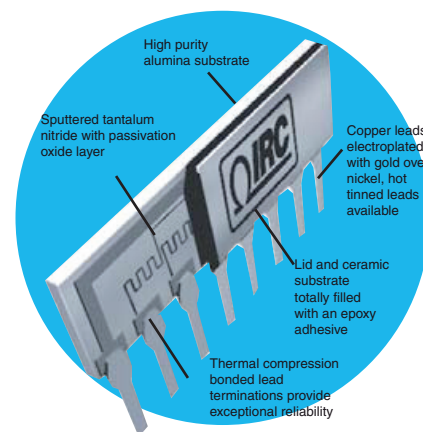


TaNFilm® Precision SIP Network

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 (RoHS2)

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

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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	$\sqrt{PxR}$ 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

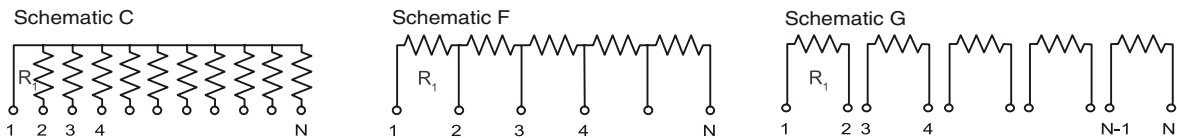
Test Per MIL-PRF-83401	MIL-PRF-83401 ΔR Limits			TaNFilm® Test Data ΔR	
	M	K	H	Max	Typical
Thermal Shock And Power Conditioning	±0.7%	±0.7%	±0.5%	±0.10%	±0.02%
Low Temperature Operation	±0.5%	±0.25%	±0.1%	±0.05%	±0.02%
Short-term Overload	±0.5%	±0.25%	±0.1%	±0.1%	±0.02%
Terminal Strength	±0.25%	±0.25%	±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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4700 Series

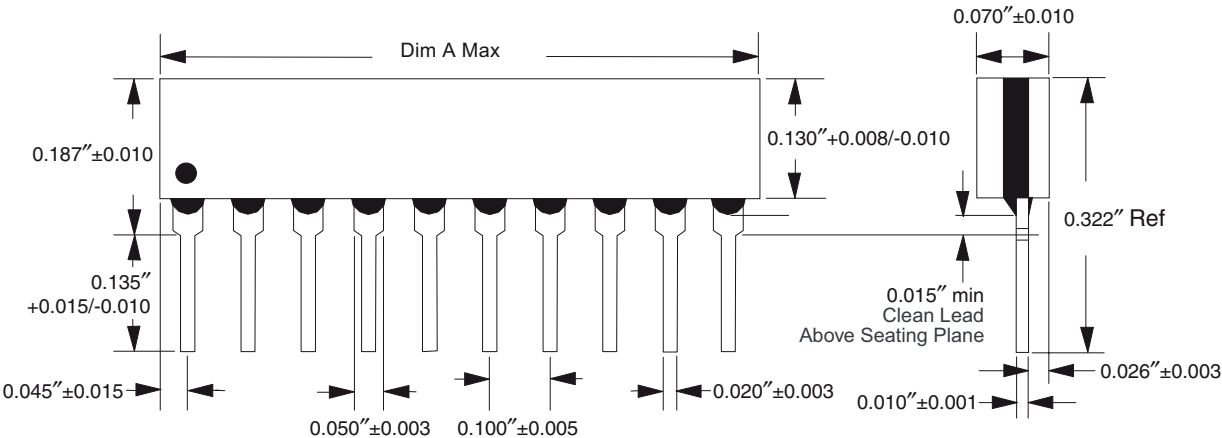
Schematic Data



N = number of pins

Physical Data

No. Pins	IRC Model Number	Std Mil Spec Style	Hi Rel Mil Style	Dim. A
6	476X	RZ070	RZ210	0.598
8	478X	RZ080	RZ220	0.798
10	470X	RZ090	RZ230	0.998



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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 = $\pm 100\text{ppm}/^{\circ}\text{C}$; 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 R_1									
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 = 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.											

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