

TaNFilm® Precision SIP Network Commercial and MIL Qualified

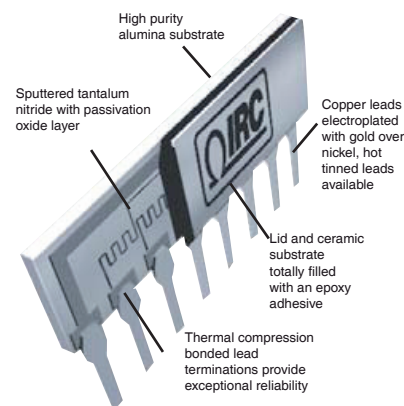


4700 Series

OBSOLETE

Features

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

BI Technologies IRC Welwyn

www.ttelectronics.com/resistors

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 50V	-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					

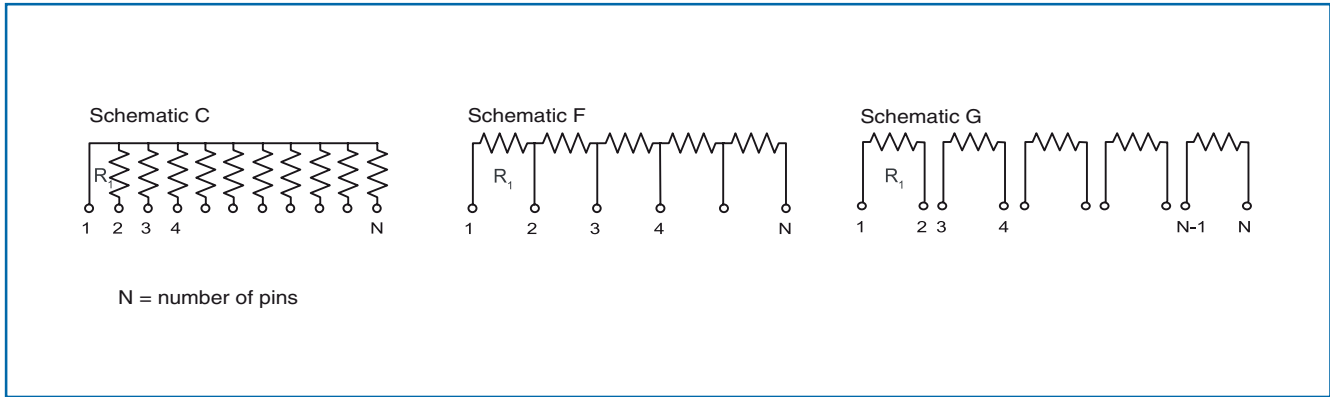
Environmental Data

Test Per MIL-PRF-83401	MIL-PRF-83401 ΔR Limits			TaNFilm® Test Data ΔR	
	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%

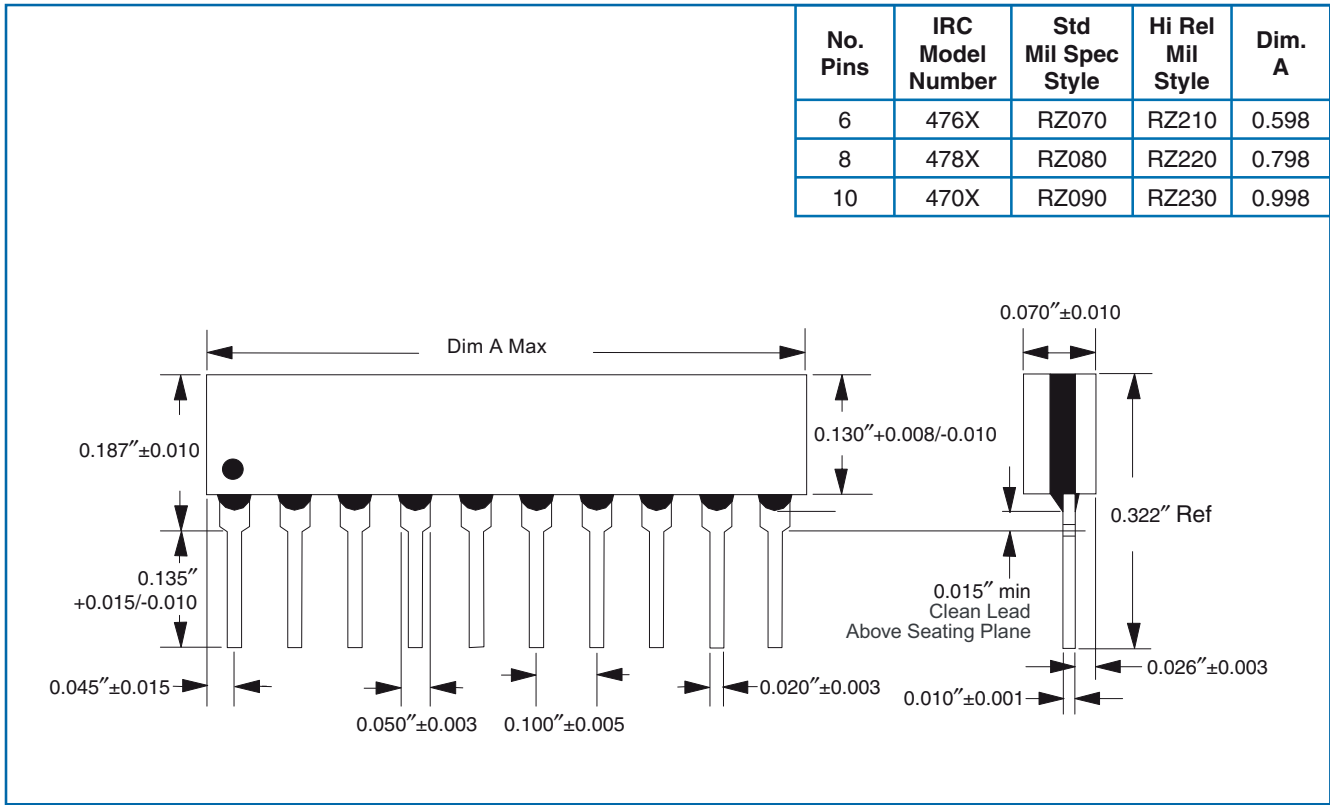
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Schematic Data



Physical Data



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 = $\pm 100\text{ppm}/^\circ\text{C}$; 02 = $\pm 50\text{ppm}/^\circ\text{C}$; 03 = $\pm 25\text{ppm}/^\circ\text{C}$; 11 = $\pm 15\text{ppm}/^\circ\text{C}$

MIL-PRF-83401 Group A Screening

04 = $\pm 300\text{ppm}/^\circ\text{C}$ Characteristic M; 05 = $\pm 100\text{ppm}/^\circ\text{C}$ Characteristic K
 06 = $\pm 50\text{ppm}/^\circ\text{C}$ Characteristic H; 07 = $\pm 25\text{ppm}/^\circ\text{C}$ Characteristic H

Resistance

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

Absolute Tolerance

J = $\pm 5\%$; G = $\pm 2\%$; F = $\pm 1.0\%$; D = $\pm 0.5\%$; B = $\pm 0.1\%$

Optional Ratio Tolerance to R₁

F = $\pm 1.0\%$; D = $\pm 0.5\%$; C = $\pm 0.25\%$; B = $\pm 0.1\%$; A = $\pm 0.05\%$; Q = $\pm 0.02\%$; T = $\pm 0.01\%$

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 = RZ070 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 = 100 Ω ; 1001=1000 Ω

Absolute Tolerance Code

J = $\pm 5\%$; G = $\pm 2\%$; F = $\pm 1\%$; B = $\pm 0.1\%$

Schematic

C; G

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