



One of the World's Largest Manufacturers of  
**Discrete Semiconductors and Passive Components**

# Thin Film North America Review of Select Products - 2009

Build **Vishay**  
into your **Design**

# THIN FILM NA RESISTORS PRECISION DIVIDERS AND NETWORKS

## MATCHED PAIRS

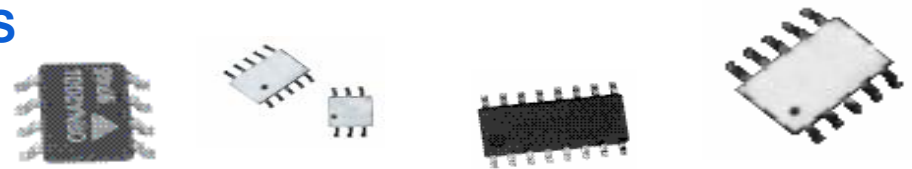
MP, MPM, MPD (SC70, SOT23, SOT143) SERIES



## MATCHED NETWORKS

ORN, NOMC, OSOP (SOIC 8, 14, 16, 20) SERIES

CSO CUSTOMS



## MARKET TRENDS

- **TRANSITIONING AWAY FROM CUSTOMS TO STANDARD OFF-THE-SHELF VALUES USING STANDARD FORMATS**
- **OPPORTUNITIES IN INDUSTRIAL, INSTRUMENTATION, AND TEST AND MEASUREMENT APPLICATIONS**
- **MOBILE APPLICATIONS NEED TO HAVE SMALL SIZE AND IMPROVED FUNCTIONALITY**

## MPM/MP/MPDA SERIES – PRECISION MATCHED PAIRS AND DIVIDERS



### • FEATURES

- Matched pair resistors
- Small size (SOT-23, SC70, SOT-143 packages)
- Tight resistance ratio tolerances (+/- 0.01 % on equal values)
- Low TC tracking (+/- 2.0 ppm)
- Excellent long term stability( +/- 0.03 % delta R ratio 2000 hours @ 70 deg. C
- Available lead (Pb) and lead (Pb)-free e3 solder (RoHS)



### PUSH ('05)

<b>SAMPLES:</b>	1 week	
<b>L-TIME:</b>	Stock – 4 wks	
<b>DATA SHEET:</b>	Released	Yes
	On WEB	Yes
<b>BUD-PRICE:</b>	\$0.50 to \$0.95 EA	
<b><u>Respons.</u></b>	G. Giambra	

### TARGET APPLICATIONS

<b><u>TELECOM</u></b>	SIGNAL CONDITIONING
<b><u>COMP</u></b>	
<b><u>CONSUM</u></b>	
<b><u>INDUST</u></b>	<ul style="list-style-type: none"> <li>- FREQUENCY COUNTERS</li> <li>- PROCESS CONTROLS</li> <li>- AUTOMATIC TEST EQUIPMENT</li> <li>- TEST EQUIPMENT</li> <li>- DATA ACQUISITION</li> </ul>
<b><u>MEDICAL</u></b>	-RADIOGRAPHY FILM PROCESSING EQUIPMENT
<b><u>AMS</u></b>	<ul style="list-style-type: none"> <li>- INSTRUMENTATION</li> <li>- ENGINE CONTROLS</li> <li>- NIGHT VISION SYSTEMS</li> </ul>

### DESCRIPTION / REMARKS

- Ratio tolerances of +/- 0.025 % and +/-0.01 % not offered by competition
- Inventory of popular divider ratios (1:1 to 100:1)
- Custom divider ratios available
- Datasheet: <http://www.vishay.com/docs/60001/mpm.pdf>
- Datasheet: <http://www.vishay.com/docs/60092/mpseries.pdf>
- Datasheet: <http://www.vishay.com/docs/60016/mpmpda.pdf>

**Main Competitors and Products: IRC (SOT)**

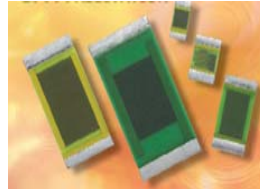
**BI Technologies (SS103)**

**Maxim (MAX5490)**

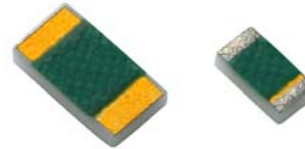
**KOA (RTY)**

# THIN FILM RESISTORS PRECISION CHIP RESISTORS

QPL MIL APPROVED  
**MIL-PRF-55342 SERIES**



INDUSTRIAL PRECISION  
**P , PTN, M , FC SERIES**

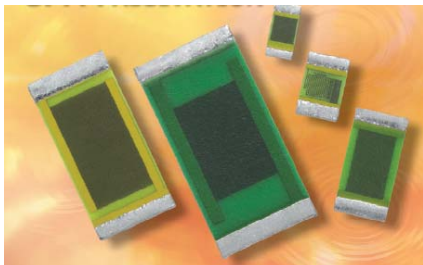


## MARKET TRENDS

- **TRANSITIONING TO STANDARD SMALLER FORMATS**
- **OPPORTUNITIES IN APPLICATIONS THAT REQUIRE HIGH RELIABILITY ,STABLE PERFORMANCE, AND HIGH FREQUENCY**
- **MOBIL APPLICATIONS NEED TO HAVE SMALL SIZE AND IMPROVED FUNCTIONALITY**

## PTN SERIES – TANTALUM NITRIDE CHIP RESISTORS

### PTN SERIES



### FEATURES

- Moisture-impervious
- Precision ( $\pm 0.1\%$  tol and  $\pm 25$  ppm/C TCR)
- Very low noise:  $< -35$  dB and voltage coefficient 0.1 ppm/v
- Available lead or lead (Pb)-free (e1) solder (RoHS)
- Non-std. values available (i.e., 24.9563 kohms)

STATUS:	<b>MATURE ('95)</b>	
SAMPLES:	1 weeks	
L-TIME:	8 – 12 weeks	
DATA SHEET:	Released	YES
	On WEB	YES
BUD-PRICE:	\$0.25 - \$0.50 ea.	
<u>Respons.</u>	A. Tapani	

### DESCRIPTION / REMARKS

- **Self-passivated tantalum nitride resistor film**
- **Custom resistor values: 10 – 3 Mohms**
- **Power ratings to 2 watts**
- **Available in 12 chip case sizes: 0402 thru 2512**
- **Datasheet: <http://www.vishay.com/docs/60026/ptn.pdf>**
- **Sales sheet: VMN-PT9187-0605**

- **Main Competitors and Products: IRC (PFC Series)  
Mini Systems (WATF Series)**

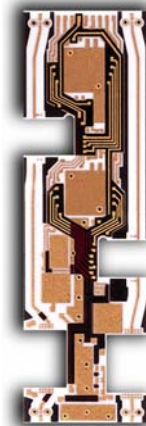
### TARGET APPLICATIONS

<u>MEDICAL</u>	
<u>TELECOM</u>	- BASE STATIONS
<u>COMP</u>	- MOBILE COMMUNICATIONS, SERVERS
<u>CONSUM</u>	
<u>INDUST</u>	- POWER SUPPLIES - VOLTAGE REGULATORS - TEST INSTRUMENTS
<u>AutoL</u>	
<u>AMS</u>	- COMMUNICATIONS - GUIDANCE AND CONTROL SYSTEMS - MISSILES - SATELLITES

## THIN FILM NA RESISTORS

### PATTERN SUBSTRATES USING THIN FILM TECHNOLOGY

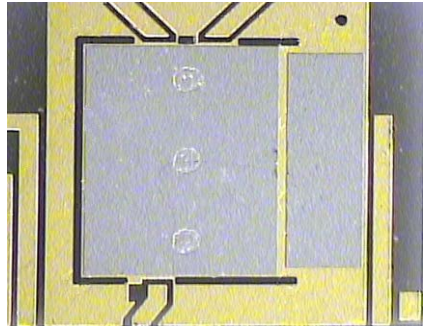
- SUBSTRATES
  - $\text{Al}_2\text{O}_3$ , AlN, BeO, ferrite, garnet
- METAL SYSTEMS
  - Cr, TiW, NiCr, Pd, Pt, Ni, Cu, Au
- RESISTORS
  - $\text{Ta}_2\text{N}$ , NiCr, CrSiO
- VIA HOLES
  - Plated, filled, Au or Cu
- PASSIVATION AND SOLDER BARRIERS
  - $\text{SiO}_2$ ,  $\text{Si}_3\text{N}_4$ , polyimide, nickel oxide, low-temperature polymer
- LASER MACHINING
  - Cutouts and custom shapes



#### MARKET TRENDS

- **TRANSITIONING AWAY FROM GOLD/TIN PREFORMS TO DIRECTLY DEPOSITED, CONTROLLED GOLD/TIN**
- **OPPORTUNITIES IN SUBASSEMBLIES THAT REQUIRE THERMAL MANAGEMENT, SPECIAL SHAPES, AND SMALL SIZES**

## AuSn SERIES – LASER SUBMOUNTS



### FEATURES

- Custom layout to fit application
- Gold/tin die mount area
- 80/20 AuSn integrated composition
- Freeze time: 120 seconds @ 320 C
- Substrate choices: Aln, BeO, Al2O3
- Multiple substrate thicknesses available



STATUS:	<b>NEW ('06)</b>	
SAMPLES:	3 – 4 weeks	
L-TIME:	6 – 10 weeks	
DATA SHEET:	Released	YES
	On WEB	YES
BUD-PRICE:	\$7.00 - \$10.00 Ea.	
<u>Respons.</u>	D. Coulton	

### TARGET APPLICATIONS

<u>TELECOM</u>	- <b>LASER SUBMOUNTS:</b> - OPTICAL RECEIVERS / TRANSCEIVERS - TOSA/ROSA PACKAGES - DIODE LASERS
<u>COMP</u>	
<u>CONSUM</u>	
<u>INDUST</u>	
<u>MEDICAL</u>	
<u>AMS</u>	

### DESCRIPTION / REMARKS

- Thin film metallization stack with AuSn
  - Optional solid filled gold or copper vias for thermal dissipation or electrical through substrate connection
  - Provides precise component placement to +/-0.0005 inches
  - Eliminates conventional pre-forms for mounting
  - Datasheet: <http://www.vishay.com/doc/61081>
  - Sales sheet: VMN-PT9187-0605
- 
- Main Competitors: Ultrasource, Rhinehardt