to +125℃ 追記 SHEET No. 10/10 HOKURIKU (DONGGUAN) Co., Ltd. & OEM in Domestic factory ↓ HOKURIKU (DONGGUAN) Co., Ltd.	使用温度範囲の見直し 生産拠点の見直し	waka-bayashi	T. Naka-yama
2003. 09. 17	H	SHEET No.3/10 5． 寸法及び構造 2）構造 ①リード線 材料 (Sn:Pb=95:5)→(Sn-2Cu) SHEET No.4/10 表３． 特性表 No.7 はんだ付け性 試験温度 235±5℃ → 245±5℃	鉛フリー化による リード線メッキの変更	若林	中山
2004. 02. 18	J	SHEET No.1/10 3． 定格 図１． 負荷軽減曲線 の変更 SHEET No.9/10 9． 包装 1）包装数量 200ヶ/袋 → 100ヶ/袋 2）ラベル 記載事項 type, resistance value, quantity, lot No., maker trade mark ↓ type designation, quantity, manufacturing No. maker trade mark	負荷軽減曲線図の見直し 単位数量の見直し ラベル発行システムの切替による	春田	若林
2005. 02. 22	K	SHEET No.1/10 3． 定格 図１． 負荷軽減曲線 の変更 (1/2W, 1W)	負荷軽減曲線図の見直し	春田	若林
2005. 04. 20	L	SHEET No.10/10 １１． 注意事項 8） ＲｏＨＳ指令について 追記	ＲｏＨＳ指令対応による変更	春田	若林
2005. 05. 06	M	SHEET No.8/10 4)RY型ﾗｼﾞｱﾙﾃｰﾋﾟﾝｸﾞ MOS1, 2, 3 F2寸法公差 7.5±0.8 →$7.5^{+0.6}_{-0.2}$	ＲＹ加工寸法公差の見直し	春田	若林
2005. 09. 14	N	SHEET No.4/10 試験方法適用規格の変更 JIS C 5202 → JIS C 5201-1	JIS規格の改廃による変更		
2006. 02. 02	〃	表３． 特性表 No.4. 耐久性（定常状態）→ 高温高湿（定常状態） 「定格電力を90分ON30分OFF」→ 追記 No.5. 耐久性（定格負荷） 「定格電力を90分ON30分OFF」→ 追記	表記の訂正と追記	春田	若林
2006. 04. 11	〃	No.10. 断続過負荷 「抵抗値100Ω以上に適用」追記			

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MOS－D－0002			Miniature Paint Insulated Fixed Metal Oxide Film Resistors, Flame Proof		
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2006.04.12	P	~~SHEET No.2/10~~ ~~5. 寸法及び構造~~ ~~1)製品寸法~~ ~~図2. 製品外形図~~ ~~L'（ﾘｰﾄﾞ線を含む全長）追加~~ ~~ﾘｰﾄﾞ線長さ1 → 参考値~~ ~~ﾘｰﾄﾞ線長さ1の変更~~ ~~MOS2(mm) : 38±3 → 25（参考値）~~ ~~MOS3(mm) : 38±3 → 24（参考値）~~ ~~ﾘｰﾄﾞ線を含む全長L' 寸法明記~~ ~~MOS1/2~MOS3(mm) : 61±3~~ SHEET No.8/10 3)RP型ﾗｼﾞｱﾙﾃｰﾋﾟﾝｸﾞ MOS2(mm) H寸法 38max. → 35.5max F3寸法 6.35±1.0 → 5.85±1.0	（取消理由：事業本部の計画変更による 2007.2.15） 寸法の見直し	春田	若林
2006.06.30	Q	SHEET No.10/10 11. 注意事項 4)抵抗器のはんだ付けについて 「はんだゴテによる作業の場合は・・・・」→追記 9)お願い事項追記	表記文の見直しによる追加	春田	若林
2006.12.26	R	SHEET No.2/10 5. 寸法及び構造 1)製品寸法 MOS1ﾘｰﾄﾞ線径 0.8±0.1 → 0.65±0.1 加工記号・注釈文の追記 SHEET No.6/10 7. フォーミング加工 MOS1 R加工追記 SHEET No.7/10, 8/10 8. テーピング加工 各加工にφd寸法の追記 SHEET No.9/10 9. 包装 1)包装数量 ｽﾄﾚｰﾄに記号附記、自立ﾌｫｰﾐﾝｸﾞR追記 ＴＵの１Ｗ記号変更→TU65, TU65H 3)ﾃｰﾋﾟﾝｸﾞ箱寸法 ＴＵの１Ｗ→ＴＵ６５ ＴＵ６５Ｈの箱寸法・注釈文追記	１Ｗリード線径の変更	春田	若林
2007.07.04	S	SHEET No.2/10 5. 寸法及び構造 1)製品寸法 のﾘｰﾄﾞ線仕様表記 ↓ 7. 製品形状寸法 へ明記 7. ﾌｫｰﾐﾝｸﾞ → 7. 製品形状寸法 1)ｽﾄﾚｰﾄﾊﾞﾗ → 追記 各形状寸法にﾘｰﾄﾞ線径の明記 SHEET No.8/10 3)RP型ﾗｼﾞｱﾙﾃｰﾋﾟﾝｸﾞ MOS1/2 H寸法 32max. → 28.5max	リード線径表記の変更 寸法の見直し	春田	若林
2008.01.15	T	SHEETNo.7/10 8. ﾃｰﾋﾟﾝｸﾞ加工 P寸法公差：±0.3 に統一 S寸法：0.8以下 に統一 ・累積ﾋﾟｯﾁの許容差： ±1.6mm/20ﾋﾟｯﾁ→±2.0mm/20ﾋﾟｯﾁ	TP・TUﾃｰﾋﾟﾝｸﾞ図の統一及び寸法値の規格統一	春田	高崎
2011.4.26	U	SHEETNo.8/10 8. ﾃｰﾋﾟﾝｸﾞ加工 3)ﾊﾟﾅｻｰﾄﾗｼﾞｱﾙﾃｰﾋﾟﾝｸﾞ(RP) MOS1/2W粘着ﾃｰﾌﾟ幅(W)変更 12.5min. →5.5min.	・１／２ＷＲＰテーピング粘着テープ幅変更		

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2011. 12. 12	V	SHEET No. 10/10 HOKURIKU (DONGGUAN) Co., Ltd. ↓ HOKURIKU ELECTRIC (GUANG DONG) CO., LTD.	独資企業への転換による社名変更		

Products Specification;MOS	No.MOS－D－0002V

Items	Contents

1. Application

This specification covers Miniature Paint Insulated Fixed Metal Oxide Film Resistors; MOS.

2. Model No. designation

A model No. is designated as follows.

ex.

MOS	1 W	102	J	TU65
Model	Rated Wattage	Resistance	Tolerance	Forming, Taping

3. Ratings

1) Ratings

Ratings are shown at table 1. Ratings.

table 1. Ratings

Items	Contents			
type	MOS1/2	MOS1	MOS2	MOS3
Rated wattage	0.5 W	1 W	2 W	3 W
Max. operational voltage	250 V	350 V	350 V	350 V
Max. overload voltage	400 V	600 V	600 V	600 V
Max. intermittent overload voltage	500 V	750 V	750 V	750 V
Dielectric withstanding voltage	250 V	350 V	350 V	350 V
Rated ambient temperature	70 ℃			
Operating temperature range	−55 ℃ to +200 ℃			
Resistance tolerance	class G(±2 %), J(±5 %), K(±10 %)			
Resistance range	0.1 Ω to 10 kΩ	0.1 Ω to 100 kΩ	0.1 Ω to 100 kΩ	0.1 Ω to 100 kΩ

*In case of under 0.2 Ω of resistance value, resistance tolerance is only class J and K.

*Rated wattage is the maximum continuous power applicable at ambient temperature from −55 ˚C to 70 ˚C.

*Max. operational voltage is the D.C. or rms A.C. maximum voltages that fixed by each resistor size. If calculated rated voltage is over Max. operational voltage, this Max. operational voltage is rated voltage.

*In case of ambient temperature above 70 ˚C, power rating shall be in accordance with Fig 1. Derating curve.

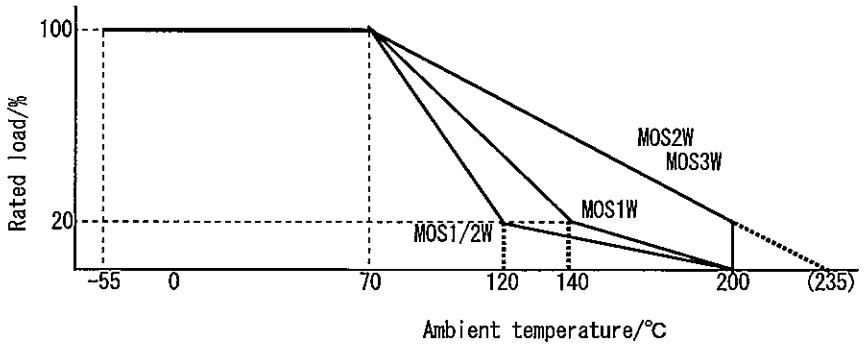

Fig 1. Derating curve

2) Rated voltage

Rated voltage is the D.C. or rms A.C. maximum voltage at ambient temperature from −55 ˚C to 70 ˚C. Rated voltage shall be determined from following formula. If Rated voltage is over Max. operational voltage, then rated voltage is equal to Max. operational voltage on table1.

$$\text{Rated voltage[V]} = \sqrt{\text{rated wattage[W]} \times \text{nominal resistance[Ω]}}$$

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4. Nominal Resistance

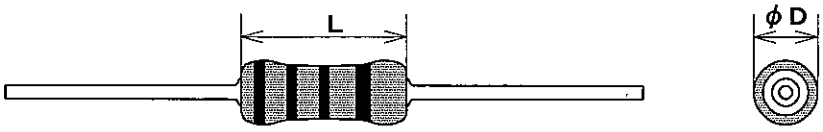
Nominal resistance are that following basic value multiplied by $10^{-1}, 10^{0}, 10^{1}, 10^{2}, 10^{3}, 10^{4}, 10^{5}$.

table2.

series	basic value									
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						

5. Dimensions and Constructions

1) Dimensions



(mm)

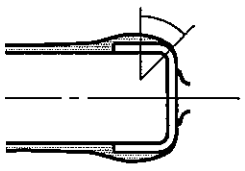
Model	body length L	body dia D
MOS1/2	6.5±1.0	2.2±0.5
MOS 1	9.0±1.0	3.5±1.0
MOS 2	12.0±1.5	4.0±1.0
MOS 3	15.0±1.5	5.5±1.0

※ The size of the lead wire has been described in the paragraph of "7. Shape and dimensions of a product-1) Straight bulk".

Painting method

Welding point, terminal and lead wire, is permissible to be exposed without the outer coated cover. The extent should be within 1/2 of the arc angle.

1/2 of the arc angle



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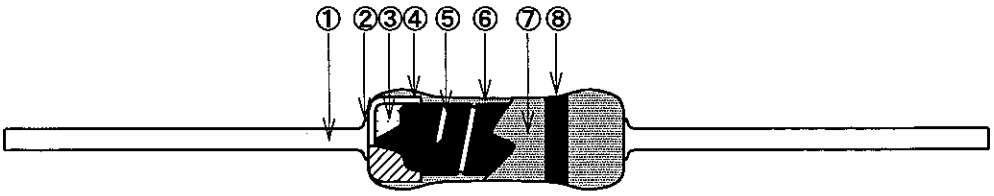
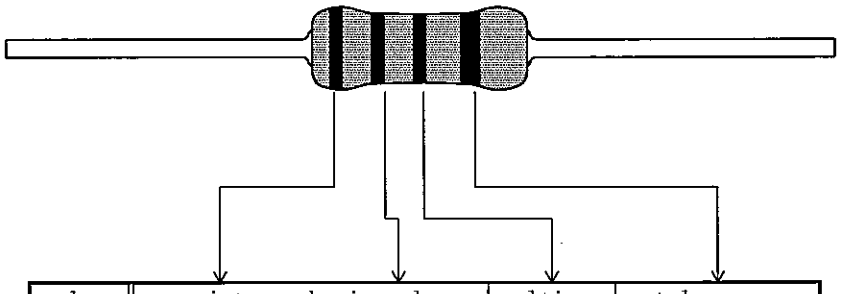
2)Constructions



	parts	material
①	lead wire	rich tin plated copper wire(Sn-2Cu)
②	contact of cap and lead wire	welding
③	ceramic base	alumina ceramic of the kind
④	cap	tin plated iron base
⑤	helical cutting groove	-
⑥	conductive film	metal oxide film(10 Ω and over), plated metal film(less than 10 Ω)
⑦	insulation coat	silicone paint of the kind(green) flame proof(UL94V-0)
⑧	color code	silicone resin of the kind

3)Marking

Markings are four color bands.



color	resistance basic value		multi-plier	tolerance
	1st digit	2nd digit		
black	0	0	10^0	—
brown	1	1	10^1	—
red	2	2	10^2	± 2 %
orange	3	3	10^3	—
yellow	4	4	10^4	—
green	5	5		—
blue	6	6		—
violet	7	7		—
gray	8	8		—
white	9	9		—
gold	—	—	10^{-1}	± 5 %
silver	—	—	10^{-2}	±10 %

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6.Character-istics and Test method

Characteristics and test method are shown table 4.Characteristics.

table 4.Characteristics

№	Items	Characteristics	Test method
1	Resistance value	class G(± 2 %), J(± 5 %),K(±10 %)	JIS-C-5201-1 4.5
2	Temperature coefficient of resistance	±300 ppm／ ℃	A resistance temperature coefficient is computed from the difference of resistance (R2) with t1+100 ℃ (t2) on the basis of the resistance (R1) in normal temperature (t1). T.C.R.=$(R2-R1)/R1)/(t2-t1)\times10^6$ ppm /℃
3	Short-time overload	resistance change within ±(1.0 %+0.05 Ω)	JIS-C-5201-1 4.13 Rated voltage×2.5 5 s
4	Damp heat (steady state)	resistance change within ±(5.0 %+0.05 Ω)	JIS-C-5201-1 4.24 1)test temp.40 ℃±2 ℃ 2)relative humidity 90 % to 95 % 3)duration 1 000 h^{+48}_{-0} h Rated wattage: 90 min ON,30 min OFF
5	Endurance (rated load)	resistance change within ±(5.0 %+0.05 Ω)	JIS-C-5201-1 4.25.1 1)test temp 70 ℃±2 ℃ 2)duration 1 000 h^{+48}_{-0} h Rated wattage: 90 min ON,30 min OFF
6	Resistance to soldering heat	resistance change within ±(1.0 %+0.05 Ω)	JIS-C-5201-1 4.18 temp.of solder and duration of immersion 260 ℃±5 ℃, 10 s±1 s or 350 ℃±10 ℃, 3.5 s±0.5 s
7	solder-ability	95 %min. coverage	JIS-C-5201-1 4.17 1)temp.of solder 245 ℃±5 ℃ 2)duration of immersion 5.0 s±0.5 s 3)preparation not applied
8	Change of temperature	resistance change within ±(1.0 %+0.05 Ω)	JIS-C-5201-1 4.19 1)test temperature -25 ℃±3 ℃(30 min) to normal temperature(2 to 3 min) +85 ℃±3 ℃(30 min)to normal temperature(2 to 3 min) 2)number of cycles 5cycles
9	Resistance to vibration	resistance change within ±(1.0 %+0.05 Ω)	1)condition A(10 Hz to 55 Hz) 2)XYZ3-direction each 2 h (6 h in total)
10	Intermittent overload	resistance change within ±(5.0 %+0.05 Ω)	JIS-C-5201-1 4.39 1)applicable more than 100 Ω 2)Rated voltage×3 1 s ON, 25 s OFF 3)10 000^{+48}_{-0} cycles
11	Dielectric withstanding voltage	Flash over,burning, insulation damages should not be observed.	1)V-Block 2)test voltage 1/2 W:250 V 1～3 W:350 V 3)duration time 60 s^{+5}_{-0} s 4)voltage increasing rate 100 V/s

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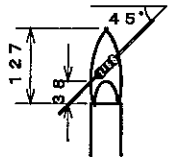
table 3. Characteristics (continued)

No.	Items	Characteristics	Test method
12	Terminal strength (tensile strength)	lead wire break and terminal loose should not be observed.	JIS-C-5201-1 4.16 1) tensile force 10 N 2) maintained time 10 s±1 s
	Terminal strength (torsional strength)		1) torsional angle 360 ° 2) torsional times 5times (0 °→360 °→0 ° counted as twice)
	Terminal strength (bending strength)		1) bending force 5 N 2) bending time twice (0 °→+90 °→0 °→−90 °→0 °)
13	Insulation resistance	10 GΩmin.	JIS-C-5201-1 4.6.1.1 1) V-Block 2) test voltage 100 V 3) measured at applied voltage maintained for 1 min.
14	Flame retardance (Flame resistance test)	flame 5 s max. in total	calorific value of 38 kJ/m^3 maintained 15 s then removed 15 s counted 1cycle. This cycle is carried out 5 times. outer flame 127 mm inner flame 38 mm an angle 45 ° 
	Flame retardance (Over-load burning resistance)		applying A.C. voltages corresponding to 2 times, 4 times , 8 times, 16 times and 32 times rated wattage each for 1 min. until disconnection. (regard disconnection as 100 times or more the nominal resistance value) Don't exceed either one of 4 times max. operational voltage or 3 000 V.
15	Resistance to solvent	no remarkable outward changes	JIS-C-5201-1 4.29 1) kind of solvent Isopropyl alcohol 2) temp. 20 °C to 25 °C 3) duration 60 s±10 s

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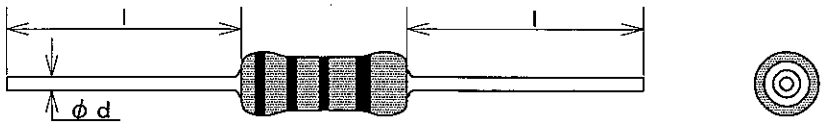
7. Shape and dimensions of a product

1) Straight Bulk

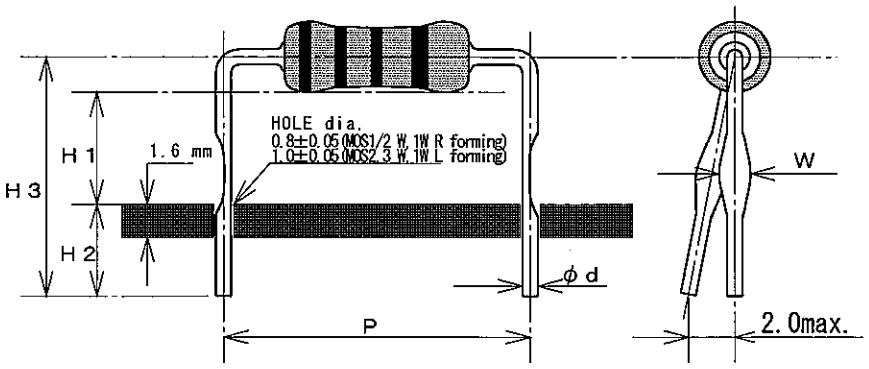


(mm)

Model	symbol	lead length l	lead dia. d
MOS1/2	—	30±3	$0.6^{+0}_{-0.05}$
MOS 1	B65	30±3	0.65±0.1
MOS 2	—	38±3	0.8±0.1
MOS 3	—	38±3	0.8±0.1

※Forming-symbol is a blank in the bulk excluding MOS1.

2) Stand-off forming



(mm)

Model	symbol	φ d	P	H1	H2	H3 (reference value)	W
MOS1/2	L	$0.6^{+0}_{-0.05}$	10.0±1.0	6.0±1.0	5.0±1.0	12.0	1.2±0.2
MOS 1	R	0.65±0.1	12.5±1.5	4.0±1.5	3.5±0.5	9.5	1.2±0.2
MOS 1	L	0.8 ±0.1	15.0±1.0	6.0±1.0	5.0±1.0	13.0	1.4±0.2
MOS 2	LS	0.8 ±0.1	15.0±1.0	6.0±1.0	5.5±1.0	14.0	1.4±0.2
MOS 3	LS	0.8 ±0.1	20.0±1.0	6.5±1.0	5.5±1.0	15.0	1.4±0.2

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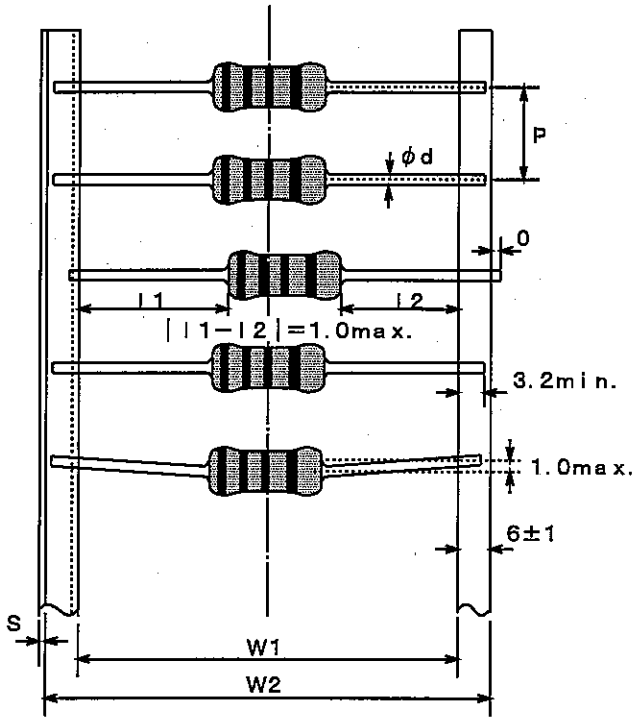
Items	Contents

8. Taping

symbol	taping name	application
TP	Axial panasert taping	MOS1／2 W
TU	Axial universal taping	MOS1／2～3 W
RP	Radial panasert taping	MOS1／2～2 W
RY	RYtype-Radial panasert taping	MOS1／2～3 W

1) Axial panasert taping : TP

2) Axial universal taping : TU(**)



(mm)

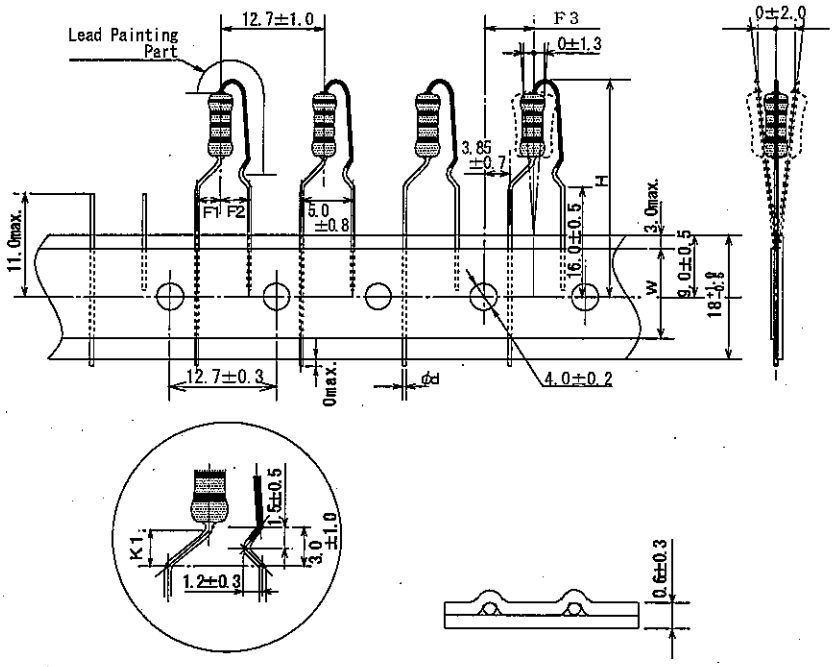
symbol	Model	φ d	W1	W2	P	S
TP	MOS1/2	0.6 $^{+0.1}_{-0.05}$	26$^{+1.0}_{-0}$	39.0±1.0	5.0±0.3	0.8 max.
TU	MOS1/2	0.6 $^{+0.1}_{-0.05}$	52±1.0	64.5±0.5	5.0±0.3	0.8 max.
TU65	MOS 1	0.65±0.1				
TU	MOS 2	0.8 ±0.1				
TU	MOS 3	0.8 ±0.1	52±1.0	64.5±0.5	10.0±0.3	0.8 max.

Integrated pitch tolerance is ±2.0 mm/20 pitches.
・No drop out is permissible.

Products Specification;MOS	No.MOS－D－0002V

Items	Contents

3) Radial panasert taping

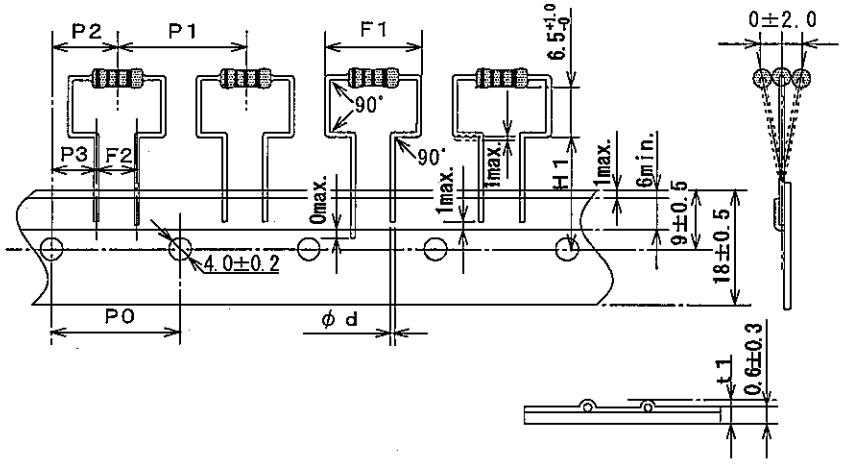


(mm)

symbol	Model	H	φ d	F 1	F 2	F 3	K 1	W
RP	MOS1/2	28.5max.	$0.60^{+0}_{-0.05}$	2.5±0.5	2.5±0.5	6.35±1.0	$3.0^{+0}_{-0.5}$	5.5min.
	MOS 1	32.0max.	0.65±0.1				2.5±0.5	12.5min.
	MOS 2	35.5max.		2.0±0.5	3.0±0.5	5.85±1.0		

*Continuous lack of parts are 3 pcs. Max.

4) RY-type Radial panasert taping



symbol	Model	φ d	P 0	P 1	P 2	P 3
RY	MOS1/2	$0.60^{+0}_{-0.05}$	12.7±0.3	12.7±1.0	6.35±1.0	3.85±0.7
	MOS 1 MOS 2 MOS 3	0.8±0.1	15.0±0.3	30.0±1.0	7.5±1.0	3.75±0.5

(mm)

F 1	F 2	H 1	t 1
11.2max.	5.0±0.5	16.0±0.5	1.5max.
14.0max.	$7.5^{+0.6}_{-0.2}$	18.0±1.0	1.7max.
17.0max.		19.0±1.0	
21.0max.			

*Continuous lack of parts are 3 pcs. Max.

Products Specification;MOS	No.MOS－D－0002V

Items	Contents

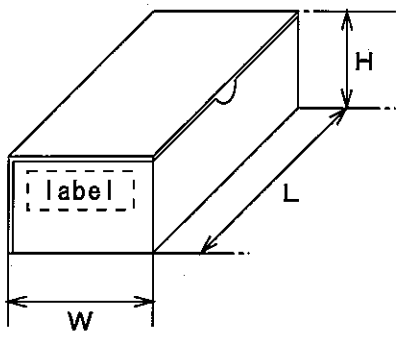
9. Packaging
1) quantity

	sym -bol	pack -agin	quantity MOS1/2 W	MOS1 W	MOS2 W	MOS3 W
Straight Bulk	-	bag	100pcs	——	100pcs	100pcs
	B65	bag	——	100pcs	——	——
Stand-off forming	L	bag	100pcs	100pcs	——	——
	R	bag	——	100pcs	——	——
	LS	bag	——	——	100pcs	100pcs
Axial panasert taping	TP	box	2 000pcs	——	——	——
Axial universal taping	TU	box	2 000pcs	——	2 000pcs	1 000pcs
	TU65	box	——	2 000pcs	——	——
	TU65H	box	——	2 000pcs	——	——
Radial panasert taping	RP	box	2 000pcs	2 000pcs	2 000pcs	——
RYtype-Radial panasert taping	RY	box	2 000pcs	1 000pcs	500pcs	500pcs

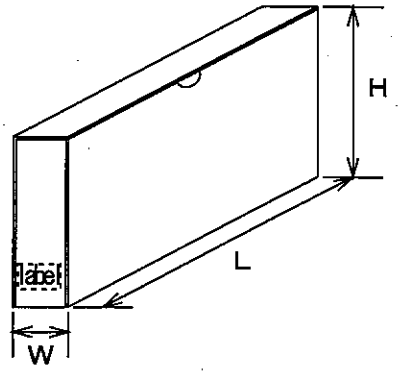
2) label

	the items mentioned
Straight Bulk	Model No. designation, quantity, lot ID number, maker trade mark
Stand-off forming	Model No. designation, quantity, lot ID number, maker trade mark
Taping	Model No. designation, quantity, lot ID number, maker trade mark

3) taping box dimension



Taping box(TP·TU)



Taping box(RP·RY)

(mm)

symbol		Model	H	W	L
Axial panasert(TP)		MOS1/2	50±5	50±5	252±5
Axial univer sal (TU)	TU	MOS1/2	50±5	80±5	252±5
	TU65H	MOS1	110±5	80±5	252±5
	TU65	MOS1	80±5	80±5	350±5
	TU	MOS2,3	100±5	80±5	360±5
RP		MOS1/2	130±5	45±5	325±5
		MOS1	170±5	55±5	325±5
		MOS2	220±5	55±5	325±5
RY		MOS1/2,1	155±5	50±5	340±5
		MOS2	100±5	50±5	340±5
		MOS3	170±5	55±5	340±5

※ MOS1 TU type has two box size. "TU65H" is short type, "TU65" is long type.

10. Producing district and factory name

	Producing district and factory name
Overseas factory	JIAO-SHE ZONE, DONG-KENG TOWN, DONG-GUAN, GUANG DONG, CHINA HOKURIKU ELECTRIC (GUANG DONG) CO., LTD.

Products Specification;MOS	№MOS－D－０００２V

Items	Contents
11.Notes	1) Storing condition It is desirable that the Resistor are stored the room temperature at 0 to 30 ℃ and relative humidity under 65 %,are not at high-temperature,high-humidity,dusty,harmful gas,for example hydrogen chloride and sulfate gas etc. Please not store for a long time,and mount within a year after delivered. 2) Power derating Even if have use it in a derating curve, in consideration of self-fever, ambient temperature of a resistor, heat influence from the other parts. We ask for enough load deratings in case of use in a stable state for a long term. 3) Resistor placing In case of the Resistor are placed around another electric parts,the distance is 5mm at least. 4) Soldering In soldering,soldering heat effect to the Resistor is as little as possible,the advised condition are under 265 ℃ and within 11 s. In case of work by soldering iron, please work in iron temperature less than 360 ℃, less than 4 s. 5) Shock to the Resistor When the Resistor are shocked, there is danger that the Resistor breaks. So in use of insertion machine,please adjust it for no damaging to the Resistor.Please avoid dropping in a high,too. 6) Forming In forming,don't force heavily on Resistor body and welding point. Bending forms are not forced curve. 7) For environmental protection We don't use Class I ODC and PBBOs,PBBs in a products and the process. 8) RoHS directive This resistor is a product satisfying a RoHS. 9) Cautions for Resistors ・This specification shows the quality and performance as a resistor simple. Before adoption, please evaluate and check your product in which the resistor was mounted. ・This products are designed and manufactured for general standard use in general electronic equipment (AV equipment, household electric appliances, office equipment, information and communication equipment, etc.). When there is a danger that a human life and other serious damage will occur by the fault of this products at transportation equipment (such as train, automobile, vessel, etc.), traffic signal, medical equipment, aerospace equipment, electric heating appliances, burning appliances, gas apparatus, rotation equipment, disaster prevention, and crime prevention equipment, please design fail-safe systems and ensure safety, such as the following. ＊Systems with protective circuits and a protective equipment ＊Systems with redundant circuits and others to do not cause danger by a single failure