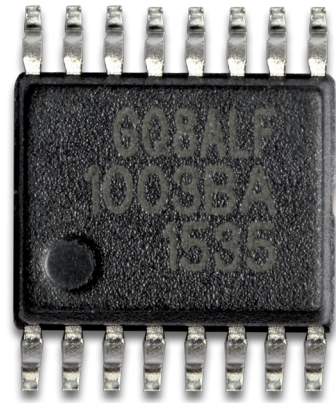



QSOP Thin Film on Ceramic Resistor Networks

QSOP-C Series

- Reliable, no internal cavity
- High resistor density - .025" lead spacing
- Standard JEDEC 16, 20, and 24 pin packages
- Ultra-stable TaN resistors on ceramic substrate
- Lower crosstalk than silicon substrate types



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

QSOP-C resistor networks are high density, low crosstalk networks which combine high precision with the stability and reliability associated with the self-passivating tantalum nitride film system.

Electrical Data

Resistance Range	100R – 150K
Absolute Tolerance	To $\pm 0.1\%$
Ratio Tolerance to R1	To $\pm 0.05\%$
Absolute TCR	To $\pm 25\text{ppm}/^\circ\text{C}$
Tracking TCR	To $\pm 5\text{ppm}/^\circ\text{C}$
Element Power Rating @ 70°C	
Isolated Schematic	100mW
Bussed Schematic	50mW
Package Power Rating @ 70°C	16-Pin 750mW 20-Pin 1.0W 24-Pin 1.0W
Rated Operating Voltage (not to exceed $\sqrt{P \times R}$)	100 Volts
Operating Temperature	-55°C to +125°C
Noise	<-25dB

Environmental Data

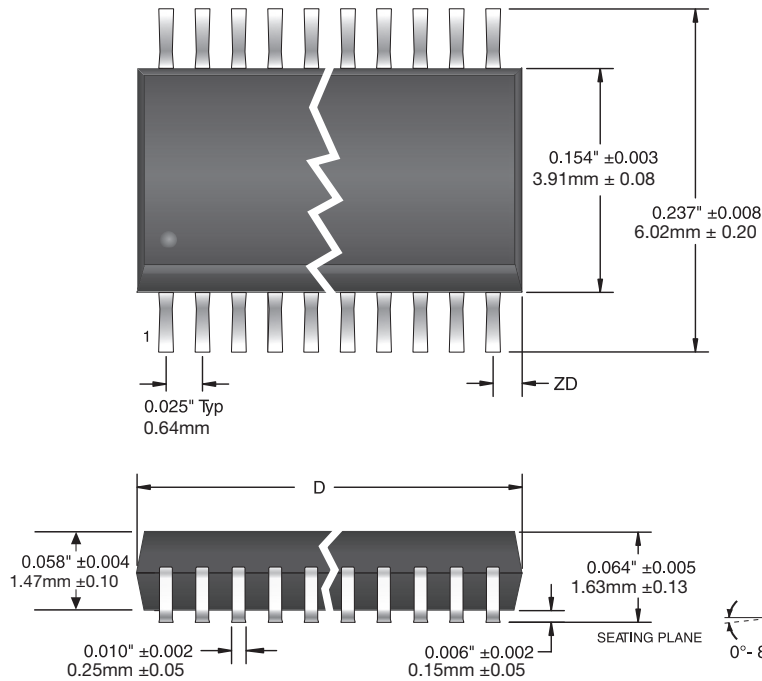
Test Per MIL-PRF-83401	Typical Delta R	Max Delta R
Thermal Shock	$\pm 0.02\%$	$\pm 0.1\%$
Power Conditioning	$\pm 0.03\%$	$\pm 0.1\%$
High Temperature Exposure	$\pm 0.03\%$	$\pm 0.05\%$
Short-time Overload	$\pm 0.02\%$	$\pm 0.05\%$
Low Temperature Storage	$\pm 0.03\%$	$\pm 0.05\%$
Life	$\pm 0.05\%$	$\pm 0.1\%$

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.

QSOP-C Series

Physical Data



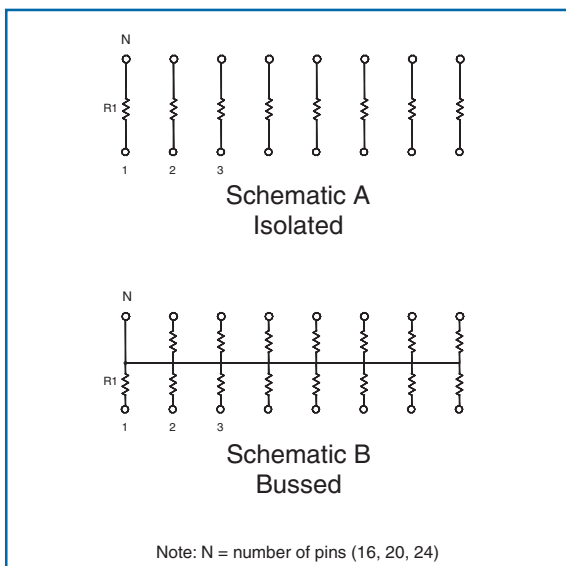
# OF PINS	DIMENSION "D"	ZD REF
16	0.193" ±0.004 4.90mm ± 0.10	0.009" 0.23mm
20	0.341" ±0.004 8.66mm ± 0.10	0.058" 1.47mm
24	0.341" ±0.004 8.66mm ± 0.10	0.033" 0.84mm

Note: N = number of pins (16, 20, 24)

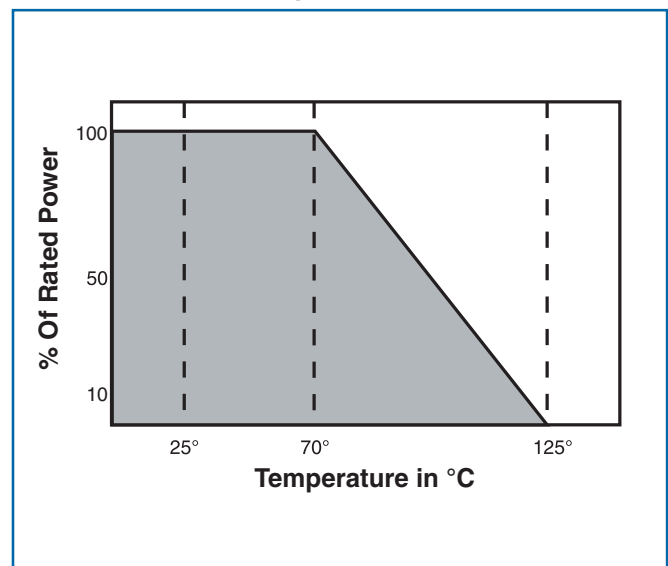
Note: All dimensions exclude mold flash and end flash which shall not exceed 0.006" 0.15mm per side. Drawing proportions not to scale.

Note: Lead Coplanarity 0.004" 0.10mm Max.

Schematic Data



Power Derating Curve



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QSOP-C Series

Ordering Procedure

Example: GQ8ALF021002BATHR (16 pin QSOP, isolated elements, 50ppm/°C, 10 kilohms, absolute tolerance ±0.1%, ratio tolerance ±0.05%, tube packed, variant HR, Pb-free)

G	Q	8	A	L	F	0	2	1	0	0	2	B	A	T	H	R	
1	2	3	4	5	6		7	8	9	10							

1	2	3	4	5	6	7	8	9	10
Type	Size	Schematic	Termination	TCR	Value	Absolute Tolerance	Ratio Tolerance	Packing	Variant
GQ = Gullwing QSOP	8=16 pin	A=Isolated	LF=Pb-free	01=±100ppm/°C	3 digits + multiplier	B=±0.1%	A=±0.05%	T=Tube	Optional code - see below
	0=20 pin	B=Bussed		02=±50ppm/°C		C=±0.25	B=±0.1%	R=Reel	
	C=24 pin			03=±25ppm/°C	R = ohms for values < 100 ohms	D=±0.5%	C=±0.25%		
				F=±1%		D=±0.5%			
				G=±2%		F=±1%			
						J=±5%	G=±2%		

Variant codes	
Blank	Standard
HR	High reliability screened (50 cycles, thermal shock)

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