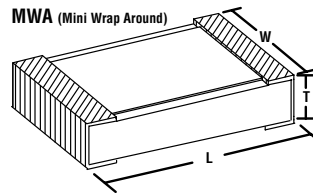
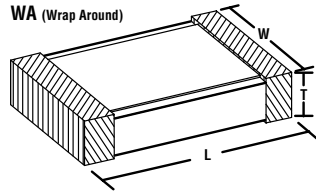
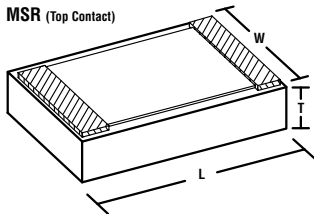


NOTES:

- 1. Power Rating 0.250 Watts
- 2. Voltage Rating 177 Volts

ALL DIMENSIONS ARE IN	<b>M S I</b>		MINI-SYSTEMS, INC. North Attleboro, Ma	
	INCHES	DWG. TITLE Chip Resistor Style 83		
TOLERANCE +/-	SHEET TITLE MSR Final Dimensions			
0.0005	CUSTOMER REF.			
UNLESS OTHERWISE NOTED	DRAWN R. CHARBONNEAU	DATE 3/6/98	DWG. NO. 5083	REV.
	APPD. SHD	DATE 3/12/98	SHEET 3 OF 11	C

# QPL Precision Resistors



## QPL PART NUMBER DESIGNATION

**EXAMPLE: M55342M01W10E0S**

*Per MIL-PRF-55342, TCR  $\pm 300$ ppm, 0502 case size, Top Contact, Gold base metal, 10K $\Omega$ , 1% tol., "S" Life Failure Rate*

### MIL-PRF-55342: M55342

D = For /07 series only  
 M = all other series  
 Military Spec. Indicating  
 MIL-PRF-55342

### Characteristic: M

K =  $\pm 100$ ppm  
 M =  $\pm 300$ ppm  
*70°C Max. ambient temperature  
 at rated wattage*

### QPL Size: 01

See Tables on pages 16 & 17

### Termination: W Material *Base Metal*

W = Gold *Top Contact*  
 T = Platinum Gold *Top Contact*  
 D = Palladium Silver *Top Contact*  
 B = Nickel Barrier,  
 Solder Coated *Wrap Around*  
 G = Nickel Barrier,  
 Gold Plated *Wrap Around*  
 C = Palladium Silver *Wrap Around*  
 U = Platinum Gold *Wrap Around*

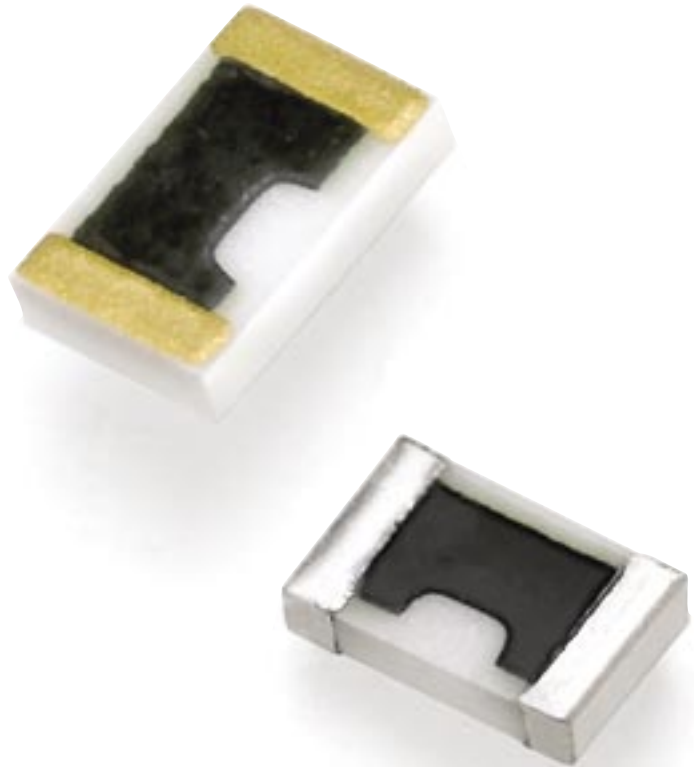
### Value and: 10E0 Tolerance

10K $\Omega$ , 1%  
*See pgs. 14 & 15 for tables III & IV  
 of MIL-PRF-55342*

### Life Failure: S Rate *Product Level*

C = Non-ER  
 M = 1.0% / 1000 Hrs.  
 P = 0.1% / 1000 Hrs.  
 R = 0.01% / 1000 Hrs.  
 S = 0.001% / 1000 Hrs.  
 T = Space Level

QPL thick film resistors are printed and fired on 96% Alumina. All case sizes are offered to fit a variety of Hi-Rel hybrid microelectronic applications. Advanced processing techniques and, Hi-Rel Construction assure optimum performance where TCR, VCR and operating power are critical factors. All styles meet and exceed the qualification requirements of MIL-PRF-55342



*Packaged in chip trays if not specified*

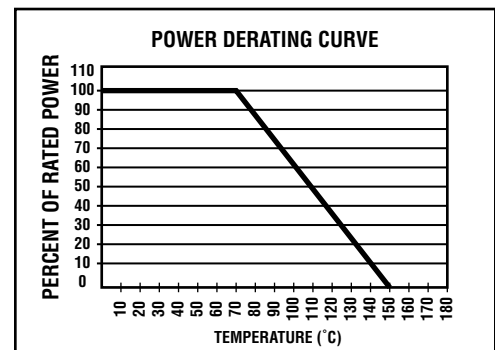
QPL SIZE	QPL STYLE Case Size	TERMINATION	CHAR.	RESISTANCE		TOLERANCE %	POWER (WATTS)	VOLTAGE (VOLTS DC)	MSI SIMILAR STYLE/TYPE
				MIN.	MAX.				
01	RM0502	W, T, D B, G, C, U	K, M	5.60 Ω	1 MΩ	1, 2, 5, 10	0.020	40	MSR81 WA81
02	RM0505	W, T, D B, G, C, U	K, M	5.60 Ω	1 MΩ	1, 2, 5, 10	0.050	40	MSR82 WA82
03	RM1005	W, T, D B, G, C, U	K, M	5.60 Ω	1 MΩ	1, 2, 5, 10	0.100	40	MSR83 WA83
04	RM1505	W, T, D B, G, C, U	K, M	5.60 Ω	4.75 MΩ	1, 2, 5, 10	0.150	40	MSR80 WA80
05	RM2208	W, T, D B, G, C, U	K, M	5.60 Ω	15 MΩ	1, 2, 5, 10	0.225	40	MSR85 WA85
06	RM0705	W, T, D B, G, C, U	K, M	5.60 Ω	1 MΩ	1, 2, 5, 10	0.100	50	MSR86 WA86
07	RM1206	W, T, D B, G, C, U	K, M	5.60 Ω	5.62 MΩ	1, 2, 5, 10	0.250	100	MSR92 WA87
08	RM2010	W, T, D B, C, U	K, M	5.60 Ω	15 MΩ	1, 2, 5, 10	0.800 <sup>1</sup>	150	MSR88 WA88
09	RM2512	W, T, D B, C, U	K, M	5.60 Ω	15 MΩ	1, 2, 5, 10	1.000 <sup>1</sup>	200	MSR89 WA89
10	RM1010	W, T, D B, G, C, U	K, M	5.60 Ω	5.62 MΩ	1, 2, 5, 10	0.500 <sup>1</sup>	75	MSR90 WA90
11	RM0402	W, D B, G, C, U	K, M	5.60 Ω	1 MΩ	1, 2, 5, 10	0.040	25	MSR20 WA20
12	RM0603	W, D B, G, C, U	K, M	5.60 Ω	1 MΩ	1, 2, 5, 10	0.070	50	MSR93 WA93
13	RM0302	W, D B, G, C, U	K, M	5.60 Ω	1 MΩ	1, 2, 5, 10	0.040	15	MSR98 MWA98

1. Mounted to a ceramic board.

## Electrical Performance Characteristics

MIL-PRF-55342 Test	MIL-PRF-55342 Requirement	MSI Typical
Short Term Overload	±0.25%	±0.03%
High Temperature Exposure	±0.50%	±0.05%
Thermal Shock	±0.50%	±0.07%
Low Temperature Operation	±0.25%	±0.05%
Resistance to Bonding Exposure / Soldering Heat	±0.25%	±0.09%
Moisture Resistance	±0.50%	±0.06%
Stability (Life 70°C 2,000Hrs)	±0.50%	±0.04%
Stability (Life 70°C 10,000Hrs)	±2.00%	±0.07%

Operating temperature range from -55°C to +150°C



Power rating at 70°C derated linearly to 0% power at 150°C.  
( $P = E^2/R$ )

MIL-PRF-55342

**TABLE III. Designator or resistance values for resistance tolerances**

Designator for 1 percent tolerance		Resistance Ohms		
<b>Ohms</b>	1D00 to 9D76 inclusive	1.00	to	9.76 inclusive
	10D0 to 97D6 inclusive	10.0	to	97.6 inclusive
	100D to 976D inclusive	100	to	976 inclusive
<b>Kohms</b>	1E00 to 9E76 inclusive	1,000	to	9,760 inclusive
	10E0 to 97E6 inclusive	10,000	to	97,600 inclusive
	100E to 976E inclusive	100,000	to	976,000 inclusive
<b>Mohms</b>	1F00 to 9F76 inclusive 10F0	1,000,000	to	9,760,000 inclusive 10,000,000
Designator for 2 percent tolerance		Resistance Ohms		
<b>Ohms</b>	1G00 to 9G10 inclusive	1.00	to	9.10 inclusive
	10G0 to 91G0 inclusive	10.0	to	91.0 inclusive
	100G to 910G inclusive	100	to	910 inclusive
<b>Kohms</b>	1H00 to 9H10 inclusive	1,000	to	9,100 inclusive
	10H0 to 91H0 inclusive	10,000	to	91,000 inclusive
	100H to 910H inclusive	100,000	to	910,000 inclusive
<b>Mohms</b>	1T00 to 9T10 inclusive 10T0	1,000,000	to	9,100,000 inclusive 10,000,000
Designator for 5 percent tolerance		Resistance Ohms		
<b>Ohms</b>	1J00 to 9J10 inclusive	1.00	to	9.10 inclusive
	10J0 to 91J0 inclusive	10.0	to	91.0 inclusive
	100J to 910J inclusive	100	to	910 inclusive
<b>Kohms</b>	1K00 to 9K10 inclusive	1,000	to	9,100 inclusive
	10K0 to 91K0 inclusive	10,000	to	91,000 inclusive
	100K to 910K inclusive	100,000	to	910,000 inclusive
<b>Mohms</b>	1L00 to 9L10 inclusive 10L0	1,000,000	to	9,100,000 inclusive 10,000,000
Designator for 10 percent tolerance		Resistance Ohms		
<b>Ohms</b>	1M00 to 8M20 inclusive	1.00	to	8.20 inclusive
	10M0 to 82M0 inclusive	10.0	to	82.0 inclusive
	100M to 820M inclusive	100	to	820 inclusive
<b>Kohms</b>	1N00 to 8N20 inclusive	1,000	to	8,200 inclusive
	10N0 to 82N0 inclusive	10,000	to	82,000 inclusive
	100N to 820N inclusive	100,000	to	820,000 inclusive
<b>Mohms</b>	1P00 to 8P20 inclusive 10P0	1,000,000	to	8,200,000 inclusive 10,000,000

## MIL-PRF-55342

**TABLE IV. Standard resistance values for the 10 to 100 decade**

1%	2% & 5%	10%	1%	2% & 5%	10%	1%	2% & 5%	10%
10.00	10.00	10.00	21.50			46.40		
10.20			22.10	22.00	22.00	47.50	47.00	47.00
10.50			22.60			48.70		
10.70			23.20			49.90		
11.00	11.00		23.70			51.10	51.00	51.00
11.30			24.30	24.00		52.30		
11.50			24.90			53.60		
11.80			25.50			54.90		
12.10	12.00	12.00	26.10			56.20	56.00	56.00
12.40			26.70			57.60		
12.70			27.40	27.00	27.00	59.00		
13.00	13.00		28.00			60.40		
13.30			28.70			61.90		
13.70			29.40			63.40	62.00	
14.00			30.10	30.00		64.90		
14.30			30.90			66.50		
14.70			31.60			68.10		
15.00	15.00	15.00	32.40			69.80	68.00	68.00
15.40			33.20	33.00	33.00	71.50		
15.80			34.00			73.20		
16.20	16.00		34.80			75.00	75.00	75.00
16.50			35.70			76.80		
16.90			36.50	36.00		78.70		
17.40			37.40			80.60		
17.80			38.30			82.50	82.00	82.00
18.20	18.00	18.00	39.20	39.00	39.00	84.50		
18.70			40.20			86.60		
19.10			41.20			88.70		
19.60			42.20			90.90		
20.00	20.00		43.20	43.00		93.10	91.00	
20.50			44.20			95.30		
21.00			45.30			97.60		