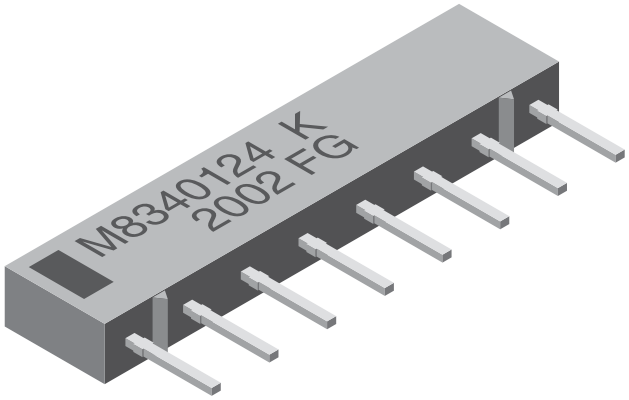
Thick Film Resistor Networks, Military, MIL-PRF-83401 Qualified, Type RZ240, Single-In-Line, Molded SIP



FEATURES

- Isolated, bussed, and dual terminator schematics available
- MIL-PRF-83401 qualified
- 0.195" (4.95 mm) “A” maximum seated height
- Thick film resistive elements
- TCR available in “K” (± 100 ppm/°C) or “M” (± 300 ppm/°C) characteristic
- All device leads are hot-solder dipped
- Rugged molded case construction
- Compatible with automatic insertion equipment
- 100 % screen tested per group A, subgroup 1 of MIL-PRF-83401
- All devices are capable of passing the MIL-STD-202, method 210, condition D “Resistance to Soldering Heat” test
- Available in tube pack

STANDARD ELECTRICAL SPECIFICATIONS

VISHAY DALE MODEL/ PIN NO/ PROFILE	MIL STYLE	MIL SPEC. SHEET	SCHEMATIC	POWER RATING ELEMENT $P_{70\,°C}$ W	POWER RATING PACKAGE $P_{70\,°C}$ W	RESISTANCE RANGE Ω	TOLERANCE (1) ± %	TEMPERATURE COEFFICIENT (2) (-55 °C to +125 °C) ± ppm/°C	WEIGHT g
MSM10A-01-S4	RZ240	24	01 (C)	0.12	1.08	10 to 1M	1, 2, 5	100, 300	0.6
MSM10A-03-S2			03 (G)	0.12	0.60	10 to 1M			
MSM10A-05-S3			05 (H)	0.07	1.08	Consult factory			

Notes

- DSCC has created a drawing to support the need for a 10 pin, single in line package (SIP), 0.350" maximum seated height resistor network product with an extended lead length. Vishay Dale is listed as a resource on this drawing as follows:

DSCC DRAWING NUMBER	VISHAY DALE MODEL	SCHEMATIC	POWER RATING ELEMENT $P_{70\,°C}$ W	POWER RATING PACKAGE $P_{70\,°C}$ W	RESISTANCE RANGE Ω	TOLERANCE (1) ± %	TEMPERATURE COEFFICIENT (2) (-55 °C to +125 °C) ± ppm/°C	MAX. WORKING VOLTAGE (1) V
92013	MSP10C-01-S125	01 (C)	0.2	1.8	10 to 1M	1, 2, 5	100	50
	MSP10C-03-S154	03 (G)	0.2	1.0	10 to 1M			
	MSP10C-05-S122	05 (H)	0.11	1.8	Consult factory			

- This drawing can be viewed at: www.landandmaritime.dla.mil/Programs/MilSpec/ListDwgs.aspx?DocTYPE=DSCCdwg.

(1) ± 2 % standard, ± 1 % and ± 5 % available

(2) K = ± 100 ppm/°C; M = ± 300 ppm/°C

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: M8340124K1003GCD03 (preferred part numbering format)

M	8	3	4	0	1	2	4	K	1	0	0	3	G	C	D	0	3

MIL STYLE	SPEC. SHEET	CHARACTERISTIC	RESISTANCE VALUE	TOLERANCE	SCHEMATIC	PACKAGING
M83401	**24** = 10 pin, "A" profile, 0.190" leads	**K** = 100 ppm **M** = 300 ppm	3 digit significant figure, followed by a multiplier **10R0** = 10 Ω **3302** = 33 kΩ **1004** = 1 MΩ	**F** = ± 1 % **G** = ± 2 % **J** = ± 5 %	**C** = Bussed **G** = Isolated	**D03** = Tin/lead, tube **DSL** = Tin/lead, tube, single lot date code

Historical Part Number: M8340124K1003GC (will continue to be accepted)

M83401	24	K	1003	G	C	D03
MIL STYLE	SPEC SHEET	CHARACTERISTIC	RESISTANCE VALUE	TOLERANCE	SCHEMATIC	PACKAGING

New Global Part Numbering: M8340124KA001GHD03 (preferred part numbering format)

M	8	3	4	0	1	2	4	K	A	0	0	1	G	H	D	0	3

MIL STYLE	SPEC. SHEET	CHARACTERISTIC	RESISTANCE VALUE	TOLERANCE	SCHEMATIC	PACKAGING
M83401	**24** = 10 pin, "A" profile, 0.190" leads	**K** = 100 ppm **M** = 300 ppm	Per Std. MIL. Spec. (see Impedance Codes table)	**F** = ± 1 % **G** = ± 2 % **J** = ± 5 %	**H** = Dual terminator	**D03** = Tin/lead, tube **DSL** = Tin/lead, tube, single lot date code

Historical Part Number: M8340124KA001GH (will continue to be accepted)

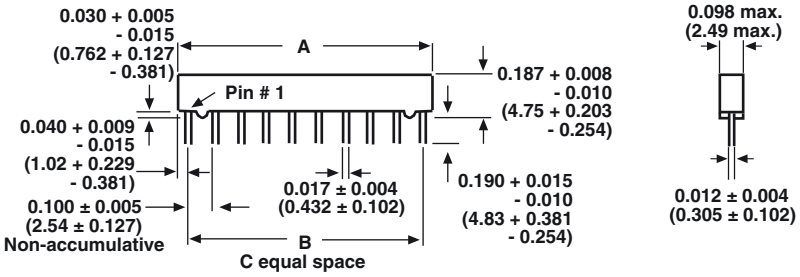
M83401	24	K	A001	G	H	D03
MIL STYLE	SPEC SHEET	CHARACTERISTIC	RESISTANCE VALUE	TOLERANCE	SCHEMATIC	PACKAGING

Note

- For additional information on packaging, refer to the Through-Hole Network Packaging document (www.vishay.com/doc?31542).

DIMENSIONS in inches (millimeters)

"A" Profile



VISHAY DALE MODEL	A	B	C
MSM10	0.983 ± 0.015 (24.97 ± 0.381)	0.900 (22.86)	9

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	MSM SERIES
Maximum Operating Voltage	V_{DC}	50
Voltage Coefficient of Resistance	V_{eff}	< 50 ppm
Dielectric Strength	V_{AC}	200 min.
Insulation Resistance	Ω	10 000 M
Operating Temperature Range	°C	-55 to +125
Storage Temperature Range	°C	-55 to +150

MECHANICAL SPECIFICATIONS

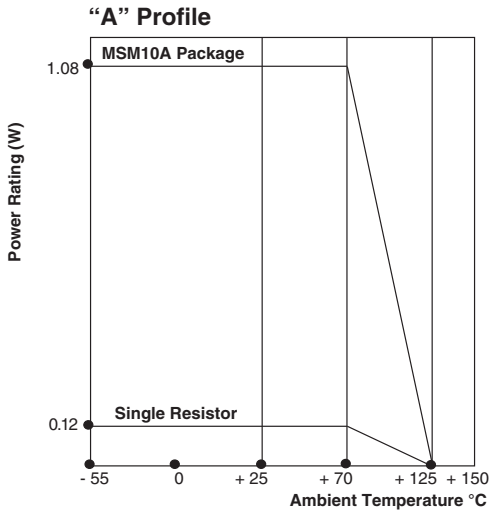
Body	Molded epoxy
Terminals	Copper alloy, hot-solder dipped
Solderability	Per MIL-PRF-83401

CAGE CODE: 91637 and 2799A (formerly SH903)

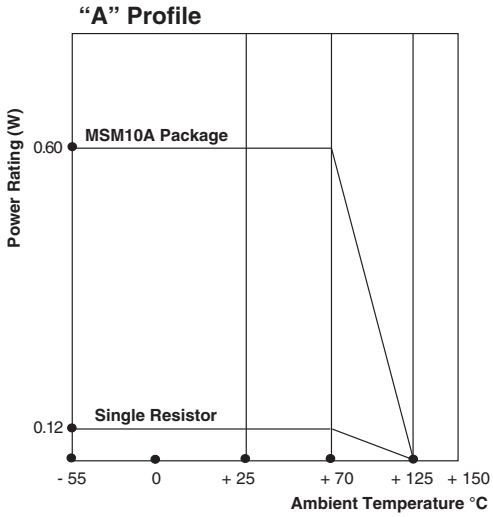
MILITARY IMPEDANCE CODES					
CODE	R_1 (Ω)	R_2 (Ω)	CODE	R_1 (Ω)	R_2 (Ω)
A001	82	130	A011	330	680
A002	120	200	A012	1.5K	3.3K
A003	130	210	A013	3K	6.2K
A004	160	260	A014	180	270
A005	180	240	A015	270	270
A006	180	390	A016	560	560
A007	220	270	A017	560	1.2K
A008	220	330	A018	620	2.7K
A009	330	390	A019	150	1K
A010	330	470	A020	1K	1K

DERATING

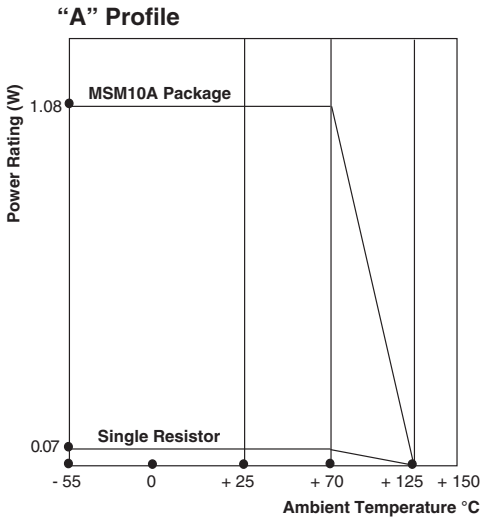
01 Schematic



03 Schematic

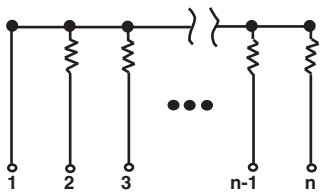


05 Schematic



CIRCUIT APPLICATIONS

01 Schematic



9 resistors with one pin common

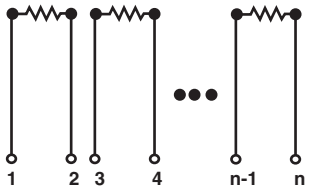
"A" Profile
MSM10A-01-S4 (M8340124xxxxxxC)

The MSM10A-01-S4 molded single-in-line resistor network provides the user with 9 nominally equal resistors, each connected to a common pin (pin no. 1).

Commonly used in the following applications:

- "Wired OR" pull-up
- Power gate pull-up
- MOS/ROM pull-up/pull-down
- Open collector pull-up
- TTL input pull-down
- TTL unused gate pull-up

03 Schematic



5 isolated resistors

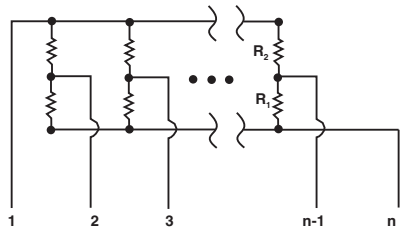
"A" Profile
MSM10A-03-S2 (M8340124xxxxxxG)

The MSM10A-03-S2 molded single-in-line resistor network provides the user with 5 nominally equal resistors. Each resistor is isolated from all others.

Commonly used in the following applications:

- "Wired OR" pull-up
- Power driven pull-up
- Power gate pull-up
- Line termination
- Long-line impedance balance
- LED current limiting
- ECL output pull-down
- TTL input pull-down

05 Schematic



8 resistor pairs

"A" Profile
MSM10A-05-S3 (M8340124xxxxxxH)

The MSM10A-05-S3 molded single-in-line resistor network provides the user with 8 pair of *R*1/*R*2 resistor values for pulse squaring and TTL dual-line terminating requirements.

PERFORMANCE		
TEST	**CONDITIONS**	**MAX. Δ*R* (TYPICAL TEST LOTS)**
Power Conditioning	1.5 x rated power, applied 1.5 h “ON” and 0.5 h “OFF” for 100 h ± 4 h at +25 °C ambient temperature	± 0.50 % Δ*R*
Thermal Shock	5 cycles between -65 °C and +125 °C	± 0.50 % Δ*R*
Short Time Overload	2.5 x rated working voltage for 5 s	± 0.25 % Δ*R* (Characteristic K) ± 0.50 % Δ*R* (Characteristic M)
Low Temperature Operation	45 min at full rated working voltage at -65 °C	± 0.25 % Δ*R* (Characteristic K) ± 0.50 % Δ*R* (Characteristic M)
Moisture Resistance	240 h with humidity ranging from 80 % RH to 98 % RH	± 0.50 % Δ*R*
Resistance to Soldering Heat	Leads immersed in +260 °C solder to within 1/16" of body for 10 s	± 0.25 % Δ*R*
Shock	Total of 18 shocks at 100 *g*’s	± 0.25 % Δ*R*
Vibration	12 h at maximum of 20 *g*’s between 10 Hz and 2000 Hz	± 0.25 % Δ*R*
Load Life	1000 h at +70 °C, rated power applied 1.5 h “ON”, 0.5 h “OFF” for full 1000 h period	± 0.50 % Δ*R* (Characteristic K) ± 2.00 % Δ*R* (Characteristic M)
Terminal Strength	4 1/2 pound pull for 30 s	± 0.25 % Δ*R*
Insulation Resistance	10 000 MΩ (minimum)	-
Dielectric Withstanding Voltage	No evidence of arcing or damage (200 V_{RMS} for 1 min)	-

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