

Precision Thin Film Chip Resistors High Power Type

RH73 Series

MERITEK

FEATURE

- Operating Temperature: -55 ~ +155°C
- Extremely Low TCR Down to $\pm 1\text{PPM}/^\circ\text{C}$
- Very Tight Tolerance Down to $\pm 0.01\%$
- High Power Rating
- Applications: Medical equipment, testing/ measurement equipment, printer equipment, automatic equipment controller, converters, communication device, cell phone, GPS, PDA



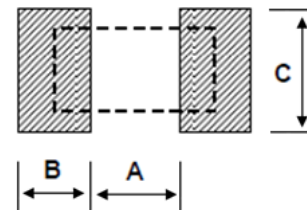
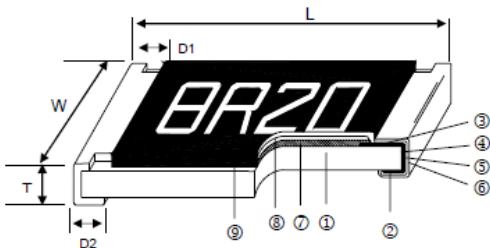
PART NUMBERING SYSTEM



RH73 **F** **1J** **TD** **4R70** **A**
(1) (2) (3) (4) (5) (6)

No	Item	Code	Description	Series Reference
(1)	Meritek Series	RH73	Precision Thin Film Chip Resistor	High Power Type
(2)	TCR Code	F	F: $\pm 25\text{PPM}/^\circ\text{C}$	5: ± 1 ; X: ± 2 , O: ± 3 , B: ± 5 , C: ± 10 , D: ± 15 , G: ± 50
(3)	Size Code	1J	1J: 0603inches	1H: 0201, 1E: 0402, 2A: 0805, 2B: 1206, 2E: 1210, 2H: 2010, 3A: 2512
(4)	Packaging	TD	TD: Paper Tape (Reel)	TE: Plastic Tape (Reel)
(5)	Resistance	4R70	4R70: 4.7Ω	First Three Digits: Significant, Fourth: Multiplier
(6)	Tolerance	A	A: $\pm 0.05\%$	T: $\pm 0.01\%$, B: $\pm 0.1\%$, C: $\pm 0.25\%$, D: $\pm 0.5\%$, F: $\pm 1\%$

DIMENSIONS AND LAND PATTERN RECOMMENDATION



Size	L (mm)	W (mm)	T (mm)	D1 (mm)	D2 (mm)	A (mm)	B (mm)	C (mm)	Weight (g/1000pcs)
1H (0201)	0.58 \pm 0.05	0.29 \pm 0.05	0.23 \pm 0.05	0.12 \pm 0.05	0.15 \pm 0.05	0.25	0.30	0.40 \pm 0.2	0.14
1E (0402)	1.00 \pm 0.05	0.50 \pm 0.05	0.30 \pm 0.05	0.20 \pm 0.10	0.20 \pm 0.10	0.50	0.50	0.60 \pm 0.2	0.54
1J (0603)	1.55 \pm 0.10	0.80 \pm 0.10	0.45 \pm 0.10	0.30 \pm 0.20	0.30 \pm 0.20	0.80	1.00	0.90 \pm 0.2	1.83
2A (0805)	2.00 \pm 0.15	1.25 \pm 0.15	0.55 \pm 0.10	0.30 \pm 0.20	0.40 \pm 0.20	1.00	1.00	1.35 \pm 0.2	4.71
2B (1206)	3.05 \pm 0.15	1.55 \pm 0.15	0.55 \pm 0.10	0.42 \pm 0.20	0.35 \pm 0.25	2.00	1.15	1.70 \pm 0.2	9.02
2E (1210)	3.10 \pm 0.15	2.40 \pm 0.15	0.55 \pm 0.10	0.40 \pm 0.20	0.55 \pm 0.25	2.00	1.15	2.50 \pm 0.2	10
2H (2010)	4.90 \pm 0.15	2.40 \pm 0.15	0.55 \pm 0.10	0.60 \pm 0.30	0.50 \pm 0.25	3.60	1.40	2.50 \pm 0.2	23.61
3A (2512)	6.30 \pm 0.15	3.10 \pm 0.15	0.55 \pm 0.10	0.60 \pm 0.30	0.50 \pm 0.25	4.90	1.60	3.10 \pm 0.2	38.06

Precision Thin Film Chip Resistors High Power Type

RH73 Series

MERITEK

ELECTRICAL CHARACTERISTICS

High Power Rating Electrical Specification

Size	Power Rating at 70°C (W)	Max Operating Voltage (V)	Max Overload Voltage (V)	Resistance (Ω)						TCR (±PPM/°C)
				±0.01%	±0.05%	±0.1%	±0.25%	±0.5%	±1%	
1H (0201)	1/20W	25V	50V	-	-	5K~75K	5K~75K			25, 50
1E (0402)	1/10W	50V	100V	49.9~4.99K			-	-	-	1, 2, 3
				49.9~20K			49.9~20K			5
				49.9~12K		49.9~100K	49.9~100K			10, 15
				-	49.9~12K	4.7~255K	4.7~255K			25, 50
1J (0603)	1/10W	75V	150V	24.9~15K			-	-	-	1, 2, 3
				24.9~60K			24.9~60K			5
				25~100K	4.7~322K		4.7~511K			10, 15
				25~100K	4.7~322K		1~1M			25, 50
2A (0805)	1/8W	150V	300V	24.9~30K			-	-	-	1, 2, 3
				24.9~150K			24.9~150K			5
				25~200K	4.7~511K	4.7~1M	4.7~1M			10, 15
				25~200K	4.7~511K	1~1M	1~1M			25, 50
2B (1206)	1/4W	200V	400V	24.9~49.9K			-	-	-	1, 2, 3
				24.9~300K			24.9~300K			5
				25~499K	4.7~1M		4.7~1M			10, 15
				25~499K	1~1M		1~1M			25, 50
2E (1210)	1/3W	200V	400V	24.9~49.9K			-	-	-	1, 2, 3
				24.9~300K			24.9~300K			5
				25~499K	4.7~1M		4.7~1M			10, 15
				25~499K	1~1M		1~1M			25, 50
2H (2010)	1/3W	200V	400V	24.9~49.9K			-	-	-	1, 2, 3
				24.9~300K			24.9~300K			5
				25~499K	4.7~1M		4.7~1M			10, 15
				25~499K	1~1M		1~1M			25, 50
3A (2512)	3/4W	200V	400V	24.9~2K	4.7~2K		1~2K		10, 15, 25, 50	

Notes:

1. Operating Voltage = $\sqrt{P \cdot R}$ or Max. operating voltage listed above, whichever is lower.
2. Overload Voltage = $2.5 \cdot \sqrt{P \cdot R}$ or Max. overload voltage listed above, whichever is lower.

Precision Thin Film Chip Resistors High Power Type

RH73 Series

MERITEK

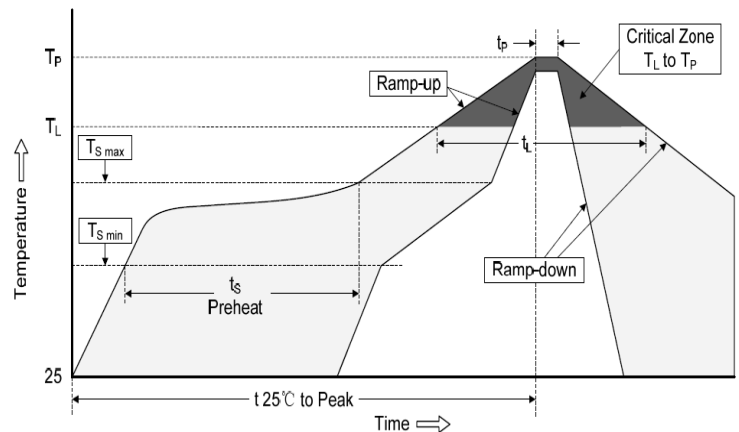
RELIABILITY TEST CONDITION AND REQUIREMENT

Test	Standard	Condition	Requirement	
			Tol. \leq 0.05%	Tol. $>$ 0.05%
Temperature Coefficient of Resistance (T.C.R.)	MIL-STD-202 Method 304	+25/-55/+25/+125/+25°C	As Specified	
Short Time Overload	JIS-C-5201-1 4.13	2.5XRCWV or Max. overload voltage whichever is lower for 5 seconds	$\Delta R \pm 0.2\%$	
Insulation Resistance	MIL-STD-202 Method 302	Apply 100 V _{DC} for 1 minute	$>9999M\Omega$	
Endurance	MIL-STD-202 Method 108A	70 \pm 2°C, RCWV for 1000 hours with 1.5 hours "ON" and 0.5 hours "OFF".	$\Delta R \pm 0.5\%$	
Damp Heat with Load	MIL-STD-202 Method 103B	40 \pm 2°C, 90~95% R.H. RCWV for 1000 hours with 1.5 hours "ON" and 0.5 hours "OFF".	$\Delta R \pm 0.5\%$	
Bending Strength	JIS-C-5201-1 4.33	Bending amplitude 3 mm for 10 seconds 2010, 2512 sizes: 2 mm Other sizes: 3mm	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.1\%$
Solderability	MIL-STD-202 Method 208H	245 \pm 5°C for 3 seconds	95% min. coverage	
Resistance to Soldering Heat	MIL-STD-202 Method 210E	260 \pm 5°C for 10 seconds	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.1\%$
Dielectric Withstand Voltage	MIL-STD-202 Method 301	Max. overload voltage for 1 minute	By type	
Thermal Shock	MIL-STD-202 Method 107G	-55°C ~ +150°C, 100 cycles	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.2\%$
Low Temperature Operation	JIS-C-5201-1 4.36	1 hour, -65°C followed by 45 minutes of RCWV	$\Delta R \pm 0.5\%$	
High Temperature Exposure	MIL-STD-202 Method 108	+155°C for 1000 hours	$\Delta R \pm 0.5\%$	

Note:
Storage Temperature: 15~28°C; Humidity <80% RH

SOLDERING RECOMMENDATION

Reflow Condition		
Pre Heat	Temp. Min T _{s(min)}	150°C
	Temp. Max T _{s(max)}	180°C
	Time (min. to max.) (t _s)	90s ~ 120s
Average ramp up rate (T _L) to peak		3°C/s
T _{s(max)} to T _L (Ramp-up rate)		3°C/s
Reflow	Temp. (T _L)	220°C
	Time (min. to max.) (t _L)	60s max.
Peak Temperature (T _P)		265°C
Time within 5°C of T _P (t _p)		10s
Ramp-down Rate		6°C/s

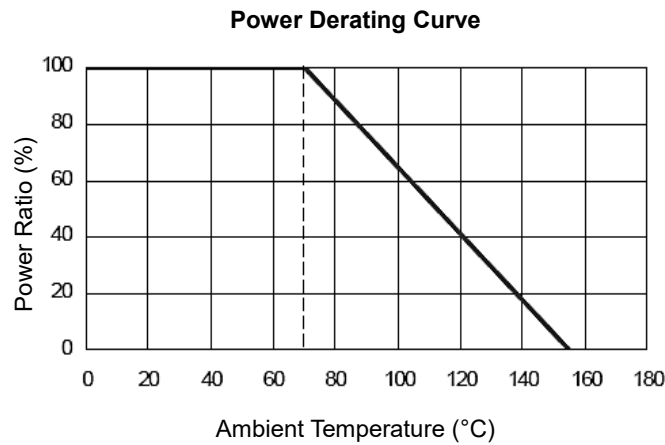


Precision Thin Film Chip Resistors High Power Type

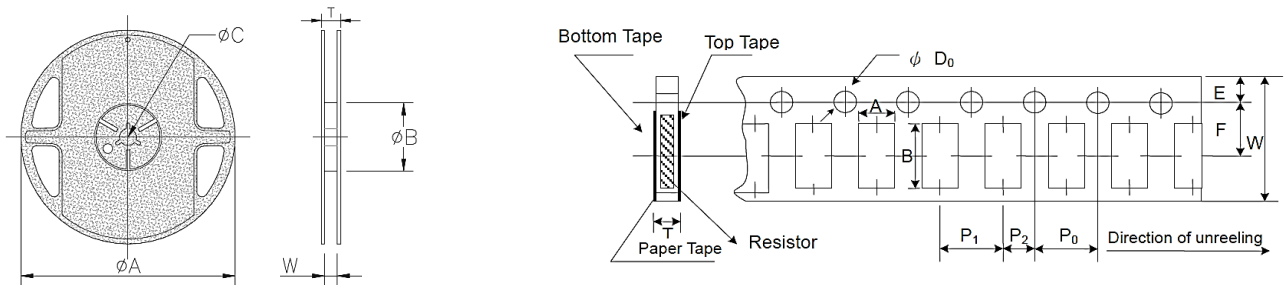
RH73 Series

MERITEK

POWER DERATING CURVE



PACKAGING SPECIFICATIONS



Size	Reel Dimension (mm)								
	Quantity	Type	Tape Width	Reel Diameter	ϕA	ϕB	ϕC	W	T
0201 0402	10K	Paper	8mm	7"	178.0±1.0	60±1.0	13.5±0.7	9.5±1.0	11.5±1.0
0603 0805 1206 1210	5K	Paper	8mm	7"	178.0±1.0	60±1.0	13.5±0.7	9.5±1.0	11.5±1.0

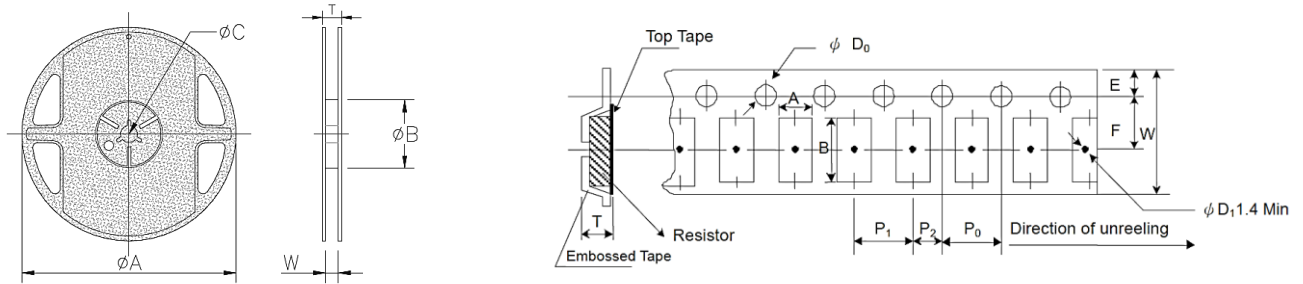
Size	Paper Tape Dimension (mm)									
	A	B	W	E	F	P_0	P_1	P_2	ΦD_0	T
0201	0.40±0.05	0.70±0.05	8±0.10	1.75±0.05	3.5±0.05	4±0.10	2±0.05	2±0.05	1.55±0.05	0.42±0.02
0402	0.70±0.05	1.16±0.05	8±0.10	1.75±0.05	3.5±0.05	4±0.10	2±0.05	2±0.05	1.55±0.05	0.40±0.03
0603	1.10±0.05	1.90±0.05	8±0.10	1.75±0.05	3.5±0.05	4±0.10	4±0.10	2±0.05	1.55±0.05	0.60±0.03
0805	1.60±0.05	2.37±0.05	8±0.10	1.75±0.05	3.5±0.05	4±0.10	4±0.10	2±0.05	1.55±0.05	0.75±0.05
1206	2.00±0.05	3.55±0.05	8±0.10	1.75±0.05	3.5±0.05	4±0.10	4±0.10	2±0.05	1.55±0.05	0.75±0.05
1210	2.75±0.05	3.40±0.05	8±0.10	1.75±0.05	3.5±0.05	4±0.05	4±0.10	2±0.05	1.60±0.10	0.75±0.05

Precision Thin Film Chip Resistors High Power Type

RH73 Series

MERITEK

PACKAGING SPECIFICATIONS



Size	Reel Dimension (mm)								
	Quantity	Type	Tape Width	Reel Diameter	ϕA	ϕB	ϕC	W	T
2010 2512	4K	Plastic	12mm	7"	178.0±1.0	60±1.0	13.5±0.7	13.5±1.0	15.5±1.0

Size	Plastic Tape Dimension (mm)									
	A	B	W	E	F	P_0	P_1	P_2	ϕD_0	T
2010	2.85±0.1	5.45±0.1	12.0±0.1	1.75±0.1	5.5±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50+0.10	1.00±0.20
2512	3.40±0.1	6.65±0.1	12.0±0.1	1.75±0.1	5.5±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50+0.10	1.00±0.20

Notes: Peel force of top cover tape, Peel speed:300mm/min ±5%, Peel force of top cover tape:between 8gf to 60gf, 20gf to 80gf (2010, 2512 only)

*Specifications subject to change without notice.