

Data Sheet

Customer: _____

Product: Thick Film Chip Resistor Network - HYC/HTC Series

Type : HYC122 & HYC/HTC124 & HYC/HTC164 & HYC158 & HYC248

Issued Date: 06-Oct.-2023

Edition: Ver. 2

Record of change

Date	Ver.	Description	Page
10-Apr.-2014	1		
06-Oct.-2023	2	Add size 0603*2 convex & rating	1,2

HITANO ENTERPRISE CORP.

7F-7, No. 3, Wu Chuan 1st Road, New Taipei Industrial Park,

New Taipei City, TAIWAN, R.O.C.

Tel: +886 2 2299 1331 (Rep.)

Fax: +886 2 2298 2466, 2298 2969

Prepared by	Checked by	Approved by	Accepted by (customer)
06-Oct.-2023	06-Oct.-2023	06-Oct.-2023	
Hwa Wu	Andy Hsu	Arthur Su	

Thick Film Chip Resistor Network

HYC/HTC Series

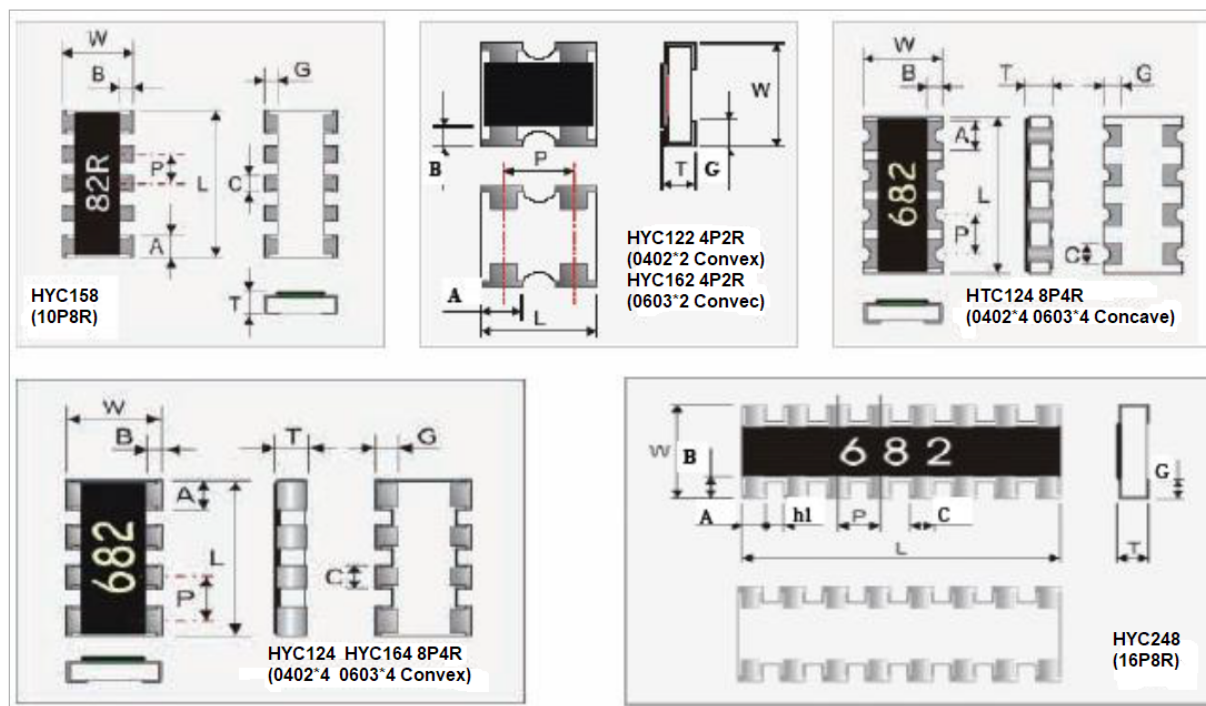
■ Features

- High density packaging provides higher productivity.
- Stable convex terminal reduces assembly costs.
- Compatible with flow and reflow soldering.
- RoHS compliant & Halogen Free.

■ Applications

- Computer
- Mobile phone
- Camcorder
- Portable audio
- Battery charger
- Hard Disk Driver

■ Configuration



■ Dimensions

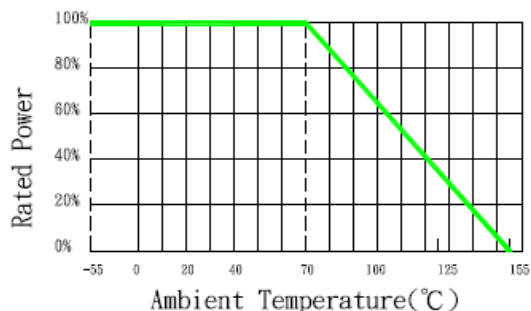
TYPE	L	W	T	B	G	P	C	A	h1
HYC122	1.00±0.10	1.00±0.10	0.35±0.10	0.20±0.15	0.25±0.17	0.65±0.10	-	0.34±0.10	-
HYC124	2.00±0.10	1.00±0.10	0.45±0.10	0.20±0.10	0.25±0.10	0.50±0.05	0.30±0.05	0.40±0.10	-
HTC124	2.00±0.10	1.00±0.10	0.45±0.10	0.20±0.15	0.25±0.10	0.50±0.05	0.25±0.05	0.25±0.05	-
HYC162	1.60±0.20	1.50±0.10	0.50±0.10	0.30±0.15	0.30±0.15	1.00±0.10	-	0.60±0.10	-
HYC164	3.20±0.20	1.60±0.10	0.50±0.10	0.30±0.20	0.30±0.20	0.80±0.10	0.45±0.10	0.60±0.15	-
HTC164	3.20 +0.20/-0.10	1.60 +0.20/-0.10	0.60±0.10	0.35±0.15	0.50±0.15	0.80±0.10	0.50±0.15	0.60±0.15	-
HYC158	3.30±0.20	1.60±0.15	0.55±0.10	0.40±0.15	0.40±0.15	0.64±0.05	0.40±0.15	0.50±0.05	-
HYC248	4.00±0.20	1.60±0.15	0.45±0.10	0.30±0.25	0.30±0.20	0.50±0.20	0.30±0.10	0.40±0.20	0.20±0.10

unit:mm

Thick Film Chip Resistor Network

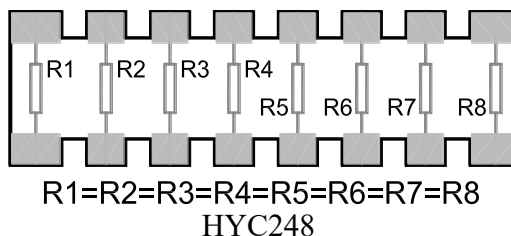
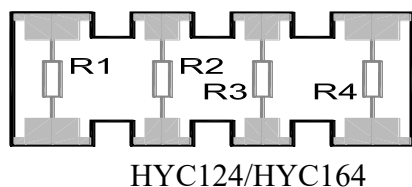
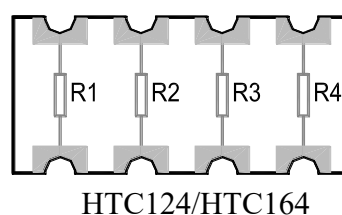
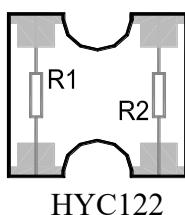
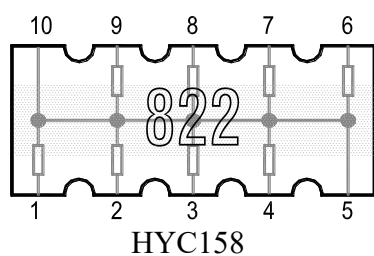
HYC/HTC Series

Power Derating Curve



Maximum dissipation in percentage of rated power as a function of the ambient temperature.

Circuit



Rating

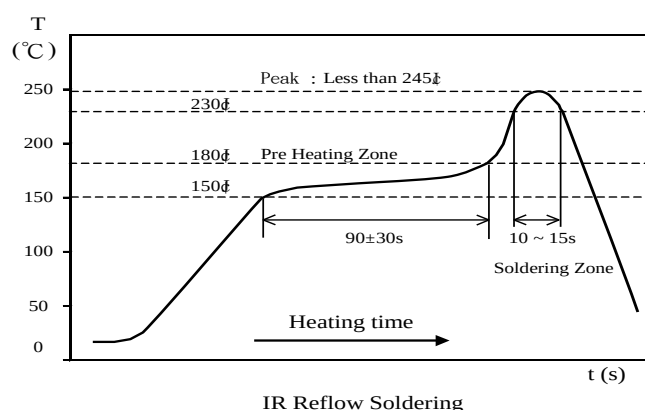
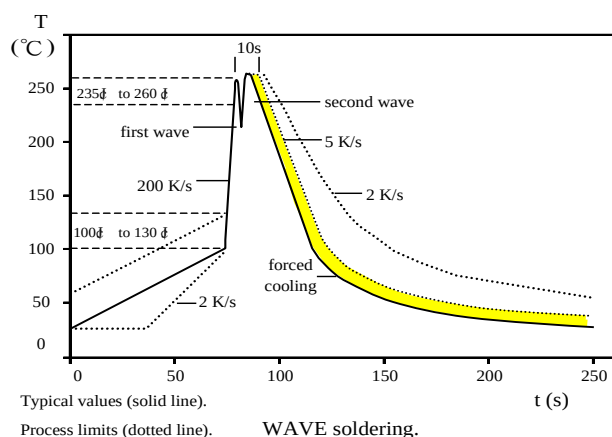
Type	Size	Termination Construction	Power Rating at 70°C	Max. RCWV	Max. Overload Voltage	Tolerance (%)	Temperature Coefficient (TCR; ppm/°C)	Resistance Range		Standard Resistance Values
								Min.	Max.	
HYC122	4P2R 0402*2	Convex	1/16W	25V	50V	±5%(J)	±300 ±400	0Ω/10Ω 3Ω	1MΩ 9.1Ω	E-24
HYC124	8P4R 0402*4	Convex	1/16W	50V	100V	±5%(J)	±200 -300~+500	0Ω/10Ω 3Ω	1MΩ 9.1Ω	E-24
						±1%(F)	±200	0Ω/10Ω	1MΩ	
HYC162	4P2R 0603*2	Convex	1/10W	50V	100V	±5%(J) ±1%(F)	±200 -300~+500	0Ω/10Ω 1Ω	1MΩ 9.1Ω	E-24
HYC164	8P4R 0603*4	Convex	1/10W	50V	100V	±5%(J)	±200 -300~+500	0Ω/10Ω 1Ω	1MΩ 9.1Ω	E-24
						±1%(F)	±200	0Ω/10Ω	1MΩ	
HYC158	10P8R	Convex	1/16W	25V	50V	±5%(J)	±200	10Ω	100KΩ	E-24
HYC248	16P8R	Convex	1/16W	50V	100V	±5%(J) ±1%(F)	±200	0Ω/10Ω	100KΩ	E-24
HTC124	8P4R 0402*4	Concave	1/16W	25V	50V	±5%(J) ±1%(F)	±300	0Ω/3Ω	1MΩ	E-24
HTC164	8P4R 0603*4	Concave	1/10W	50V	100V	±5%(J) ±1%(F)	±200	0Ω/10Ω	1MΩ	E-24

0Ω(Jumper) : ◎ Maximum resistance Rmax < 50mΩ.

Thick Film Chip Resistor Network

HYC/HTC Series

Soldering Temperature Curve



Part Number

<u>HYC</u>	<u>164</u>	<u>J</u>	<u>R</u>	-	<u>4K7R</u>
Type	Size	Tolerance	Packing		Ohmic value
HYC	122 : 0402*2	F : ± 1%	R: Paper tape - 5Kpcs		
	124 : 0402*4(Convex)	J : ± 5%			
HTC	124 : 0402*4(Concave)				
	164 : 0603*4(Concave)				
HYC	164 : 0603*4(Convex)				
	158 : 10P8R				
	248 : 16P8R				
	162 : 0603*2 (Convex)				

Resistance Marking

• E - 24 SERIES



3 digit marking for ±1% & ±5%
examples : **682** $68 \times 10^2 = 6.8 \text{ K}\Omega$

No marking for HYC122 chip resistors array.

Standard resistance value

E3	10				22				47							
E6	10		15		22		33		47		68					
E12	10	12	15	18	22	27	33	39	47	56	68	82				
E24	10	11	12	13	15	16	18	20	22	24	27	30	33	36	39	43
	51	56	62	68	75	82	91									

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■ Specification And Test Methods

ITEM	SPECIFICATION	TEST METHOD
DC Resistance	J: $\pm 5\%$, F: $\pm 1\%$ Zero ohm Jumper < 50m Ω	IEC 60115-1 / JIS C 5201-1 , Clause 4.5 Measure the resistance value.
Short time Overload	J: $\Delta R \leq \pm (2\% + 0.1\Omega)$ ' F: $\Delta R \leq \pm (1\% + 0.05\Omega)$	IEC 60115-1 / JIS C 5201-1 , Clause 4.13 2.5×Rated voltage or Max. Overload Voltage for 5 sec. measure resistance after 30 minutes
Solderability	Over 95% of termination must be covered with solder	IEC 60115-1 / JIS C 5201-1 , Clause 4.17 After immersing flux, dip in the 235±2°C molten solder bath for 2±0.5 sec
Resistance to Solder Heat	J: $\Delta R \leq \pm (1\% + 0.1\Omega)$ ' F: $\Delta R \leq \pm (0.5\% + 0.05\Omega)$ No mechanical damage	IEC 60115-1 / JIS C 5201-1 , Clause 4.18 With 260±5°C for 10±1 sec.
Temperature Coefficient of Resistance (TCR)	Size: 0402*2,0402*4 ± 300 ppm/°C Size:0603*2, 0603*4, 10P8R, 16P8R ± 200 ppm/°C	IEC 60115-1 / JIS C 5201-1 , Clause 4.8 Test temperature : 25°C (T1) → -55°C (T2) 25°C (T1) → +155°C (T2) $TCR (ppm/^{\circ}C) = \frac{R_2 - R_1}{R_1} \times \frac{1}{T_2 - T_1} \times 10^6$ T1: 25°C T2: Test temperature R1: Resistance at reference temperature (T1) R2: Resistance at test temperature (T2)
Load Life Humidity	J: $\Delta R \leq \pm (3\% + 0.1\Omega)$ ' F: $\Delta R \leq \pm (1\% + 0.05\Omega)$	IEC 60115-1 / JIS C 5201-1 , Clause 4.24 Maintain the temperature of the resistor at 40±2°C and 90~95% R.H. with the rated voltage applied. Cycle ON for 1.5 hours and OFF for 0.5 hour for 1000+48/-0 hours. After 1~4 hour, measure the resistance value.
Load Life	J: $\Delta R \leq \pm (3\% + 0.1\Omega)$ ' F: $\Delta R \leq \pm (1\% + 0.05\Omega)$	IEC 60115-1 / JIS C 5201-1 , Clause 4.25 Permanent resistance change after 1000+48/-0 hours (1.5 hours ON , 0.5 hour OFF) at RCWV or Max. Keep the resistor at 70±2°C ambient
Temperature Cycle	J: $\Delta R \leq \pm (1\% + 0.1\Omega)$ ' F: $\Delta R \leq \pm (0.5\% + 0.05\Omega)$ No mechanical damage	IEC 60115-1 / JIS C 5201-1 , Clause 4.19 Repeat 5 cycles as follows '-55°C (30 min.) + 25°C (2~3 min.) +125°C (30 min.) + 25°C (2~3 min.) for FCF370 -55°C (30 min.) + 25°C (2~3 min.) +155°C (30 min.) + 25°C (2~3 min.) for FCF220,FCF240,FCF241,FCF340,FCF341,FCF35R
Insulation Resistance	Between termination and coating must be over 1000M Ω	IEC 60115-1 / JIS C 5201-1 , Clause 4.6 Test voltage: 100±15V
Bending Strength	J: $\Delta R \leq \pm (1\% + 0.1\Omega)$ ' F: $\Delta R \leq \pm (0.5\% + 0.05\Omega)$ No mechanical damage	IEC 60115-1 / JIS C 5201-1 , Clause 4.33 Resistance change after bended on the 90mm PCB. Bend: 1mm for FCF370 2mm for FCF220,FCF240,FCF241, FCF320, FCF340, FCF341,FCF35R

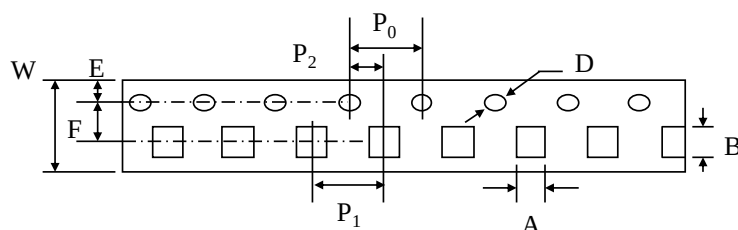
All product specification and data are subject to change without notice

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■ Tape And Reel Package

Taping specs are according to EIA RS-481

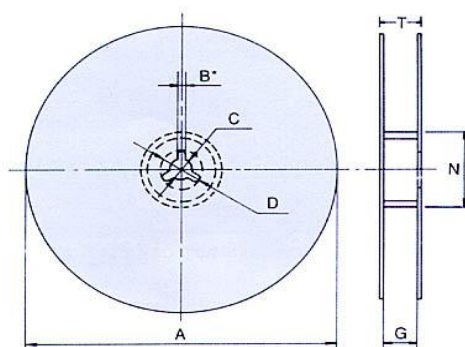


Accumulated dimensional tolerance $40 \pm 0.2 \text{ mm}$

(unit: mm)

Size	A	B	W	F	E	P1	P2	P0	D
0402*2	1.15 ± 0.10	1.15 ± 0.10	8.00 ± 0.30	3.50 ± 0.20	1.75 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	4.00 ± 0.10	$1.50 + 0.10 / -0$
0402*4 (Convex Concave)	1.20 ± 0.20	2.20 ± 0.20	8.00 ± 0.30	3.50 ± 0.20	1.75 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	4.00 ± 0.10	$1.50 + 0.10 / -0$
0603*2 (Convex)	1.80 ± 0.10	1.80 ± 0.10	8.00 ± 0.30	3.50 ± 0.10	1.75 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	$1.50 + 0.10 / -0$
8P4R (Convex Concave)	2.00 ± 0.20	3.60 ± 0.20	8.00 ± 0.30	3.50 ± 0.20	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	$1.50 + 0.10 / -0$
10P8R	$1.85 + 0.20 / -0$	$3.45 + 0.20 / -0$	8.00 ± 0.30	3.50 ± 0.20	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	$1.50 + 0.10 / -0$
16P8R	$1.80 + 0.20 / -0$	$4.20 + 0.20 / -0$	12.00 ± 0.10	5.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	$1.50 + 0.10 / -0$

• Reel Package



(unit: mm)

Size	Packaging Q'ty	A	N	C	D	B	G	T
0402*2 0402*4 (Convex , Concave) 0603*2 (Convex) 8P4R (Convex , Concave) 10P8R 16P8R	5Kpcs / Reel	178.0 ± 2.0	60.0 ± 0.5	13.0 ± 0.5	20min	2.0 ± 0.5	10.0 ± 1.5	14.9 max.
8P4R	10Kpcs / Reel	254.0 ± 2.0	100.0 ± 1.0	13.5 ± 0.5	20min	2.0 ± 0.5	10.0 ± 1.5	14.9 max.
	20Kpcs / Reel	330.0 ± 2.0	100.0 ± 1.0	13.5 ± 0.5	20min	2.0 ± 0.5	10.0 ± 1.5	14.9 max.