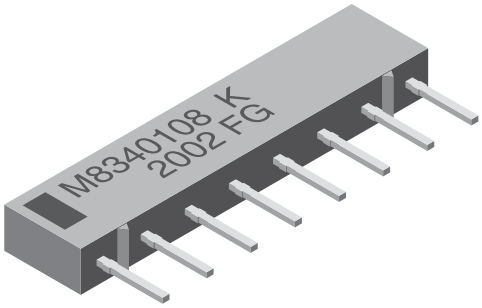
Thick Film Resistor Networks, Military, MIL-PRF-83401 Qualified, Type RZ040 to RZ090, Single-In-Line, Molded SIP



FEATURES

- Isolated, bussed and dual terminator schematics available
- MIL-PRF-83401 qualified
- 0.195" (4.95 mm) “A” and 0.350" (8.89 mm) “C” maximum seated heights
- 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
MSM06C	RZ040	04	01 (C)	0.20	1.00	10 to 1M	1, 2, 5	100, 300	0.7
			03 (G)	0.20	0.60	10 to 1M	1, 2, 5	100, 300	
			05 (H)	0.11	0.88	Consult factory	1, 2, 5	100, 300	
MSM08C	RZ050	05	01 (C)	0.20	1.40	10 to 1M	1, 2, 5	100, 300	0.9
			03 (G)	0.20	0.80	10 to 1M	1, 2, 5	100, 300	
			05 (H)	0.11	1.32	Consult factory	1, 2, 5	100, 300	
MSM10C	RZ060	06	01 (C)	0.20	1.80	10 to 1M	1, 2, 5	100, 300	1.1
			03 (G)	0.20	1.00	10 to 1M	1, 2, 5	100, 300	
			05 (H)	0.11	1.80	Consult factory	1, 2, 5	100, 300	
MSM06A	RZ070	07	01 (C)	0.12	0.60	10 to 1M	1, 2, 5	100, 300	0.4
			03 (G)	0.12	0.36	10 to 1M	1, 2, 5	100, 300	
			05 (H)	0.07	0.60	Consult factory	1, 2, 5	100, 300	
MSM08A	RZ080	08	01 (C)	0.12	0.84	10 to 1M	1, 2, 5	100, 300	0.5
			03 (G)	0.12	0.48	10 to 1M	1, 2, 5	100, 300	
			05 (H)	0.07	0.84	Consult factory	1, 2, 5	100, 300	
MSM10A	RZ090	09	01 (C)	0.12	1.08	10 to 1M	1, 2, 5	100, 300	0.6
			03 (G)	0.12	0.60	10 to 1M	1, 2, 5	100, 300	
			05 (H)	0.07	1.08	Consult factory	1, 2, 5	100, 300	

Notes

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

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

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GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: M8340107K1003GCD03 (preferred part numbering format)

M	8	3	4	0	1	0	7	K	1	0	0	3	G	C	D	0	3

MIL STYLE	SPEC SHEET	CHARACTERISTIC	RESISTANCE VALUE	TOLERANCE CODE	SCHEMATIC	PACKAGING
M83401	**04** = 6 pin, “C” profile **05** = 8 pin, “C” profile **06** = 10 pin, “C” profile **07** = 6 pin, “A” profile **08** = 8 pin, “A” profile **09** = 10 pin, “A” profile	**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 example: M8340107K1003GC (will continue to be accepted)

M83401	07	K	1003	G	C	D03
MIL STYLE	SPEC SHEET	CHARACTERISTIC	RESISTANCE VALUE	TOLERANCE CODE	SCHEMATIC	PACKAGING

New Global Part Numbering: M8340104KA001GHD03 (preferred part numbering format)

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

MIL STYLE	SPEC SHEET	CHARACTERISTIC	RESISTANCE VALUE	TOLERANCE CODE	SCHEMATIC	PACKAGING
M83401	**04** = 6 pin, “C” profile **05** = 8 pin, “C” profile **06** = 10 pin, “C” profile **07** = 6 pin, “A” profile **08** = 8 pin, “A” profile **09** = 10 pin, “A” profile	**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 example: M8340104KA001GH (will continue to be accepted)

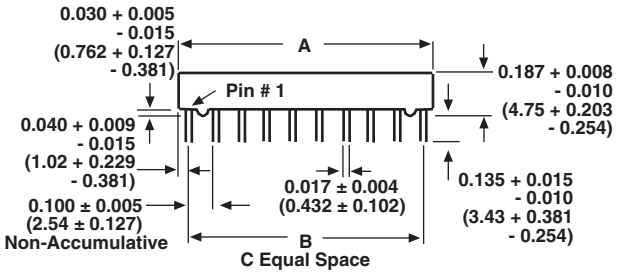
M83401	04	K	A001	G	H	D03
MIL STYLE	SPEC SHEET	CHARACTERISTIC	RESISTANCE VALUE	TOLERANCE CODE	SCHEMATIC	PACKAGING

Note

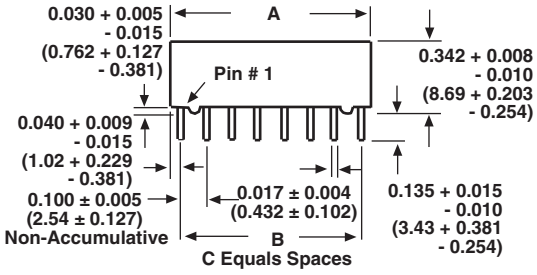
- For additional information on packaging, refer to the Through Hole Network Packaging document (www.vishay.com/doc?31542).

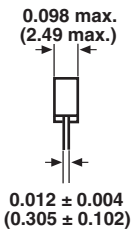
DIMENSIONS in inches (millimeters)

“A” Profile

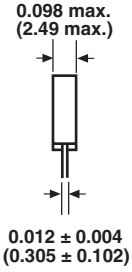


“C” Profile





VISHAY DALE MODEL	A	B	C
MSM06	0.583 ± 0.015 (14.81 ± 0.381)	0.500 (12.70)	5
MSM08	0.783 ± 0.015 (19.89 ± 0.381)	0.700 (17.78)	7
MSM10	0.983 ± 0.015 (24.97 ± 0.381)	0.900 (22.86)	9



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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 000M
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 (1)	150	1K
A010	330	470	A020 (1)	1K	1K

Note

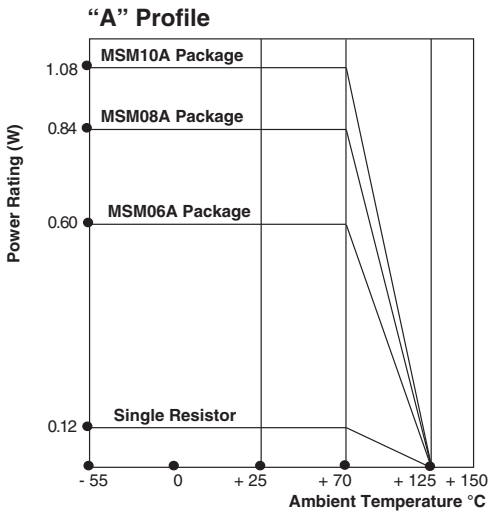
(1) Offered for the M83401/09 product only

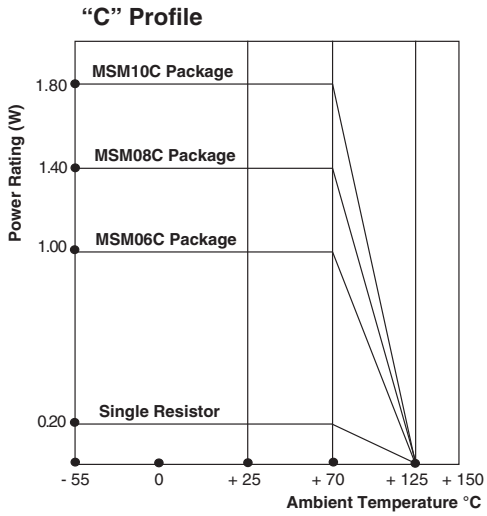
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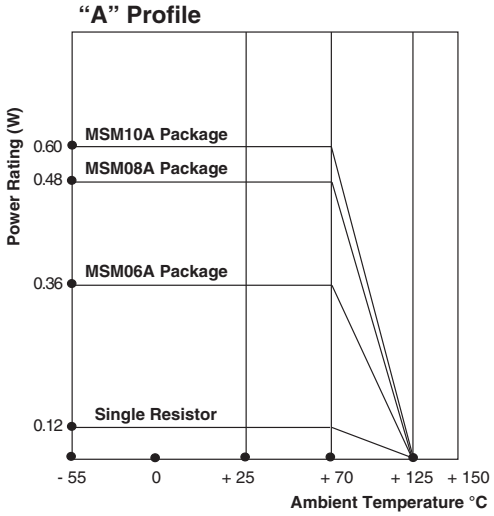
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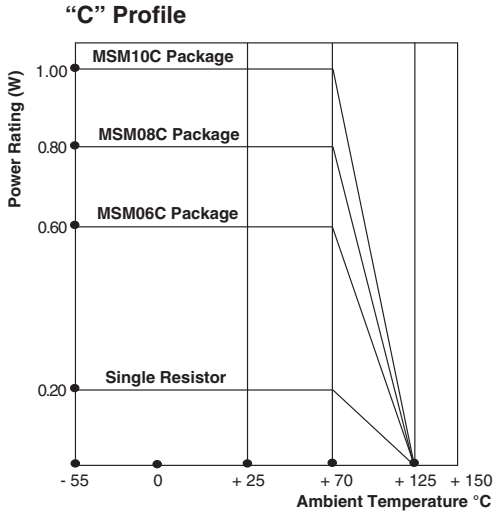
01 Schematic



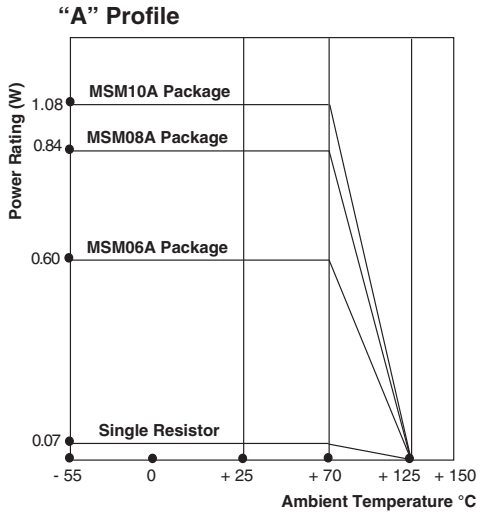


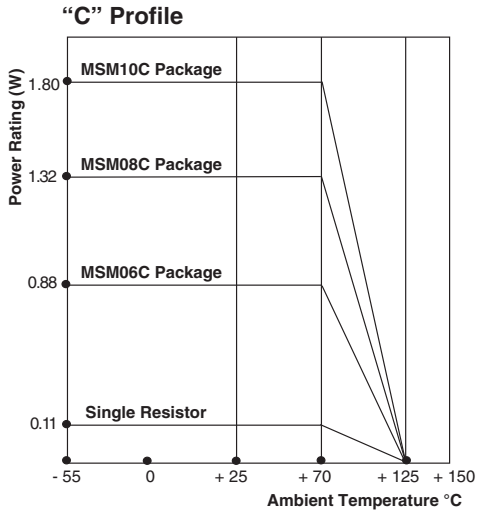
03 Schematic





05 Schematic

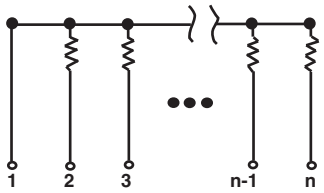




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CIRCUIT APPLICATIONS

01 Schematic



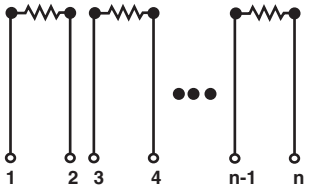
5, 7 or 9 resistors with one pin common

"A" Profile	"C" Profile
MSM06A01 (M8340107xxxxxC)	MSM06C01 (M8340104xxxxxC)
MSM08A01 (M8340108xxxxxC)	MSM08C01 (M8340105xxxxxC)
MSM10A01 (M8340109xxxxxC)	MSM10C01 (M8340106xxxxxC)

The MSM06A01, MSM08A01, MSM10A01, MSM06C01, MSM08C01, and MSM10C01 molded single-in-line resistor networks provide the user with a choice of 5, 7, or 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



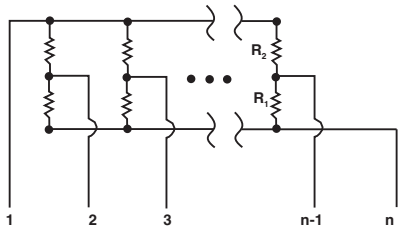
3, 4 or 5 isolated resistors

"A" Profile	"C" Profile
MSM06A03 (M8340107xxxxxG)	MSM06C03 (M8340104xxxxxG)
MSM08A03 (M8340108xxxxxG)	MSM08C03 (M8340105xxxxxG)
MSM10A03 (M8340109xxxxxG)	MSM10C03 (M8340106xxxxxG)

The MSM06A03, MSM08A03, MSM10A03, MSM06C03, MSM08C03, and MSM10C03 molded single-in-line resistor networks provide the user with a choice of 3, 4, or 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



4, 6 or 8 resistor pairs

"A" Profile	"C" Profile
MSM06A05 (M8340107xxxxxH)	MSM06C05 (M8340104xxxxxH)
MSM08A05 (M8340108xxxxxH)	MSM08C05 (M8340105xxxxxH)
MSM10A05 (M8340109xxxxxH)	MSM10C05 (M8340106xxxxxH)

The MSM06A05, MSM08A05, MSM10A05, MSM06C05, MSM08C05, and MSM10C05 molded single-in-line resistor networks provide the user with a choice of 4, 6, or 8 pair of R_1/R_2 resistor values for pulse squaring and TTL dual-line terminating requirements.

PERFORMANCE

TEST	CONDITIONS	MAX. ΔR (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 % ΔR
Thermal Shock	5 cycles between -65 °C and +125 °C	± 0.50 % ΔR
Short Time Overload	2.5 x rated working voltage for 5 s	± 0.25 % ΔR (Characteristic K) ± 0.50 % ΔR (Characteristic M)
Low Temperature Operation	45 min at full rated working voltage at -65 °C	± 0.25 % ΔR (Characteristic K) ± 0.50 % ΔR (Characteristic M)
Moisture Resistance	240 h with humidity ranging from 80 % RH to 98 % RH	± 0.50 % ΔR
Resistance to Soldering Heat	Leads immersed in +260 °C solder to within 1/16" of body for 10 s	± 0.25 % ΔR
Shock	Total of 18 shocks at 100 *g*'s	± 0.25 % ΔR
Vibration	12 h at maximum of 20 *g*'s between 10 Hz and 2000 Hz	± 0.25 % ΔR
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 % ΔR (Characteristic K) ± 2.00 % ΔR (Characteristic M)
Terminal Strength	4 1/2 pound pull for 30 s	± 0.25 % ΔR
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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