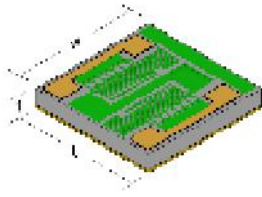
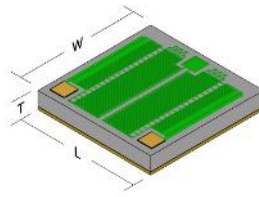


BACK CONTACT CHIP RESISTORS

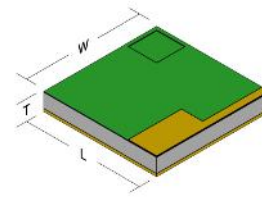
DRBC3



DRBC4



EMSBC



Mini-Systems, Inc. **Back Contact chip resistors** offer the **high stability, low noise and low TCR** of Mini-Systems proven Thin Film technology while providing the design engineer with a space saving alternative in hybrid designs. Each Back Contact Resistor requires only a **single wire bond to the top** side of the chip with the bottom connection made by eutectic or conductive epoxy attachment to associated circuitry. The EMSBC configurations are single resistors available in several case sizes and a wide resistance range. The DRBC configuration offers **two resistors** on a single chip and is ideal for use in applications where divider networks with closely matched tolerances and TCR are critical.

GENERAL CHARACTERISTICS

Resistance Range		5Ω to 70MΩ ¹
Resistor Material		Tantalum Nitride
Substrate Material		Silicon
Passivation		Ta ₂ O ₅ (Self Passivating)
Resistance Tolerance		±0.05% to ±10%
Termination Material		Aluminum or Gold
Termination Size		0.0035" Square Min. - Value Dependent
Operating Temperature		-55°C to +125°C
Storage Temperature		-65°C to +150°C
Insulation Resistance		10 ¹² Ω Min.
Dielectric Breakdown		400V Min.
Operating Voltage		100V Max.
Thermal Conductivity (W/m•K)		149 (Silicon) 1.38 (12kÅ SiO ₂)
TCR		±150 ppm/°C (Standard) Optional to: ±100 ppm/°C
TCR Tracking (Dual Resistors Only)		±2ppm/°C
Current Noise	101Ω to 250kΩ	-35dB
	≤ 100Ω > 250kΩ	-20dB

¹ Consult Engineering if lower valued resistors are required

PART NUMBER DESIGNATION

EMSBC	110	S	T	300R0 / 500R0 ² 10001	F	RN	E
STYLE	TYPE	SUBSTRATE	RESISTOR FILM	OHMIC VALUE	TOLERANCE	RATIO	OPTION
EMSBC	See Tables	S = Silicon	T = Tantalum Nitride	5-Digit Number: 1st 4 digits are significant with "R" as decimal point when required. 5th digit represents number of zeros.	Q = 0.05% B = 0.1% C = 0.25% D = 0.5% F = ±1% G = ±2% J = ±5% K = ±10%	RA = ±0.01% RB = ±0.05% RC = ±0.10% RE = ±0.25% RD = ±0.50% RF = ±1% RN = No Ratio	F = ±100ppm/°C E = Aluminum Bond Pads G = Gold Bond Pads TR = Tape & Reel

EXAMPLE: EMSBC-110-ST-10001F-E

EMSBC -110 Series, Silicon, Tantalum, 10kΩ ±1% Tol., ±150 ppm/°C, Aluminum Bond Pads

² Use for Dual Resistors Only - (R1 ≤ R2)



MINI SYSTEMS INC.
MADE IN AMERICA
SINCE 1968

THIN FILM DIVISION

ISO 9001 CERTIFIED
20 DAVID ROAD
NORTH ATTLEBORO, MA 02760
EMAIL: msithin@Mini-SystemsInc.com
WEB: www.Mini-SystemsInc.com
PHONE: 508-695-0203 FAX: 508-695-6076



8041 Rev. A

BACK CONTACT CHIP RESISTORS



SINGLE RESISTOR BACK CONTACT SERIES

CASE SIZE	STYLE EMSBC	DIMENSIONS			RESISTANCE RANGE			POWER RATING ¹
		L (±0.003") [±0.076mm]	W (±0.003") [±0.076mm]	T (±0.002") [±0.051mm]	MIN	MAX OPT TCR ±100ppm/°C	MAX STD TCR ±150ppm/°C	
0201	21	0.020" [0.508]	0.010" [0.254]	0.006" [0.152]	5Ω	60kΩ	300kΩ	50mW
0202	1	0.015" [0.381]	0.015" [0.381]	0.010" [0.254]	5Ω	200kΩ	1MΩ	50mW
0202	122	0.020" [0.508]	0.016" [0.406]	0.010" [0.254]	5Ω	200kΩ	1MΩ	125mW
0202	2	0.020" [0.508]	0.020" [0.508]	0.010" [0.254]	5Ω	320kΩ	1.6MΩ	250mW
0302	32	0.030" [0.762]	0.020" [0.508]	0.010" [0.254]	5Ω	400kΩ	2MΩ	250mW
0303	3	0.030" [0.762]	0.030" [0.762]	0.010" [0.254]	5Ω	800kΩ	4MΩ	250mW
0402	110	0.037" [0.940]	0.017" [0.432]	0.010" [0.254]	5Ω	600kΩ	3MΩ	125mW
0404	35	0.035" [0.889]	0.035" [0.889]	0.010" [0.254]	5Ω	1.3MΩ	6.5MΩ	250mW
0404	4	0.040" [1.060]	0.040" [1.060]	0.010" [0.254]	10Ω	2.4MΩ	11MΩ	350mW
0502	115	0.050" [1.270]	0.025" [0.635]	0.010" [0.254]	5Ω	1.3MΩ	6.5MΩ	250mW
0505	112	0.050" [1.270]	0.050" [1.270]	0.010" [0.254]	5Ω	2.8MΩ	14MΩ	500mW
0603	63	0.060" [1.524]	0.030" [0.762]	0.010" [0.254]	5Ω	2.4MΩ	11MΩ	500mW
0606	6	0.060" [1.524]	0.060" [1.524]	0.010" [0.254]	20Ω	8MΩ	40MΩ	500mW
1005	120	0.100" [2.540]	0.050" [1.270]	0.010" [0.254]	5Ω	9MΩ	45MΩ	500mW
1010	121	0.100" [2.540]	0.100" [2.540]	0.010" [0.254]	10Ω	14MΩ	70MΩ	750mW
1206	126	0.126" [3.200]	0.063" [1.524]	0.010" [0.254]	10Ω	10MΩ	50MΩ	750mW

MSBC2 will continue to be available, size and characteristics match EMSBC2. Available with aluminum bond pads only

¹ Power Rating at 70°C Derated Linearly to 0% at 150°C

² Consult Engineering if lower valued resistors are required

DUAL RESISTOR BACK CONTACT SERIES

Case Size	STYLE DRBC	DIMENSIONS			RESISTANCE RANGE ² Per Resistor			POWER RATING ¹ Per Resistor
		L (±0.003") [±0.076mm]	W (±0.003") [±0.076mm]	T (±0.002") [±0.051mm]	MIN	MAX OPT TCR ±100ppm/°C	MAX STD TCR ±150ppm/°C	
0303	3	0.030" [0.762]	0.030" [0.762]	0.010" [0.254]	5Ω	400kΩ	2MΩ	125mW
0404	4	0.040" [1.060]	0.040" [1.060]	0.010" [0.254]	5Ω	1.2MΩ	6MΩ	125mW

¹ Power Rating at 70°C Derated Linearly to 0% at 150°C

² Consult Engineering if lower valued resistors are required

PERFORMANCE SPECIFICATIONS

PROPERTY	TEST CONDITION	REQUIRED LIMITS	MSI TYPICAL LIMITS
SHORT TERM OVERLOAD	2.5xWVDC(6.25xRATED POWER)MIL-PRF-55342, +25°C, 5 SEC	±0.25 MAX ΔR/R	±0.10 MAX ΔR/R
HIGH TEMP EXPOSURE	+150°C, 100HRS	±0.20 MAX ΔR/R	±0.03 MAX ΔR/R
THERMAL SHOCK	MIL-STD 202, METHOD 107	±0.25 MAX ΔR/R	±0.10 MAX ΔR/R
MOISTURE RESISTANCE	MIL-STD 202, METHOD 106	±0.40 MAX ΔR/R	±0.10 MAX ΔR/R
STABILITY	MIL-STD 202 METHOD 108, 2000 HRS, +70°C, RATED POWER	±0.50 MAX ΔR/R	±0.10 MAX ΔR/R

All EMSBC, DRBC Series parts are produced on the same manufacturing line using the same materials and processes as parts manufactured to MIL-PRF-55342