

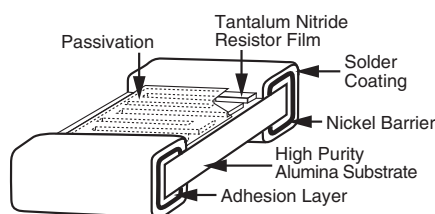


## QPL MIL-PRF-55342 Qualified Ta<sub>2</sub>N Thin Film Resistor, Surface Mount Chip



Thin Film MIL chip resistors feature an all sputtered wraparound termination for excellent adhesion and dimensional uniformity. They are ideal in applications requiring stringent performance requirements. Established reliability is assured through 100 % screening and extensive environmental lot testing.

### CONSTRUCTION



### FEATURES

- Established reliability, “R” and “U” failure rate level (0.01 % per 1000 h), C = 2
- High purity alumina substrate
- Wraparound termination featuring a tenacious adhesion layer covered with an electroplated nickel barrier layer for +150 °C operating conditions
- Very low noise and voltage coefficient (< -25 dB, 0.5 ppm/V)
- Non-inductive
- Laser-trimmed tolerances ± 0.1 %
- Complete MIL-testing available in-house
- Antistatic waffle pack or tape and reel packaging available
- Military / aerospace / QPL approval

### TYPICAL PERFORMANCE

	ABSOLUTE
TCR	25
TOL.	0.1

### STANDARD ELECTRICAL SPECIFICATIONS

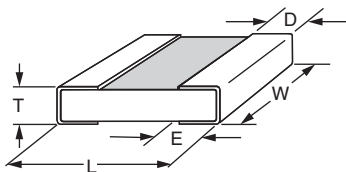
TEST	SPECIFICATIONS	CONDITIONS
Material	Tantalum nitride (Ta <sub>2</sub> N) resistor film	-
Resistance Range	49.9 Ω to 3.3 MΩ	-
TCR: Absolute	± 25 ppm/°C to ± 300 ppm/°C	-55 °C to +125 °C
Tolerance: Absolute	± 0.1 % to ± 10 %	+25 °C
Stability: Absolute	ΔR ± 0.02 %	2000 h at +70 °C
Stability: Ratio	-	-
Voltage Coefficient	0.1 ppm/V	-
Working Voltage	30 V to 200 V	-
Operating Temperature Range	-55 °C to +150 °C	-
Storage Temperature Range	-55 °C to +150 °C	-
Noise	< - 25 dB	-
Shelf Life Stability: Absolute	ΔR ± 0.01 %	1 year at +25 °C

### COMPONENT RATINGS

CASE SIZE	POWER RATING (mW)	WORKING VOLTAGE (V)	RESISTANCE RANGE BY TOLERANCE		
			0.1 %, 0.25 %, 0.5 %, 1 %	2.0 % and 5.0 %	10 %
M55342/01	50	40	49.9 Ω to 64.9 kΩ	51 Ω to 68 kΩ	51 Ω to 68 kΩ
M55342/02	125	40	49.9 Ω to 140 kΩ	51 Ω to 150 kΩ	51 Ω to 150 kΩ
M55342/03	200	75	49.9 Ω to 357 kΩ	51 Ω to 360 kΩ	51 Ω to 360 kΩ
M55342/04	150	125	49.9 Ω to 806 kΩ	51 Ω to 820 kΩ	51 Ω to 820 kΩ
M55342/05	225	175	49.9 Ω to 1.5 MΩ	51 Ω to 1.5 MΩ	51 Ω to 1.5 MΩ
M55342/06	150	50	49.9 Ω to 309 kΩ	51 Ω to 820 kΩ	51 Ω to 820 kΩ
D55342/07	250	100	49.9 Ω to 1 MΩ	51 Ω to 1 MΩ	51 Ω to 1 MΩ
M55342/08	800	150	49.9 Ω to 2.0 MΩ	49.9 Ω to 2.0 MΩ	51 Ω to 2.23 MΩ
M55342/09	1000	200	49.9 Ω to 3.01 MΩ	51 Ω to 3 MΩ	51 Ω to 3.3 MΩ
M55342/10	500	75	49.9 Ω to 604 kΩ	51 Ω to 620 kΩ	51 Ω to 680 kΩ
M55342/11	50	30	49.9 Ω to 49.9 kΩ	51 Ω to 51 kΩ	51 Ω to 51 kΩ
M55342/12	100	50	49.9 Ω to 130 kΩ	51 Ω to 130 kΩ	51 Ω to 150 kΩ

#### Note

- Values listed are a guide, refer to MIL spec for value/tolerance allowance

**DIMENSIONS** in inches

CASE SIZE	TERM.	L	W	T	D	E
M55342/01	B	0.055 ± 0.006	0.025 ± 0.005	0.010 to 0.033	0.010 ± 0.005	0.015 ± 0.005
M55342/02	B	0.055 ± 0.006	0.050 ± 0.005	0.010 to 0.033	0.010 ± 0.005	0.015 ± 0.005
M55342/03	B	0.105 ± 0.007	0.050 ± 0.005	0.010 to 0.033	0.015 ± 0.005	0.015 ± 0.005
M55342/04	B	0.155 ± 0.007	0.050 ± 0.005	0.015 to 0.033	0.015 ± 0.005	0.015 ± 0.005
M55342/05	B	0.230 ± 0.007	0.075 ± 0.005	0.010 to 0.033	0.020 ± 0.005	0.020 ± 0.005
M55342/06	B	0.080 ± 0.006	0.050 ± 0.005	0.010 to 0.033	0.016 ± 0.008	0.015 ± 0.005
D55342/07	B	0.126 ± 0.008	0.063 ± 0.005	0.010 to 0.033	0.020 + 0.005/- 0.010	0.020 + 0.005/- 0.010
M55342/08	B	0.209 + 0.009/- 0.018	0.098 ± 0.005	0.010 to 0.033	0.020 ± 0.005	0.020 ± 0.005
M55342/09	B	0.259 + 0.009/- 0.015	0.124 ± 0.005	0.010 to 0.033	0.020 ± 0.005	0.020 ± 0.005
M55342/10	B	0.105 ± 0.007	0.100 ± 0.005	0.010 to 0.033	0.015 ± 0.005	0.015 ± 0.005
M55342/11	B	0.040 ± 0.005	0.025 ± 0.005	0.010 to 0.033	0.010 ± 0.005	0.015 ± 0.005
M55342/12	B	0.064 ± 0.006	0.032 ± 0.005	0.010 to 0.033	0.012 ± 0.005	0.015 ± 0.005

**ENVIRONMENTAL TESTS**

ENVIRONMENTAL TEST	MIL-PRF-55342 LIMITS (ΔR ±)	VISHAY PERFORMANCE (ΔR ±)
Thermal Shock	0.1 %	0.020 %
Low Temperature Operation	0.1 %	0.025 %
Short Time Overload	0.1 %	0.050 %
High Temperature Exposure	0.1 %	0.009 %
Resistance to Bonding	0.2 %	0.006 %
Moisture Resistance	0.2 %	0.004 %
TCR	± 25 ppm/°C	< 15 ppm/°C
Life (2000 h at + 70 °C)	0.5 %	0.02 %
Life (10 000 h at + 70 °C)	2.0 %	0.04 %

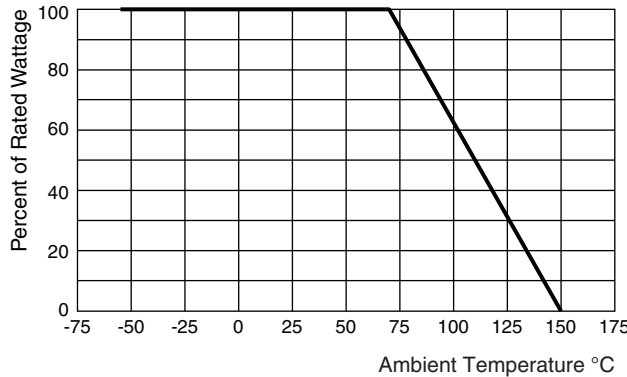
**MECHANICAL SPECIFICATIONS**

Resistive Element	Tantalum nitride (Ta <sub>2</sub> N)
Substrate Material	Alumina
Chip Terminations	Solder over nickel
Plated Solder	90/10

**FSCM CAGE # - 57489**



**DERATING**



**GLOBAL PART NUMBER INFORMATION**

New Global Part Numbering: M55342E06B9B00MT14

M 5 5 3 4 2 E 0 6 B 9 B 0 0 M T 1 4

GLOBAL MODEL	TCR CHARACTERISTIC	CASE SIZE	TERMINATION	OHMIC VALUE	FAILURE RATE	PACKAGING	THIN FILM CODE
M55342 or D55342 (/07 size only)	E = 25 ppm/°C H = 50 ppm/°C K = 100 ppm/°C L = 200 ppm/°C M = 300 ppm/°C	01 = 0502 02 = 0505 03 = 1005 04 = 1505 05 = 2208 06 = 0705 07 = 1206 08 = 2010 09 = 2512 10 = 1010 11 = 0402 12 = 0603	B = solderable	Three digits and a letter. Letter identifies tolerance, acts as multiplier and decimal locator.  MULTIPLIER Tolerance 1 Ω 1 kΩ 1 MΩ 0.1 % A B C 0.25 % R U V 0.50 % W Y Z 1 % D E F 2 % G H T 5 % J K L 10 % M N P	M = 1.0 % per 1000 h P = 0.1 % per 1000 h R = 0.01 % per 1000 h U = 0.01 % per 1000 h	<b>Standard Packaging:</b> BS = BULK 100 min., 1 mult WS = WAFFLE 100 min., 1 mult <b>TAPE AND REEL</b> T0 = 100 min., 100 mult T1 = 1000 min., 1000 mult T3 = 300 min., 300 mult T5 = 500 min., 500 mult TF = Full reel ( 2K, 4K, or 5K dependent on case size ) per tape and reel document 60034 TS = 100 min., 1 mult <b>Special Packaging:</b> WAFFLE WI = 100 min., 1 mult (item single lot date code) WP = 100 min., 1 mult (package unit single lot date code) <b>TAPE AND REEL</b> TI = 100 min., 1 mult (item single lot date code) TP = 100 min., 1 mult (package unit single lot date code)	4 for Ta <sub>2</sub> N resistor film type



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