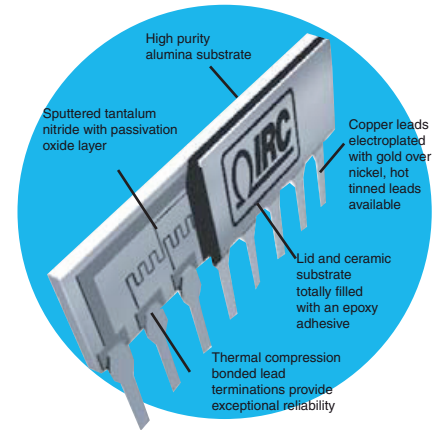


## TaNFilm® Precision SIP Network Commercial and MIL Qualified

### 4700 Series

- Inherent reliability
- MIL-PRF-83401 qualified
- Custom configuration available
- Bonded leads not susceptible to solder reflow problems
- Absolute tolerance to  $\pm 0.1\%$  - ratio accuracy to  $\pm 0.01\%$
- Absolute TCR to  $\pm 15\text{ppm}/^\circ\text{C}$  - TC tracking to  $\pm 5\text{ppm}/^\circ\text{C}$



All Pb-free parts comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

The IRC 4700 Series is the ultimate combination of precision performance, reliability, and long term stability in a low profile, TaNFilm® SIP package. Rugged welded lead construction combined with the inherent passivation characteristics of tantalum nitride ensure superior ongoing performance over the installed life of the part.

Visit our website to view a graphical demonstration of IRC's TaNFilm reliability and performance features.

### Commercial Product Capability Data

Schematic	Resistance Range ( $\Omega$ )	Absolute Tolerance	Ratio Tolerance	Absolute TCR ( $\text{ppm}/^\circ\text{C}$ )	Tracking TCR ( $\text{ppm}/^\circ\text{C}$ )	Element Power (mW)
<b>C</b>	49.9 - 99.9	F, G, J	F, G	$\pm 50; \pm 100; \pm 300$	$\pm 20$	120
	100 - 200	B, D, F, G, J	D, F, G	$\pm 25; \pm 50; \pm 100; \pm 300$	$\pm 15$	
	201 - 1.9K	B, D, F, G, J	B, D, F, G	$\pm 25; \pm 50; \pm 100; \pm 300$	$\pm 10$	
	2.0K - 200K	B, D, F, G, J	A, B, D, F, G	$\pm 15; \pm 25; \pm 50; \pm 100; \pm 300$	$\pm 5$	
<b>G</b>	20 - 49.9	F, G, J	F, G	$\pm 50; \pm 100; \pm 300$	$\pm 20$	200
	50.0 - 199	D, F, G, J	B, D, F, G	$\pm 25; \pm 50; \pm 100; \pm 300$	$\pm 5$	
	200 - 999	B, D, F, G, J	A, B, D, F, G	$\pm 25; \pm 50; \pm 100; \pm 300$	$\pm 5$	
	1.0K - 100K	B, D, F, G, J	T, Q, A, B, D, F, G	$\pm 15; \pm 25; \pm 50; \pm 100; \pm 300$	$\pm 5$	
	101K - 400K	B, D, F, G, J	A, B, D, F, G	$\pm 15; \pm 25; \pm 50; \pm 100; \pm 300$	$\pm 5$	
<b>F</b>	49.9 - 99.9	F, G, J	F, G	$\pm 50; \pm 100; \pm 300$	$\pm 20$	120
	100 - 199	F, G, J	D, F, G	$\pm 25; \pm 50; \pm 100; \pm 300$	$\pm 10$	
	200 - 999	B, D, F, G, J	B, D, F, G	$\pm 25; \pm 50; \pm 100; \pm 300$	$\pm 5$	
	1.0K - 200K	B, D, F, G, J	A, B, D, F, G	$\pm 15; \pm 25; \pm 50; \pm 100; \pm 300$	$\pm 5$	

Consult factory for tighter tolerances and TCR. Custom circuits and special testing available.

#### General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

4700 Series

## MIL-PRF-83401 QPL Capability Data

Schematic	Resistance Range	Absolute Tolerance	Element Power (mW)	Size	Characteristic
C,G	100 - 100K	B, F, G, J	120	6, 8, 10	M, H, K

## Package Specification Data

Schematic	Package Power (mW)			Voltage Rating	Temperature Range	Substrate	Lead Finish	Noise
	6-pin	8-pin	10-pin					
C, F (MIL and Commercial)	600	840	1080	$\sqrt{P \times R}$ not to exceed 100V	-65°C to +125°C	99.6% Alumina	Gold Plate (60/40 Sn/Pb available)	<-30dB
G (MIL)	360	480	600					
G (Commercial)	600	800	1000					

## Environmental Data

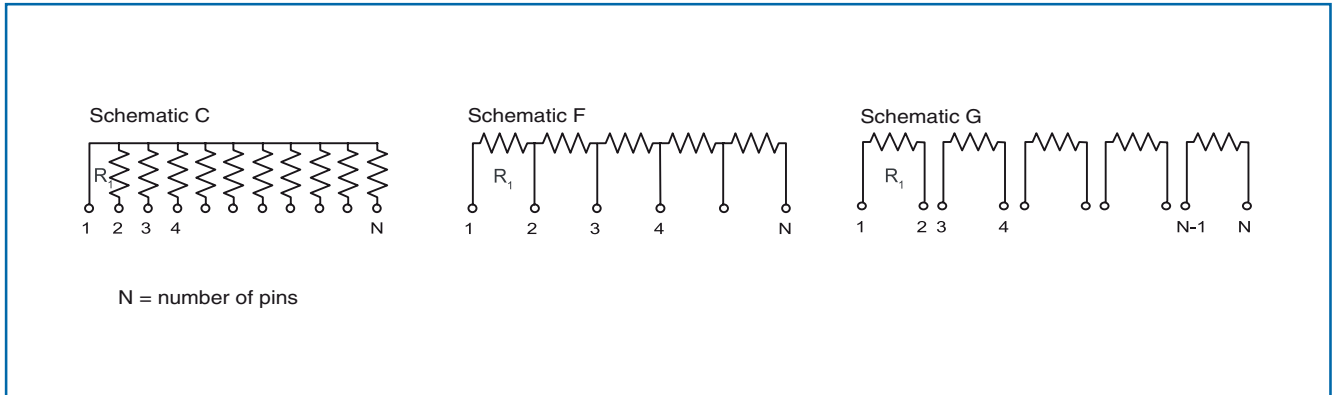
Test Per MIL-PRF-83401	MIL-PRF-83401 $\Delta R$ Limits			TaNFilm® Test Data $\Delta R$	
	M	K	H	Max	Typical
Thermal Shock And Power Conditioning	±0.7%	±0.7%	±0.5%	±0.10%	±0.02%
Low Temperature Operation	±0.5%	±0.25%	±0.1%	±0.05%	±0.02%
Short-term Overload	±0.5%	±0.25%	±0.1%	±0.1%	±0.02%
Terminal Strength	±0.25%	±0.25%	±0.1%	±0.1%	±0.02%
Resistance To Solder Heat	±0.25%	±0.25%	±0.1%	±0.1%	±0.02%
Moisture Resistance	±0.5%	±0.5%	±0.4%	±0.1%	±0.02%
Shock	±0.25%	±0.25%	±0.25%	±0.1%	±0.02%
Vibration	±0.25%	±0.25%	±0.25%	±0.1%	±0.02%
Life	±2.0%	±0.5%	±0.5%	±0.1%	±0.02%
High Temperature Exposure	±1.0%	±0.5%	±0.2%	±0.1%	±0.02%
Low Temperature Storage	±0.5%	±0.25%	±0.1%	±0.1%	±0.02%
25°C Double Load	±2.0%	±0.5%	±0.5%	±0.05%	±0.02%

### General Note

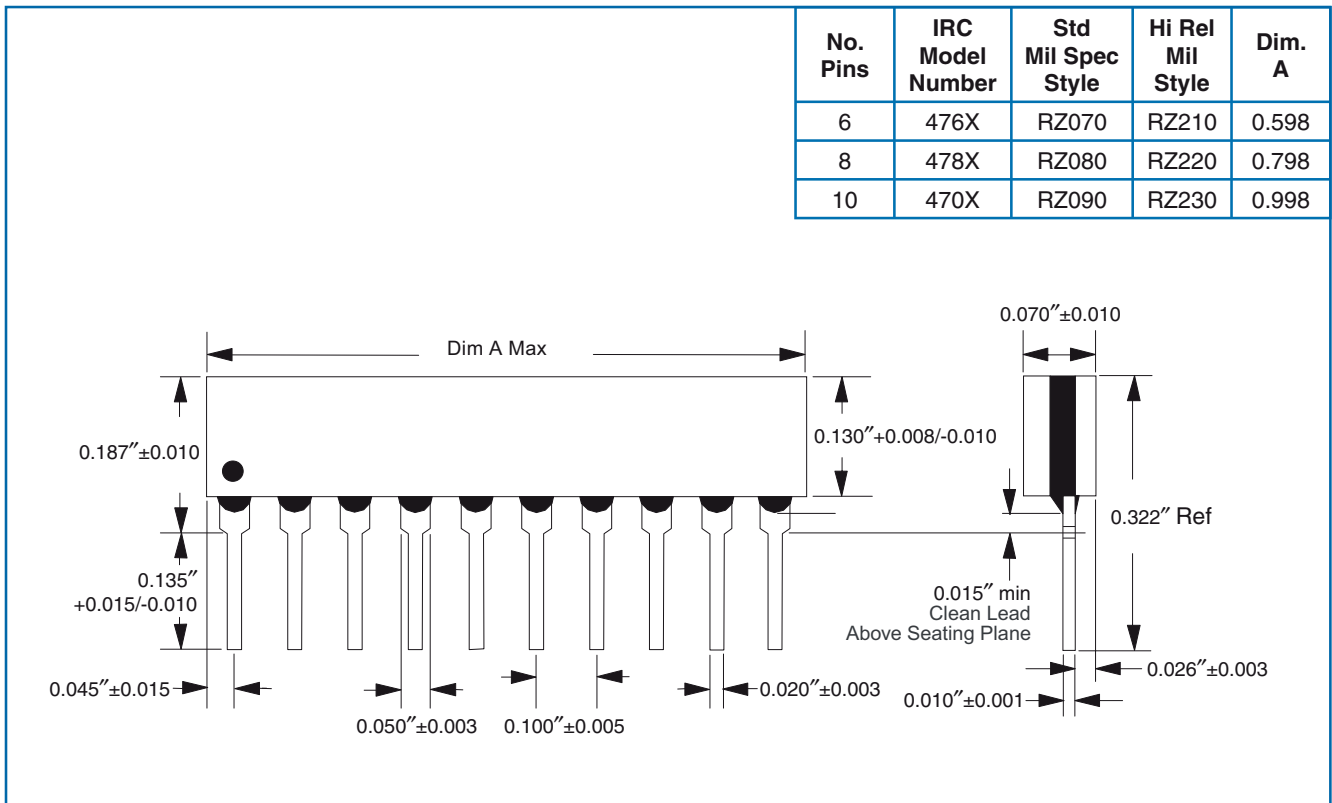
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4700 Series

## Schematic Data



## Physical Data



### General Note

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4700 Series

## Commercial and MIL-Screened (Non-QPL) Ordering Data

Sample Part No. .... SIP - 4781 - 03 - 1001 F B

**Model** .....  
 4761 = 6-pin SIP, schematic C, gold terminations  
 4761SD = 6-pin SIP, schematic C, 60/40 Sn/Pb terminations  
 4768 = 6-pin SIP, schematic F, gold terminations  
 4768SD = 6-pin SIP, schematic F, 60/40 Sn/Pb terminations  
 4769 = 6-pin SIP, schematic G, gold terminations  
 4769SD = 6-pin SIP, schematic G, 60/40 Sn/Pb terminations

4781 = 8-pin SIP, schematic C, gold terminations  
 4781SD = 8-pin SIP, schematic C, 60/40 Sn/Pb terminations  
 4788 = 8-pin SIP, schematic F, gold terminations  
 4788SD = 8-pin SIP, schematic F, 60/40 Sn/Pb terminations  
 4789 = 8-pin SIP, schematic G, gold terminations  
 4789SD = 8-pin SIP, schematic G, 60/40 Sn/Pb terminations

4701 = 10-pin SIP, schematic C, gold terminations  
 4701SD = 10-pin SIP, schematic C, 60/40 Sn/Pb terminations  
 4708 = 10-pin SIP, schematic F, gold terminations  
 4708SD = 10-pin SIP, schematic F, 60/40 Sn/Pb terminations  
 4709 = 10-pin SIP, schematic G, gold terminations  
 4709SD = 10-pin SIP, schematic G, 60/40 Sn/Pb terminations

**Absolute TCR** .....  
 01 = ±100ppm/°C; 02 = ±50ppm/°C; 03 = ±25ppm/°C; 11 = ±15ppm/°C

**MIL-PRF-83401 Group A Screening**  
 04 = ±300ppm/°C Characteristic M; 05 = ±100ppm/°C Characteristic K  
 06 = ±50ppm/°C Characteristic H; 07 = ±25ppm/°C Characteristic H

**Resistance** .....  
 Standard 4-digit MIL resistance code  
 Example: 1001 = 1000Ω; 50R0=50Ω

**Absolute Tolerance** .....  
 J = ±5%; G = ±2%; F = ±1.0%; D = ±0.5%; B = ±0.1%

**Optional Ratio Tolerance to R<sub>1</sub>** .....  
 F = ±1.0%; D = ±0.5%; C = ±0.25%; B = ±0.1%; A = ±0.05%; Q = ±0.02%, T = ±0.01%

Custom schematics and screening available.

## Ordering Data - Military (MIL-PRF-83401)

Sample Part No. .... M83401 - 08 - H - 1002 - F - G

**Model** .....  
 M83401 = Military qualified resistor network

**Size** .....  
 07 = RZ060 6-pin SIP  
 08 = RZ080 8-pin SIP  
 09 = RZ090 10-pin SIP  
 21 = RZ210 Hi-Rel 6-pin SIP  
 22 = RZ220 Hi-Rel 8-pin SIP  
 23 = RZ230 Hi-Rel 10-pin SIP

**Characteristic per MIL-PRF-83401** .....  
 M; K; H

**Resistance** .....  
 Standard 4-digit MIL resistance code  
 Example: 1000 = 100Ω; 1001=1000Ω

**Absolute Tolerance Code** .....  
 J = ±5%; G = ±2%; F = ±1%; B = ±0.1%

**Schematic** .....  
 C; G

Standard termination is gold plate. Contact factory for optional 60/40 Sn/Pb hot solder dip finish.

**General Note**

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