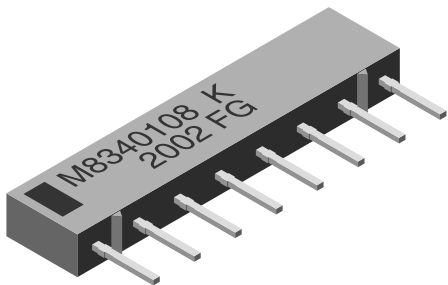


MSM (Military M83401)

Date

Thick Film Resistor Networks Military, MIL-PRF-83401 Qualified, Type RZ, Single-In-Line, Molded SIP; 01, 03, 05 Schematics



FEATURES

- 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/ $^{\circ}$ C) or "M" (± 300 ppm/ $^{\circ}$ 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	SCHEMATIC	RESISTOR POWER RATING MAX. at 70 $^{\circ}$ C W	PACKAGE POWER RATING MAX. at 70 $^{\circ}$ C W	RESISTANCE RANGE Ω	STANDARD TOLERANCE (1) %	TEMPERATURE COEFFICIENT (2) (- 55 $^{\circ}$ C to + 125 $^{\circ}$ C)	WEIGHT g
MSM06A	01	0.12	0.60	10 - 1M	± 2	K, M	0.4
MSM08A	01	0.12	0.84				0.5
MSM10A	01	0.12	1.08				0.6
MSM06A	03	0.12	0.36	10 - 1M	± 2	K, M	0.4
MSM08A	03	0.12	0.48				0.5
MSM10A	03	0.12	0.60				0.6
MSM06A	05	0.07	0.60	Consult factory	± 2	K, M	0.4
MSM08A	05	0.07	0.84				0.5
MSM10A	05	0.07	1.08				0.6
MSM06C	01	0.20	1.00	10 - 1M	± 2	K, M	0.7
MSM08C	01	0.20	1.40				0.9
MSM10C	01	0.20	1.80				1.1
MSM06C	03	0.20	0.60	10 - 1M	± 2	K, M	0.7
MSM08C	03	0.20	0.80				0.9
MSM10C	03	0.20	1.00				1.1
MSM06C	05	0.11	0.88	Consult factory	± 2	K, M	0.7
MSM08C	05	0.11	1.32				0.9
MSM10C	05	0.11	1.80				1.1

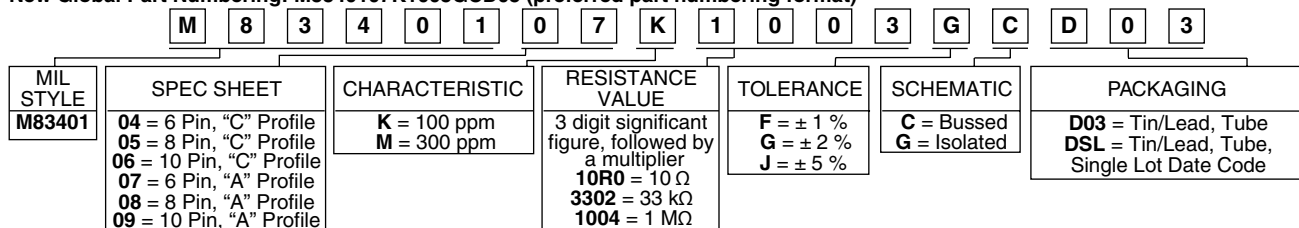
Notes

(1) ± 1 % and ± 5 % available

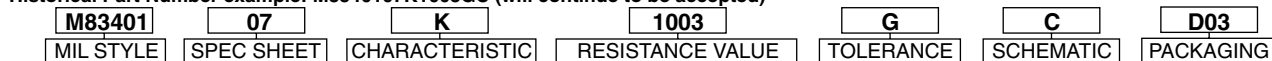
(2) K = ± 100 ppm/ $^{\circ}$ C; M = ± 300 ppm/ $^{\circ}$ C

GLOBAL PART NUMBER INFORMATION

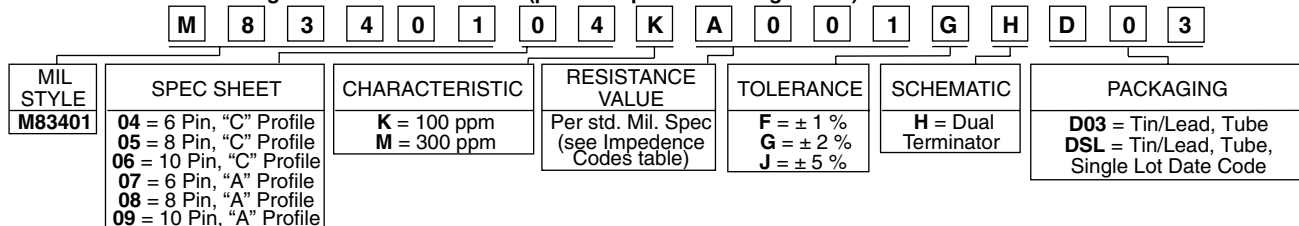
New Global Part Numbering: M8340107K1003GCD03 (preferred part numbering format)



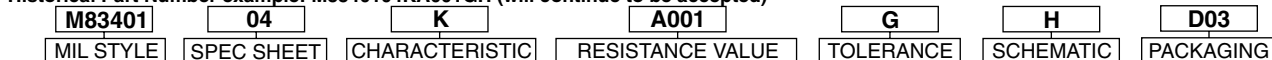
Historical Part Number example: M8340107K1003GC (will continue to be accepted)



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



Historical Part Number example: M8340104KA001GH (will continue to be accepted)

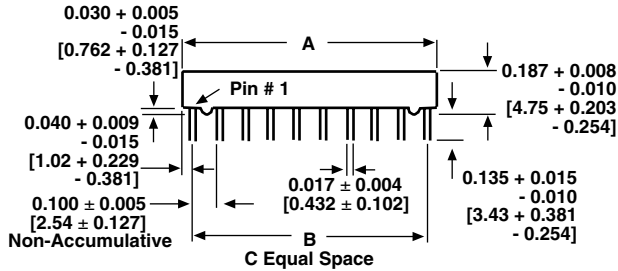


MSM (Military M83401)

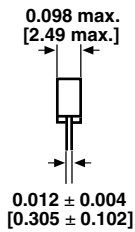
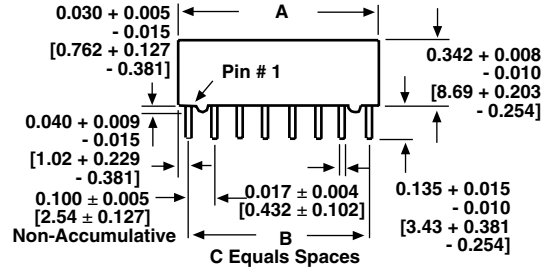
Thick Film Resistor Networks Military, MIL-PRF-83401 Qualified, Dale
Type RZ, Single-In-Line, Molded SIP; 01, 03, 05 Schematics

DIMENSIONS in inches [millimeters]

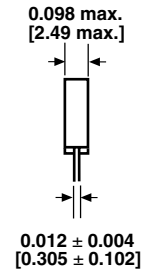
"A" Profile



"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



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 SH903

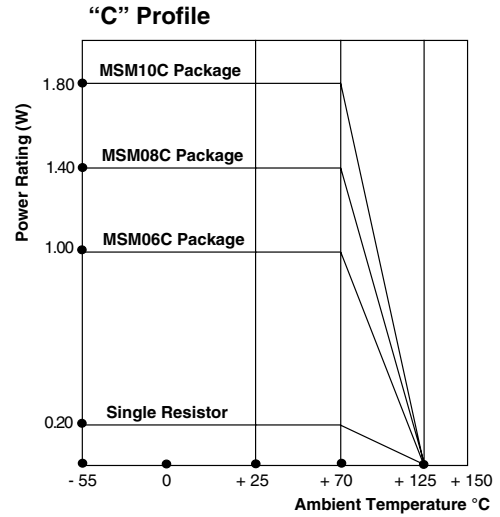
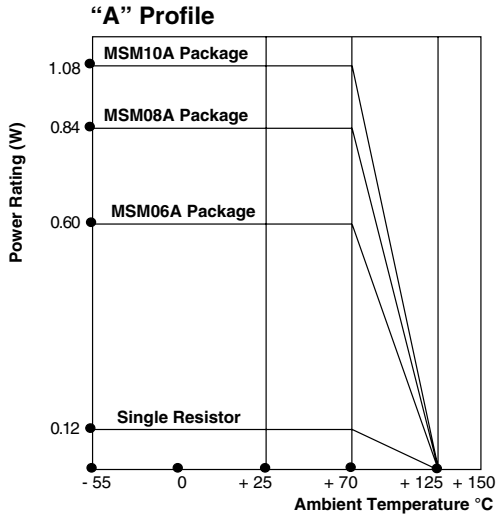
MILITARY IMPEDANCE CODES					
CODE	R ₁ (Ω)	R ₂ (Ω)	CODE	R ₁ (Ω)	R ₂ (Ω)
A001	82	130	A010	330	470
A002	120	200	A011	330	680
A003	130	210	A012	1.5K	3.3K
A004	160	260	A013	3K	6.2K
A005	180	240	A014	180	270
A006	180	390	A015	270	270
A007	220	270	A016	560	560
A008	220	330	A017	560	1.2K
A009	330	390	A018	620	2.7K

MSM (Military M83401)

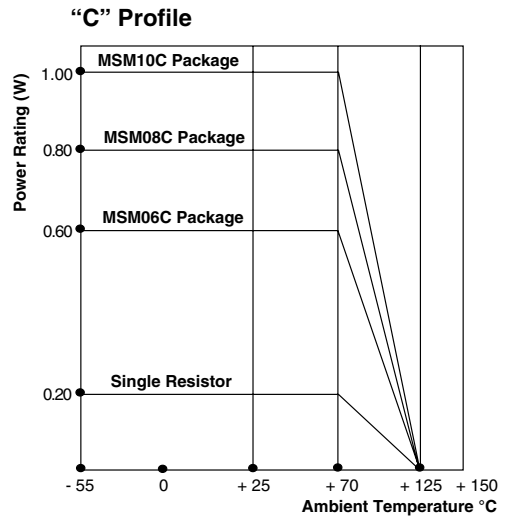
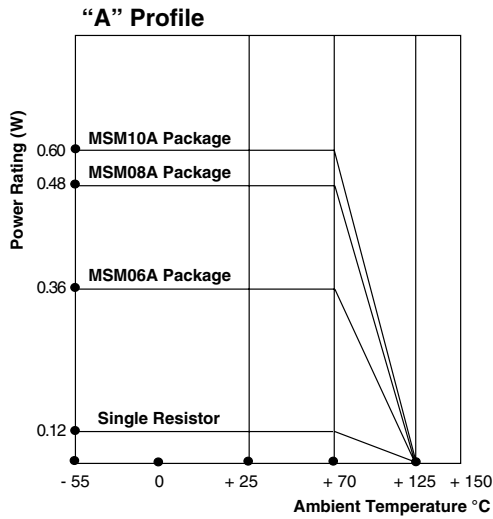
Dale Thick Film Resistor Networks Military, MIL-PRF-83401 Qualified,
Type RZ, Single-In-Line, Molded SIP; 01, 03, 05 Schematics

DERATING

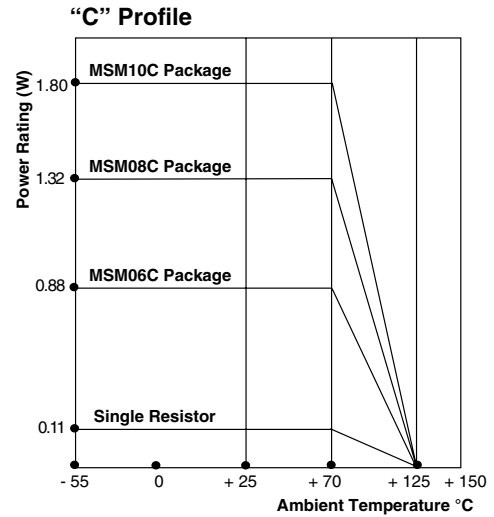
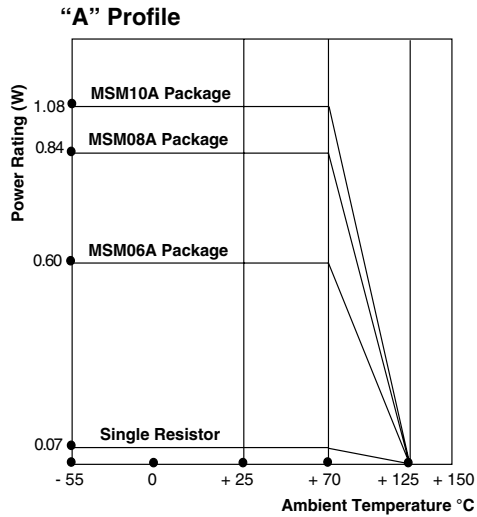
01 Schematic



03 Schematic

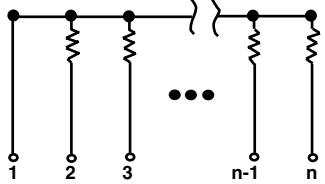
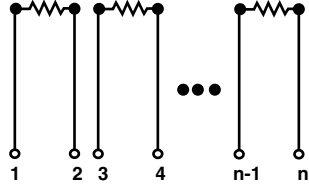
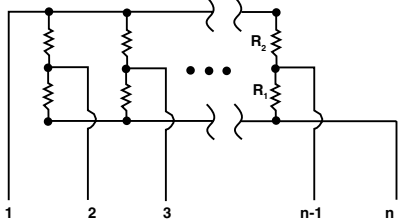


05 Schematic



MSM (Military M83401)

Thick Film Resistor Networks Military, MIL-PRF-83401 Qualified, Dale
Type RZ, Single-In-Line, Molded SIP; 01, 03, 05 Schematics

CIRCUIT APPLICATIONS									
<p>01 Schematic</p> 	<p>5, 7 or 9 resistors with one pin common</p> <table border="0"> <tr> <td>"A" Profile</td> <td>"C" Profile</td> </tr> <tr> <td>MSM06A01 (M8340107xxxxxC)</td> <td>MSM06C01 (M8340104xxxxxC)</td> </tr> <tr> <td>MSM08A01 (M8340108xxxxxC)</td> <td>MSM08C01 (M8340105xxxxxC)</td> </tr> <tr> <td>MSM10A01 (M8340109xxxxxC)</td> <td>MSM10C01 (M8340106xxxxxC)</td> </tr> </table> <p>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).</p> <p>Commonly used in the following applications:</p> <ul style="list-style-type: none"> • "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 	"A" Profile	"C" Profile	MSM06A01 (M8340107xxxxxC)	MSM06C01 (M8340104xxxxxC)	MSM08A01 (M8340108xxxxxC)	MSM08C01 (M8340105xxxxxC)	MSM10A01 (M8340109xxxxxC)	MSM10C01 (M8340106xxxxxC)
"A" Profile	"C" Profile								
MSM06A01 (M8340107xxxxxC)	MSM06C01 (M8340104xxxxxC)								
MSM08A01 (M8340108xxxxxC)	MSM08C01 (M8340105xxxxxC)								
MSM10A01 (M8340109xxxxxC)	MSM10C01 (M8340106xxxxxC)								
<p>03 Schematic</p> 	<p>3, 4 or 5 isolated resistors</p> <table border="0"> <tr> <td>"A" Profile</td> <td>"C" Profile</td> </tr> <tr> <td>MSM06A03 (M8340107xxxxxG)</td> <td>MSM06C03 (M8340104xxxxxG)</td> </tr> <tr> <td>MSM08A03 (M8340108xxxxxG)</td> <td>MSM08C03 (M8340105xxxxxG)</td> </tr> <tr> <td>MSM10A03 (M8340109xxxxxG)</td> <td>MSM10C03 (M8340106xxxxxG)</td> </tr> </table> <p>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.</p> <p>Commonly used in the following applications:</p> <ul style="list-style-type: none"> • "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 	"A" Profile	"C" Profile	MSM06A03 (M8340107xxxxxG)	MSM06C03 (M8340104xxxxxG)	MSM08A03 (M8340108xxxxxG)	MSM08C03 (M8340105xxxxxG)	MSM10A03 (M8340109xxxxxG)	MSM10C03 (M8340106xxxxxG)
"A" Profile	"C" Profile								
MSM06A03 (M8340107xxxxxG)	MSM06C03 (M8340104xxxxxG)								
MSM08A03 (M8340108xxxxxG)	MSM08C03 (M8340105xxxxxG)								
MSM10A03 (M8340109xxxxxG)	MSM10C03 (M8340106xxxxxG)								
<p>05 Schematic</p> 	<p>4, 6 or 8 isolated resistors</p> <table border="0"> <tr> <td>"A" Profile</td> <td>"C" Profile</td> </tr> <tr> <td>MSM06A05 (M8340107xxxxxH)</td> <td>MSM06C05 (M8340104xxxxxH)</td> </tr> <tr> <td>MSM08A05 (M8340108xxxxxH)</td> <td>MSM08C05 (M8340105xxxxxH)</td> </tr> <tr> <td>MSM10A05 (M8340109xxxxxH)</td> <td>MSM10C05 (M8340106xxxxxH)</td> </tr> </table> <p>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 R1/R2 resistor values for pulse squaring and TTL dual-line terminating requirements.</p>	"A" Profile	"C" Profile	MSM06A05 (M8340107xxxxxH)	MSM06C05 (M8340104xxxxxH)	MSM08A05 (M8340108xxxxxH)	MSM08C05 (M8340105xxxxxH)	MSM10A05 (M8340109xxxxxH)	MSM10C05 (M8340106xxxxxH)
"A" Profile	"C" Profile								
MSM06A05 (M8340107xxxxxH)	MSM06C05 (M8340104xxxxxH)								
MSM08A05 (M8340108xxxxxH)	MSM08C05 (M8340105xxxxxH)								
MSM10A05 (M8340109xxxxxH)	MSM10C05 (M8340106xxxxxH)								

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 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	No evidence of arcing or damage (200 V _{RMS} for 1 min)	-