



# Viking Tech Corporation

## Company Profile

# History of Viking Tech

**1997**

Viking Tech was Founded in Hsin Chu Science Park- Started Developing Integrated Passive Devices. Pilot Run on Thin Film IPD.

**1998**

Started PHIC (Printer Head IC) Development .

**2000**

Set up Manufacturing Site in Hsin Chu Industrial Park  
Leading as a professional Thin Film Device Manufacturer in Taiwan .

**2002**

Pilot Run and Mass Production on Thin Film Chip R, C, L  
Set up Sales Office in China – Dongguan

**2003**

QS9000 Certified

**2004**

Set up US Sales Office in NC.

**2005**

ISO9001 Year2000 Certified.

**2006**

ISO14001 Certified

2006

Expansion of Hukou Factory to 5,000 sq. meter , 135 employees

**(Headquarter)**

\* Product Lines:

Thin Film High Precision R, Ultra Low ohm R.  
RF Inductor- Thin Film, Wire Wound...



2006-2008

★ Acquired **Thick Film Resistor** Company  
**Kaohsiung Factory** : 10,000 sq. meter

150 employees

**Product Lines:**

MELF Resistor / Leaded Type R.

Power Resistor / Special Request R.

Current Sensing Chip R.

★ Acquired China Guang Zhou **Power Inductor** Factory  
4,500 sq. meter, 350 employees

★ Wuxi Factory: 5,400 sq. meter, 80 employees.  
(For Transportation only)

2009

TS16949 Certified .

Capital: USD 20 millions

2010

Expand MELF production lines / New Lines for Miniature power inductor with Automatic machine

2011

Viking Tech will go public in Taiwan.



# Manufacturing Site & Office

Taiwan

**Hsin Chu Headquarter** : Number of Employees: 135.

Factory qualified :  
**QS9000** , **ISO14001** , **TS16949**.

**Kaohsiung Branch** : Number of Employees : 150.

Factory qualified :  
**ISO9001** , **ISO14001** , **TS16949**

China

**Wuxi Factory** : Number of Employees: 80.

Factory qualified : **ISO9001** , **ISO14001**.

**Guang Dong Factory** : Number of Employees : 350

Factory qualified : **ISO9001** , **ISO14001**

**China Offices** :.Dong Guan Office

USA

**North America Office** in N.C.



QUALITY MANAGEMENT SYSTEM - ISO/TS 16949:2002

For and on behalf of:  
 Viking Tech Corporation  
 No. 90, Kuang-Fu Road,  
 Hsin-Chu Industrial Park,  
 Hsinchu City,  
 Taiwan

BSI has certified the Quality Management System which complies with the requirements of ISO/TS 16949:2002 for the following scope:

The design and manufacture of semiconductor resistors



QUALITY MANAGEMENT SYSTEM - ISO/TS 16949:2002

This is to certify that:  
 VIKING TECH CORPORATION  
 KAHSIUNG BRANCH  
 No.249-2, Sin-Gheng Rd.  
 Cien-Jhen Dist.  
 KAHSIUNG  
 Taiwan

HSI Certificate No: TS 482729  
 and operates a Quality Management System which complies with the requirements of ISO/TS 16949:2002 for the following scope:  
 The design and manufacture of chip resistors.  
 Permitted Exclusions: None

For and on behalf of BSI:  
  
 Managing Director, BSI, Taiwan, Dr. Yi-Ken Guo  
 Originally registered: 06/02/2008 Latest Issue: 06/02/2009 Expiry Date: 04/02/2011  
 VQTS Number: 002666



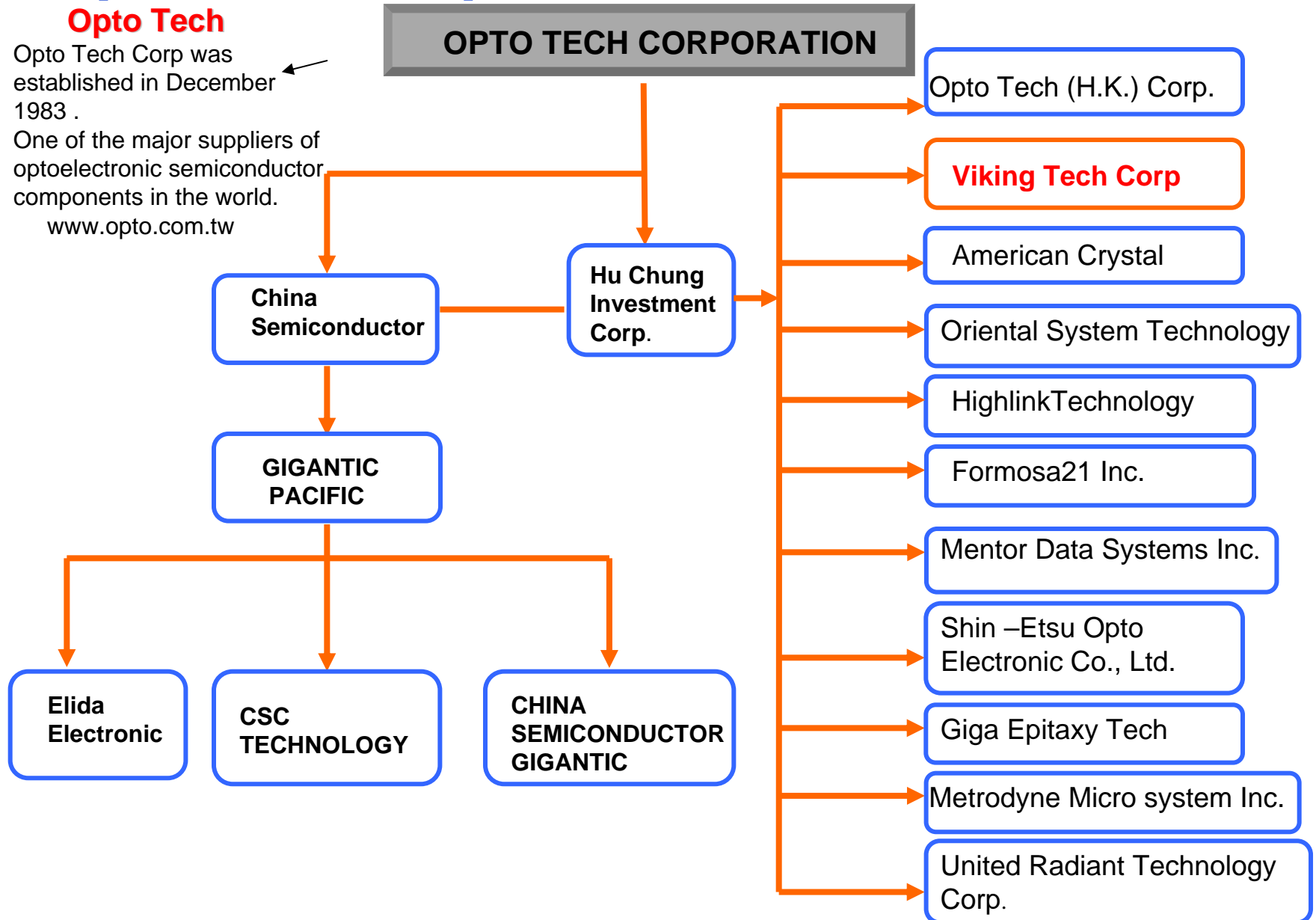
# Corporate Group

## Opto Tech

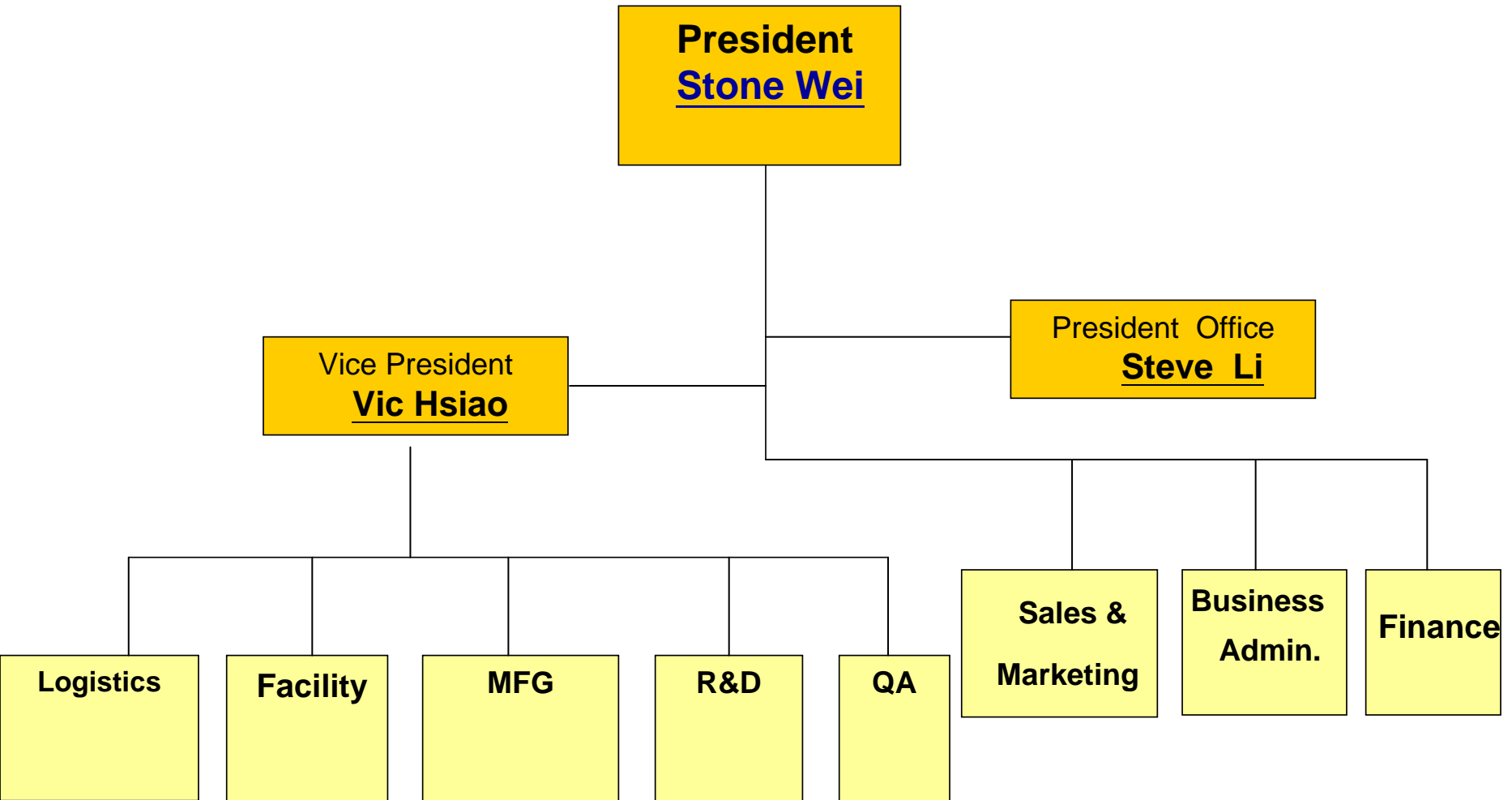
Opto Tech Corp was established in December 1983 .

One of the major suppliers of optoelectronic semiconductor components in the world.

[www.opto.com.tw](http://www.opto.com.tw)



# Organization



# Core Technology

## Core Technology

Semiconductor Thin Film Process

Thick Film & Wire Wound Process

Passive IC design

RF Circuit Design

## Product Orientation

High-Level Passive Discrete Devices

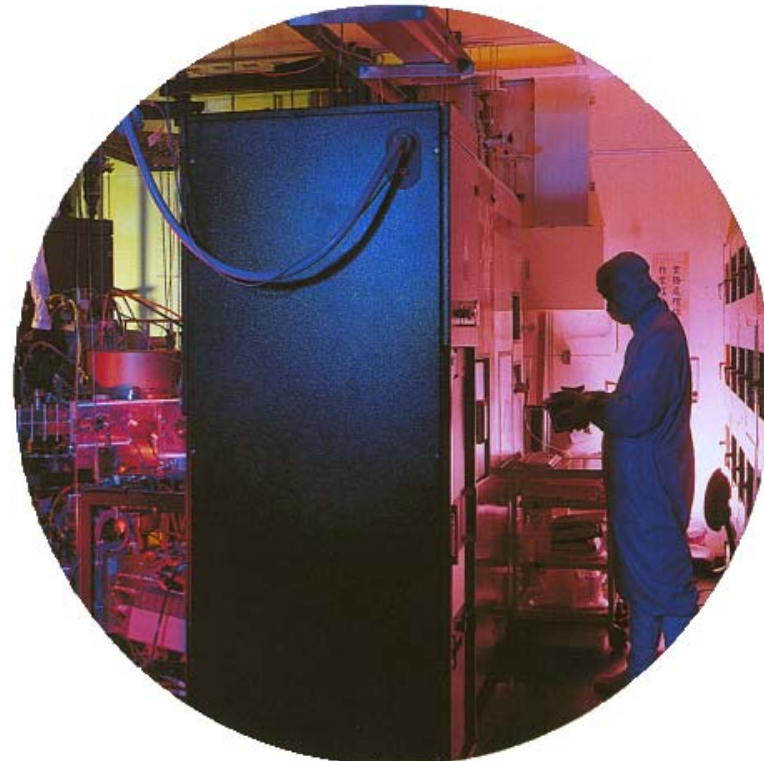
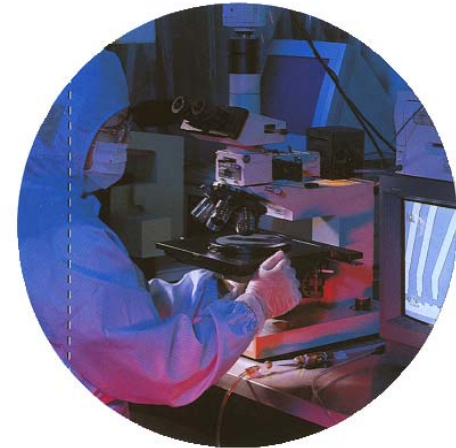
*High Precision Chip Resistor, Low Ohmic Chip Resistor  
Thin Film Silicon Chip Capacitor,  
Thin Film/ Wire Wound Chip Inductor (high frequency)*

Integrated Passive Devices

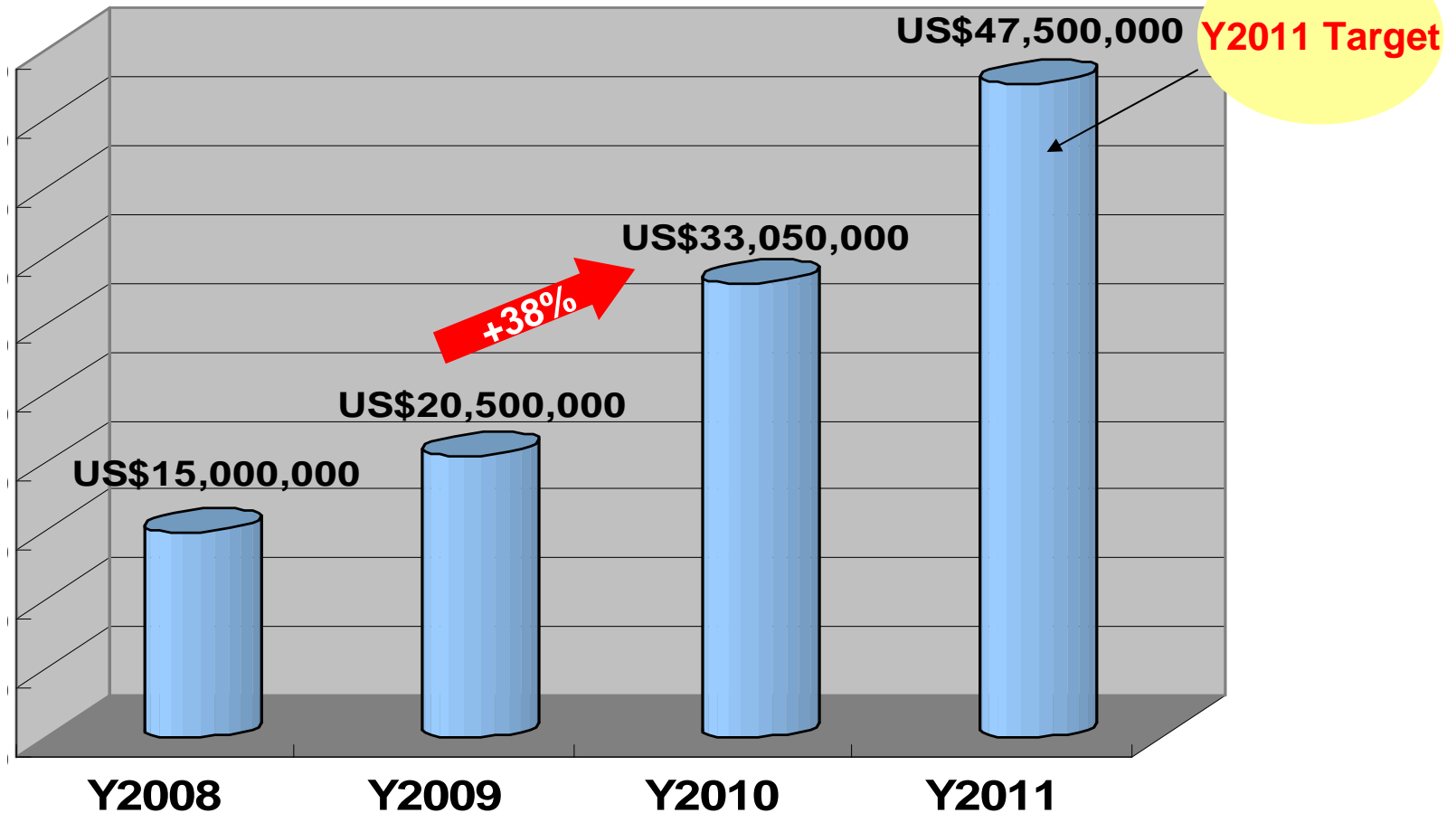
*Low frequency: R.C.D. Circuit;  
High frequency: R.C.L Circuit  
Band Filter, Balun, ESD+EMI Filter*

MEMS Foundry Service

*Inkjet Printer Head IC, Pressure Sensor, etc.*

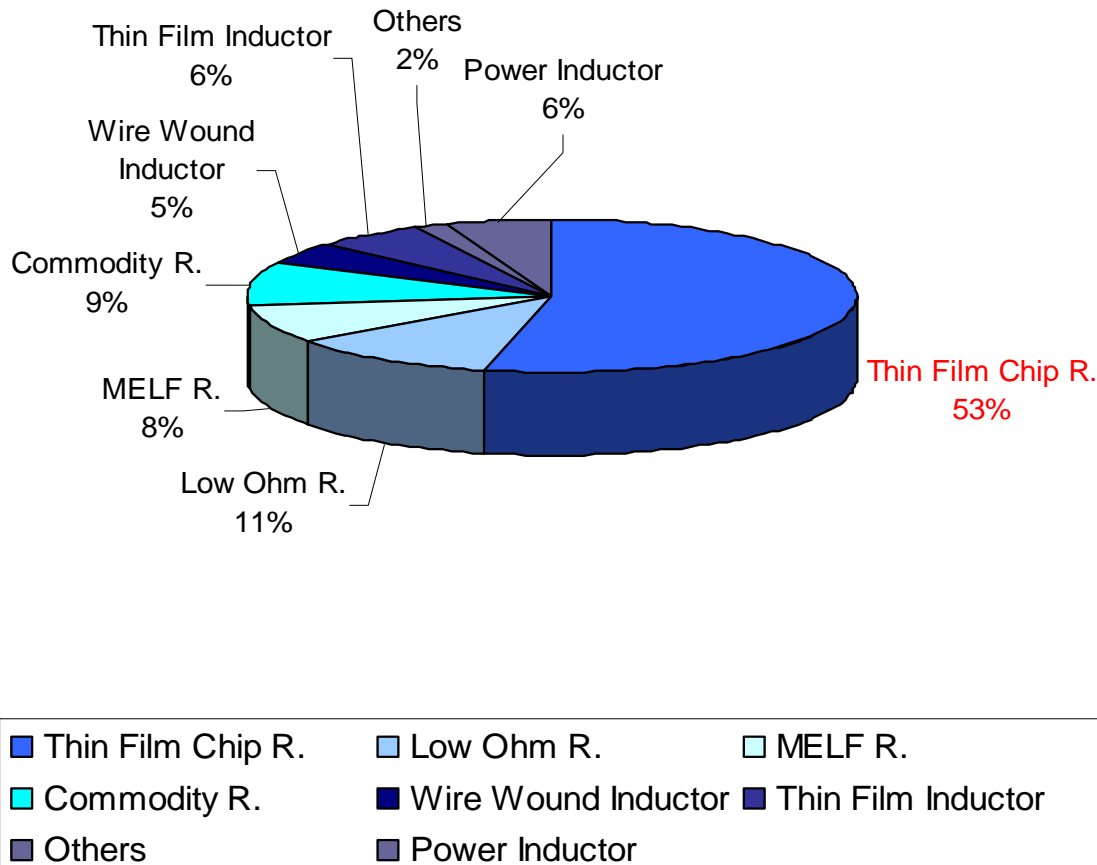


# Viking Tech Performance



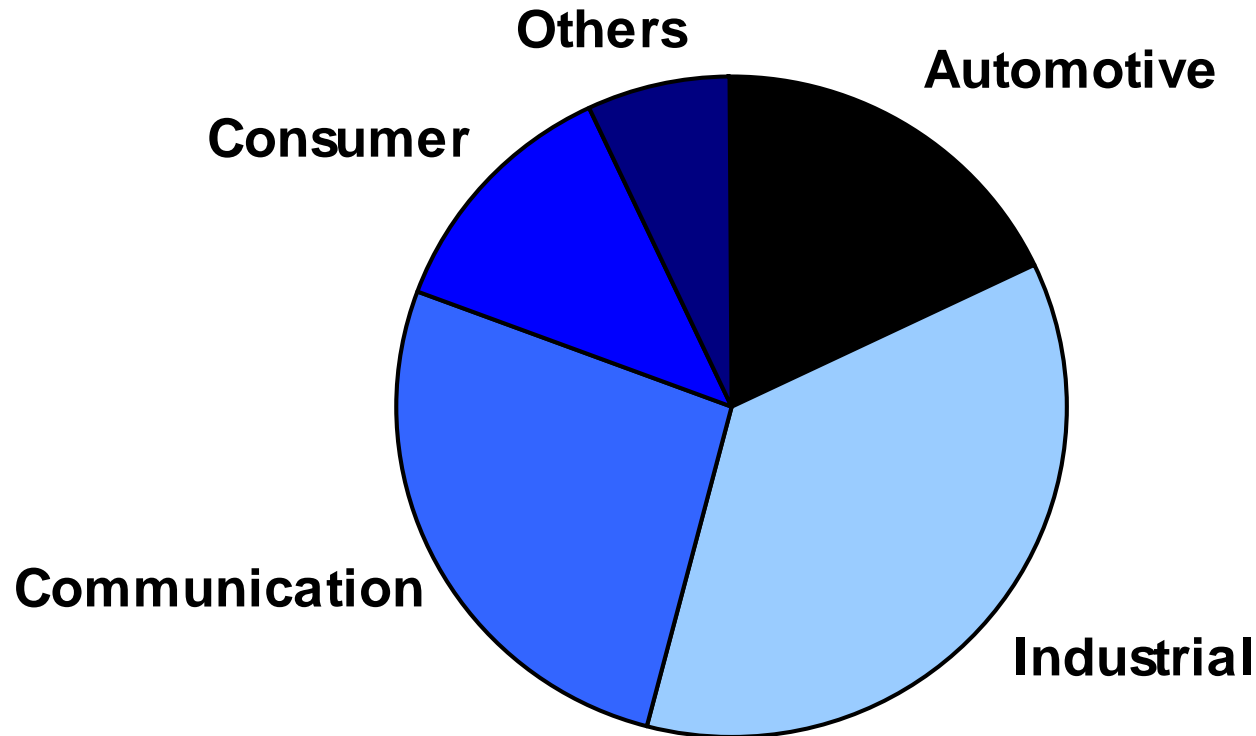
- Stably Increase
- Expect 30% up increase in Y2011

# Viking Tech Product Group Split



- Major Product line: Thin Film Chip Resistor
- Special Resistor: High Voltage, High Power, Pulse withstanding...
- RF Inductor and Power Inductor

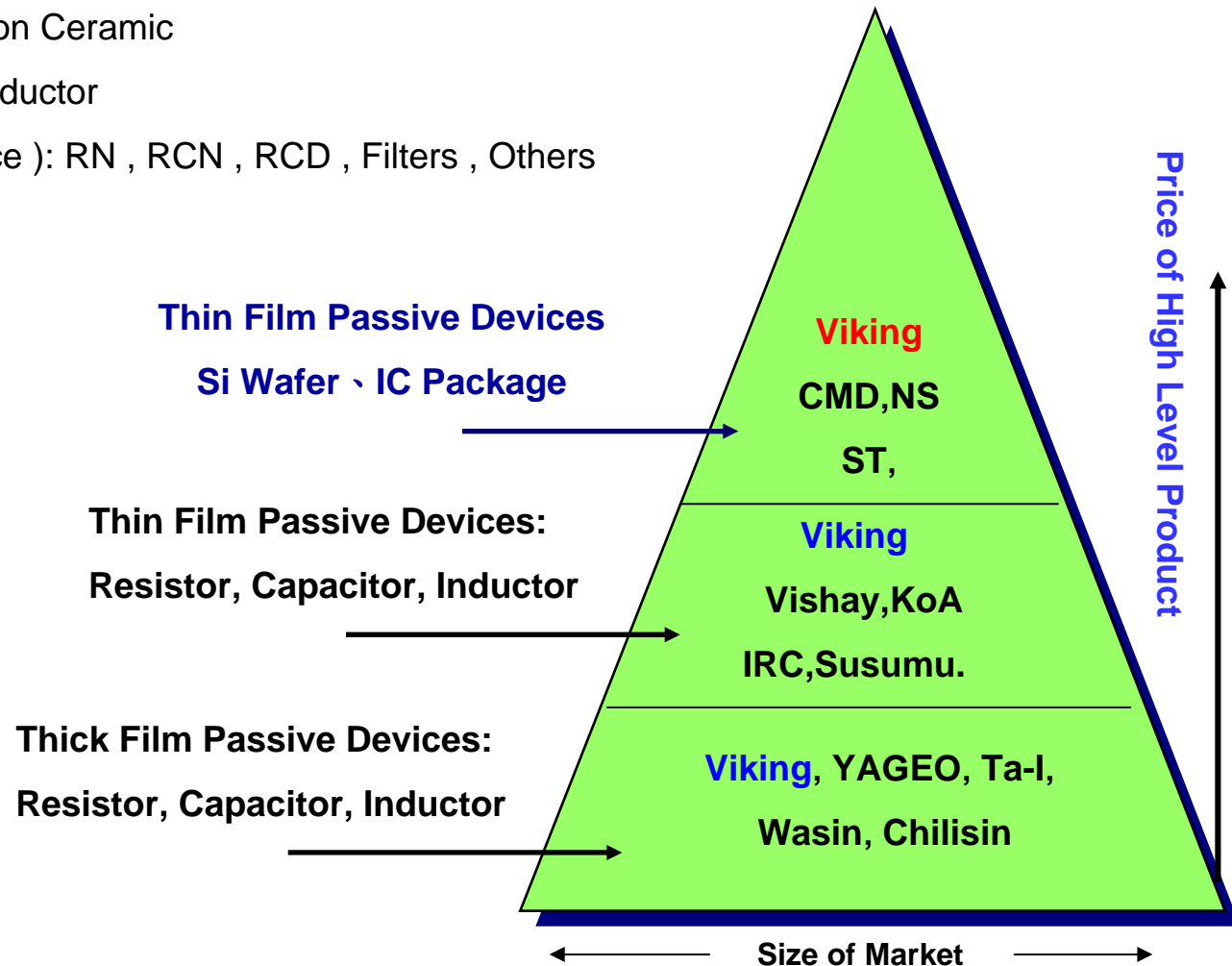
# Customer Segments supplied by Viking Tech



- Industrial filed: High Accurate request-Test/Medical equipment
- Automotives: Stably increase with new Auto-Grade series launch  
TS16949 Certificate/ AEC-Q Test Data available
- Communication: RF Inductor

# Viking Tech Technology's Strength

- ▶RF Device/Module Simulation Capability
- ▶RF Device/Module Design/Manufacturing
- ▶Thin film Resistor/Capacitor/Inductor on Silicon/Ceramic
- ▶Thick film Resistor/Capacitor on Ceramic
- ▶RF High Precision Thin film Inductor
- ▶IPD( Integrated Passive Device ): RN , RCN , RCD , Filters , Others



# Patents

Title	US PAT. NO.	Taiwan PAT. NO.	China PAT.NO	Japan PAT.NO
Method of forming a thin film resistor	6365483	-	-	-
Fabrication method for integrated passive component	09/353,393	144606 I	1112006.1	2001-141137
Packaging method of thin film passive components on silicon chip	09/399,365	88111316	1101708.2	33680
Semiconductor device with integrated RC network and MIS surge protector	09/305,297	88101945	118663.9, 99102791.4	2000-297264
Fabrication method for LC filter	-	133154 I	-	-
Packaging technology to enhance brightness of LED	10/255,877	91110992, 91118505	2122101	-
Fabrication Method of Thin film Chip Resistor	09/668,770	89106687	108558.1	2000-289926
Fabrication method for integrated RC passive component	-	88109088	-	-

# Foundry Service



## Thin-Film Process :

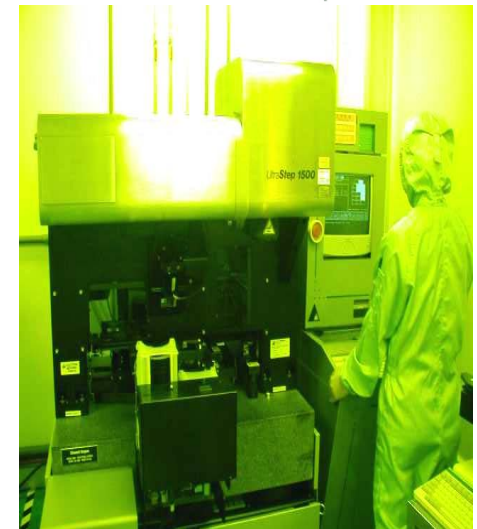
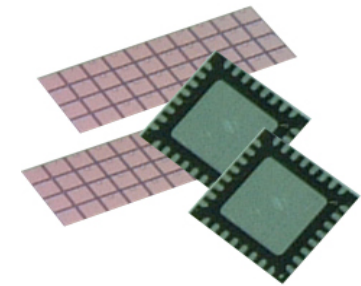
Sputter	Ta、TaN、TaAl、Ta <sub>2</sub> O <sub>5</sub> 、 Al Alloy、Ti、TiW、Au、 NiCr、Cu、TaNO <sub>x</sub>
PECVD	SiN <sub>x</sub> 、SiC <sub>x</sub>
Furnace	SiO <sub>2</sub>

## Lithography Process :

Aligner	Resolution ≥ 3.0μm
---------	--------------------

## Etching Process :

Wet Etch	SiO <sub>2</sub> 、Ti、TiW、Cu、Au、 TaN、Ta、TaAl
Dry Etch	Ta、TaN、TaAl、Ta <sub>2</sub> O <sub>5</sub> 、 SiN <sub>x</sub> 、SiC <sub>x</sub> 、TaNO <sub>x</sub>



# Development Road Map

<ul style="list-style-type: none"> <li>• LED Module for Lighting</li> <li>• 0201 Thin Film Chip Resistor</li> <li>• 0201 Thin Film Chip Inductor</li> <li>• High Power Current Sensing</li> <li>• Wire Bondable chip Resistor</li> <li>• Precision High Voltage Resistor</li> <li>• Pulse Withstanding Chip Resistor</li> </ul>	<ul style="list-style-type: none"> <li>• Metal Strip resistor 0612 size.</li> <li>• Thick Film Chip Resistor 1G ohm</li> <li>• Low Ohmic MELF</li> <li>• High Voltage MELF at</li> <li>• High Precision MELF Resistor</li> <li>• 0201 Thin film Inductor to 15nH</li> <li>• 0402 Thin Film Array</li> <li>• 0603 Thin film Array</li> <li>• Thick Film High Voltage Chip resistor .</li> <li>• Power Resistor TO220 series .</li> </ul>	<ul style="list-style-type: none"> <li>• High Precision Metal Strip Chip R.</li> <li>• Automobile Thin Film Chip R.</li> <li>• Thin Film Chip R. Array</li> <li>• Thin Film Anti Sulfured Chip R.</li> <li>• 0201 8P4R Thick Film Array</li> <li>• High Precision MELF Resistor</li> <li>• Finger Sensor OEM</li> <li>• LED Application OEM</li> <li>• Solar Cell CPV Substrate</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Metal Foil</b></li> <li>• <b>Power Inductor for VLH Series</b></li> <li>• <b>Thin Film Common Mode Choke</b></li> <li>• <b>0201 Thin film Inductor to 15nH</b></li> <li>• <b>0201 Current Sensor Low TCR</b></li> <li>• <b>Thin Film Coupler</b></li> <li>• <b>Thin Film Band/Low Pass Filter</b></li> <li>• <b>Aluminum Substrate for LED Package</b></li> <li>• <b>0201 4Pin2R Thickness Film Array Chip Resistor</b></li> <li>• <b>Small Size MELF 0102</b></li> </ul>
---	---	--	---

2006/2007

2007/2008

2008/2009

2009/2010

2010/2012

# Technology Solution Partners

## ▶ Indirect Customers:



TOSHIBA

SONY

LITEON®



DELL

Skyworth 创维

## ▶ Direct Customers:



JABIL

FLEXTRONICS



SIEMENS

dyson



AMD  
The future is fusion

## ▶ Automotives Customers:



BOSCH



HYUNDAI

# Thin Film - High Precision

## Thin Film Chip Resistor - AR

### ■ Features

- Thin film passivated NiCr resistor
- tight tolerance down to  $\pm 0.01\%$
- Extremely low TCR down to  $\pm 5 \text{ PPM}/^\circ\text{C}$
- Miniature size **0201** available



	Standard	Higher Power Rating
Size	<b>0201</b> ~ 2512	0402~2512
Power rating @ 70°C	1/32W ~ 1/2W	1/16W ~ 1W
Tolerance	$\pm 0.01\%$ ~ $\pm 1\%$	
TCR (PPM/°C)	TCR5 ~ TCR50	
Resistance Range	1Ω ~ 3MΩ	4.7Ω ~ 1MΩ

## Anti-Corrosive Chip Resistor - PR

### ■ Features

- Long term life stability demonstrated the **Anti –Corrosion** claims characterized by Ta2N
- Special passivated NiCr film for Anti-Acid and Anti-Damp
- Extremely low **TCR down to  $\pm 15 \text{ PPM}/^\circ\text{C}$**

### ■ Applications

- Extreme environment

Item	Power Rating at 70°C	Resistance Range	TCR (PPM/°C)
Type		$\pm 0.1\%$ $\pm 0.25\%$ $\pm 0.5\%$	
0402~2512	1/16W~1/2W	10Ω – 1MΩ	<b><math>\pm 15</math></b> $\pm 25, \pm 50$

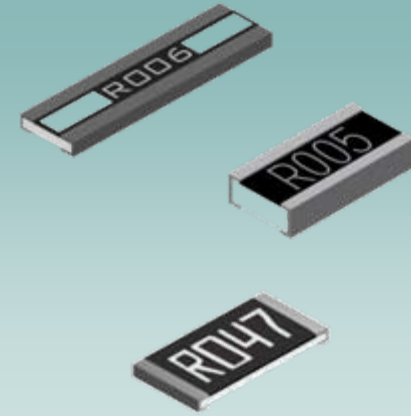
# Low Ohmic

## Current Sensing Chip Resistor

CS

### ■ Features

- Low TCR of  $\pm 100$  PPM/°C
- High Power rating : **3720 (1W), 7520 (2W), 2512 (2W) , 1225 (3W)**
- Long side terminations with higher power rating
- Resistance Values : 1m to 8000m Ohm
- Available size: 0201~ 2512, 1225, 3720, 7520



## Current Sensing Chip Resistor

RS

- Full size available from 0402 ~ 2512
- Competitive price but higher TCR
- High Power rating available ( up to 2W )



## Metal Strip (Ultra Low Ohm)

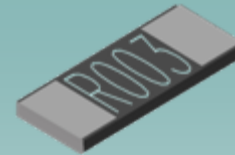
**LR**

### ■ Features

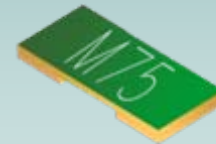
- Low TCR down to +/- 50 ppm/C
- High Power Dissipation up to **3 Watts**
- Resistance values from 0.5m Ohm to 15 m Ohm

### ■ Dimensions

- Size : 1206, 2010, 2512



**Black Coating**  
Wave or IR Reflow Soldering



**Green Coating**  
IR Reflow Soldering Only

## Current Sensing – Thin Film

**TCS**

### ■ Features

- **Thin film process** ( Low TCR / Tight Tolerance)
- Extremely low TCR down to 50ppm
- High power rating : **2512 ( 3W )**
- Resistance Values : **1m to 1000m Ohm**
- Size : 0402,0603,0805,1206,1210,2010,2512

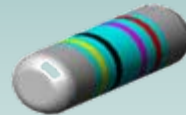


# MELF Type

## Metal Film Precision Resistor CSR

### ■ Features

- Excellent overall stability
- Tight tolerance down to  $\pm 0.1\%$
- Extremely low TCR down to  $\pm 10 \text{ PPM}/^\circ\text{C}$
- High power rating up to 2 Watt



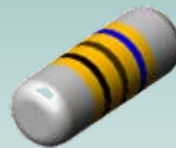
Item	Power Rating at 70°C	Resistance Range	TCR (PPM/°C)
Type		$\pm 0.1\% \sim \pm 1\%$	
0204 0207	1/4W 1/2W 1W	0.1Ω-10MΩ	$\pm 10, \pm 15$ $\pm 25, \pm 50$

Small size of 0102 will be released in end of Mar 2011

## Carbon Film Resistor CFS

### ■ Features

- Carbon Film
- Available size: 0204 / 0207 / 0309
- High Power rating: 2W



Item	Power Rating at 70°C	Resistance Range
Type		$\pm 2\%, \pm 5\%$
0204 0207 0309	1/4W 1/2W 1W 2W	1Ω-1MΩ

# Leaded Type

## Metal Film Resistor - **MFR**

Tight Tolerance:  $\pm 0.1\% \sim 1\%$  / Low TCR  
down to TCR5 ppm

**High Power Rating up to 3W**

Flame-Proof Available

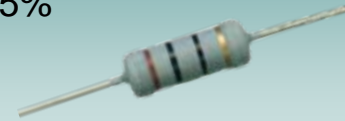


## Metal Oxide Film Resistor-**MOF**

Tolerance:  $\pm 1\%$  ,  $\pm 2\%$  ,  $\pm 5\%$

Available size: 0623~ 1550

Power Rating: 1/4W ~ 3W

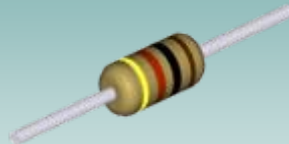


## Carbon Film Resistor - **CFR**

Tolerance:  $\pm 2\%$  ,  $\pm 5\%$

Available size: 0318 ~ 1550

Power Rating: 1/8W ~ 3W



## Metal Film Precision Resistor-**MFD**

Extremely Tight Tolerance down to  $\pm 0.02\%$

Available size : 0727 / 1040

Low TCR down to  $\pm 5$  PPM/ $^{\circ}$ C

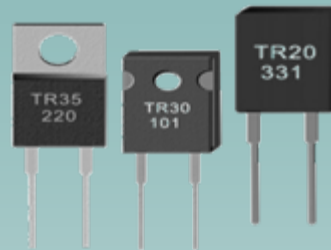
**Cross against Welwyn: RC55 series**



## Power Resistor – TR TO-220 / TO-247 Package

### Package Style:

20W / 30W / 35W / 50W



100W



### Features:

- 30W /35W :Single Screw Mounting to Heat Sink
- Electrically isolated Case / Non-Inductive design

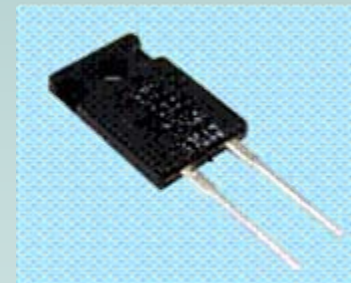
### Applications:

- High Speed Switching Power Supplies.
- Snubbed Circuits / Voltage Regulation.
- Switching Power Supplies
- UPS.

### **New!! : TR50-H**

- 50 watts at  $\leq 25^{\circ}\text{C}$  case temperature heat sink mounted
- Fixed with a M3 screw on system heat sink

**Cross against Vishay: LTO50**



## Thick Film Chip Resistor

### CR / HMR

#### ■ Features

- High Power Rating Series available
- Low TCR down to  $\pm 50\text{ppm}$
- Resistance range :  $0\Omega \sim 100\text{M}\Omega$
- Full size available: 0201~ 2512
- Automotive
- HMR : High Ohm Chip Resistor**
- Size : 0805 / 1206
- Resistance range : 110M~1G

## High Voltage Chip Resistor

### HVR

#### ■ Features

- Excellent performance at High Voltage
- **Max Operating Voltage: 100V ~ 3000V**
- **Max Overload Voltage: 200V ~ 4000V**
- Resistance Range:  $10\Omega \sim 100\text{M}$

## Pulse Withstanding Chip Resistor

### PWR

#### ■ Features

- Tolerance from  $\pm 0.5\% \sim 5\%$
- High Power Rating Available (**0.2W**~ 1.5W)
- Excellent **Pulse withstanding Performance**
- Improved working voltage ratings
- Standard package sizes of **0603**~2512
- Cross against ROHM / KOA Antis Surge series

## Surge Withstanding Chip Resistor

### SWR

#### ■ Features

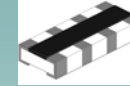
- Tolerance:  $\pm 5\%$
- High Power Rating (1/8W~ 1.5W)
- Excellent **Surge withstanding Performance**
- Standard package sizes of **0603**~2512
- Cross against KOA SG73S

# Resistor Array

## Thick Film - CN

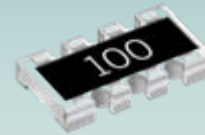
### ■ Features

- Small size for **CN-21 (0201x2)** / **CN-41 (0201x4)** available
- Reduction of assembly costs & matching with placement machines
- Concave and Convex Type Available



### ■ Dimensions

- Size : 0201\*4, 0402\*4, 0603\*4, 0402\*8



## Thin Film - TFAN

### ■ Features

- 0603\*4 Convex Type :

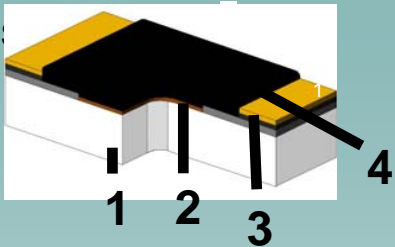


- Advanced **Thin Film** technology
- Very tight tolerance down to  $\pm 0.1\%$
- Low TCR down to  $\pm 10\text{PPM}/^\circ\text{C}$  (100R~2K)
- **Other size are Developing** : 0402, 0603

- **Applications** : Surveillance network camera / Feedback circuits

Item	Power Rating at 70°C	Resistance Range				TCR (PPM/ °C)
		$\pm 0.1\%$	$\pm 0.25\%$	$\pm 0.5\%$	$\pm 1\%$	
TFAN 43	1/16	100~20K ohm				$\pm 25$ $\pm 50$

## Wire Bondable - **WB**



1. Alumina
2. Passivated NiCr Resistive Element
3. Ni/Au Plating (Bonding Pad)
4. Overcoat

### ■ Features

- **Thin film** passivated NiCr resistive element
- Tol. : +/-0.1%~+/-10% / Low TCR down to +/- 25 ppm/C

### ■ Applications

- LED Constant Current Application
- Hybrid Chip on Board Circuits
- Multi Chip Module (MCM) Package

■ **Dimensions** – Size : 0201,0402,0603

## Anti-Sulfurated - **AS**

### ■ Features

- Special construction to **prevent Sulfuration** in a sulfur containing environment

### ■ Applications

- **Automotive**
- Industrial / Medical Equipment
- Automatic Equipment Controller



## Non-Magnetic - **NMR**

### ■ Features

- AgPd Terminations / **Non-magnetic**

### ■ Applications

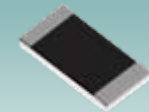
- Medical & military equipment / MRI coil industries
- Computer tomography (CT)



## Trimmable - **RT**

### ■ Features

- Suitable for laser fine tune
- Resistance Tolerance : 0~+/-30%
- Size : 0402,0603,0805,1206,1210,2010,2512



## Chip Shunt - **LRS**

### ■ Features

- LRS1050 **3W** up to 77A at 0.5mΩ / LRS1575 **5W** up to 100A at 0.5mΩ
- Heavy copper connectors

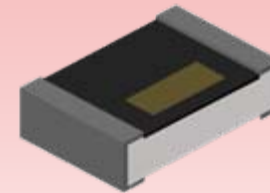


# RF Inductor: Thin Film

## Thin Film Chip Inductor - AL

### ■ Features

- Photo lithographic single layer ceramic chip
- High SRF, excellent Q, superior temperature stability
- Tight tolerance. of  $\pm 1\%$  or  $\pm 0.1\text{nH}$
- Cross Against Murata LQP series



### ■ Dimensions

- 0201 : Tolerance  $\pm 0.1\text{nH}\sim 5\%$ , Inductance  $0.1\text{nH}\sim 10\text{nH}$
- 0402 : Tolerance  $\pm 0.1\text{nH}\sim 5\%$ , Inductance  $0.2\text{nH}\sim 33\text{nH}$
- 0603 : Tolerance  $\pm 0.1\text{nH}\sim 5\%$ , Inductance  $1\text{nH}\sim 100\text{nH}$

# RF Inductor: Multilayer & Wire Wound

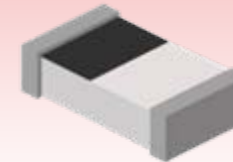
## Multilayer Ceramic Core - CL

### ■ Features

- Tolerance of 5% or 0.3nH
- For High Frequency Application (~10GHZ)

### ■ Dimensions

- 0201 : Tolerance  $\pm 0.3\text{nH} \sim 5\%$ , Inductance 0.3nH~56nH
- 0402 : Tolerance  $\pm 0.3\text{nH} \sim 10\%$ , Inductance 1nH~120nH
- 0603 : Tolerance  $\pm 0.3\text{nH} \sim 10\%$ , Inductance 1nH~220nH



## Wire Wound Ceramic Core - WL

### ■ Features

- Excellent Solderability.
- High Q.
- Tight tolerance down to +/-2%

### ■ Dimensions

- Size : 0402,0603,0805,1008,1206
- **High Current / High Q** : 0603 ,0805 ,1008
- **Low profile** : 0805 ,1008 .

### ■ Applications

- Cellular Phone (CDMA/GSM/PHS)
- Wireless PDA / GPS Receiver



# IF Filter

## Wire Wound (Ferrite Core) - NL

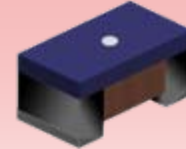
### ■ Features

- High Q.
- Wide Inductance Range (0.12uH~1000uH) for Broad and RF Application.

### ■ Applications

- Cellular Phone (CDMA/GSM/PHS) / Wireless PDA

Open Type  
0805 , 1008



Molding Type  
1210 , 1812 , 2220



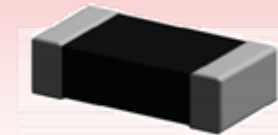
## Multilayer (Ferrite Core) - ML

### ■ Features

- Resistance : 10nH~33uH
- Closed magnetic circuit avoids crosstalk

### ■ Dimensions

- **0603** : Tolerance  $\pm 10\%$ ~  $\pm 20\%$ , Inductance 10nH~10uH
- **0805** : Tolerance  $\pm 10\%$ ~  $\pm 20\%$ , Inductance 47nH~22uH
- **1206** : Tolerance  $\pm 10\%$ ~  $\pm 20\%$ , Inductance 47nH~33uH



## Multilayer Chip Bead - CB

Size : 0402, 0603, 0805  
1204, 1206, 1210, 1808, 1812

- Standard Type : General Use
- High current Use
- High Speed Signals Use



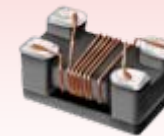
## Chip Common Mode Choke CMH

### ■Features

- Small chip inductor with ferrite core and two line types wire wound
- Highly effective in noise suppression High common-mode impedance at noise band and low differential-mode impedance at signal band

### ■Applications

- EMI Radiation Noise Suppression for Any Electronic Device
- USB / IEEE 1394 Line for Personal Computers, DVC, STB








Size : 0805, 1206






Key Competitors: Coilcraft, Murata, TDK

# Power Inductor







## Non-Shielded

Series	PDH	PD	PCD	MPI	MPE
					
Dimension (mm)	7.5 x 5.2 x 3.2 ~ 22.2 x 15 x 8	6.6 x 4.45 x 2.92 ~ 18.54 x 15.24 x 7.11	3.5 x 3 x 1.1 ~ 10 x 9 x 7.5	6.5 x 5.3 x 1 6.5 x 5.3 x 1.2 6.5 x 5.3 x 2.0	3.2 x 3.2 x 1.2
Inductance Range (uF)	0.47 ~ 100	0.18 ~ 1000	1.0 ~ 1000	1.0 ~ 1000	1.0 ~ 68
Rated DC Current (A)	0.4 ~ 30	0.1 ~ 40	0.074 ~ 9.5	0.08 ~ 2.5	0.17 ~ 1.4



# Shielded

Series	PS	PCS	PCDR	PCDS	PSDB
					
Dimension (mm)	6.6 x 4.45 x 2.92 ~ 18.54 x 15.24 x 7.62	6.2 x 6.6 x 3 ~ 12 x 12 x 8	6 x 6 x 2.8 ~ 12.5 x 12.5 x 7.5	6.2 x 5.6 x 3.2 ~ 12.6 x 11.6 x 5.4	6.2 x 6.3 x 3.0 ~ 10.3 x 10.4 x 5
Inductance Range (uF)	1 ~ 1000	1 ~ 1000	1.2 ~ 1500	4.7 ~ 820	1.3 ~ 1000
Rated DC Current (A)	0.02 ~ 5	0.14 ~ 9.8	0.13 ~ 13	0.33 ~ 3.15	0.4 ~ 10.5




# Shielded

Series	SCDA ( Automatic - machine )	SCDB	SCDS	PCF	SFM	PDRH
						
Dimension (mm)	3.2x3.2x1.05~ 4.2x4.2x1.8	3 x 3 x 1.2 ~ 3 x 3 x 1.8	3.8 x 3.8 x 1.8~ 6.7 x 6.7 x 4	3.8 x 3.8 x 1.25 ~ 10 x 10 x 6.7	5.2 x 5.2 x 2.0 ~ 6.3 x 6.0 x 3.5	3.85 x 3.85 x 1.25 ~ 5.9 x 5.9 x 3.0
Inductance Range (uF)	0.47~100	1.2 ~ 47	1.0 ~ 470	0.47 ~ 10000	1.0 ~ 10000	0.47 ~ 27000
Rated DC Current (A)	0.24~2.5	0.22 ~ 1.1	0.13 ~ 6.15	0.026 ~ 10.18	0.022 ~ 4.5	0.017 ~ 4.7

## Miniature

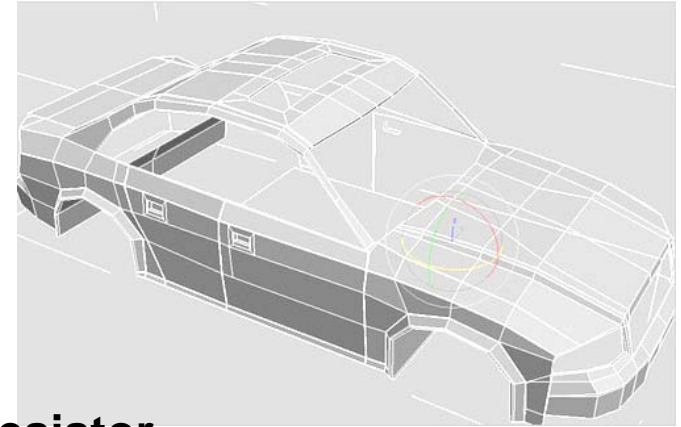
Series	SDIA	VLH ( Automatic machine )
		
Dimension (mm)	3 x 3 x 1.2 ~ 6 x 6 x 1.2	2.0 x 1.5 x 1.4~ 5.7 x 5.0 x 4.7
Inductance Range (uF)	1.0 ~ 820	0.10~ 10000
Rated DC Current (A)	0.05 ~ 1.95	0.03 ~ 6.0

## Dip

Series	DRGH	DRGR	DM
			
Dimension (mm)	6.0 x 6.5 x 4.0~ 10 x 10 x 3.5	6.0 x 6.5 x 4~ 10.5 x 10.5 x 3.5	7.5x7.5x8.5 ~ 18x15.5x18
Inductance Range (uF)	10 ~ 47000	10 ~ 10000	0.22~33
Rated DC Current t (A)	0.081 ~ 5.3	0.074 ~ 3.51	6~56

# Automotive Grade

(AEC-Q200 Compliance)



-> **AS : Automotive Grade Anti-Sulfurated Chip Resistor**

Size : 0402~2512

Resistance range : 0R~10M

Special construction to **prevent Sulfuration in a sulfur containing environment**

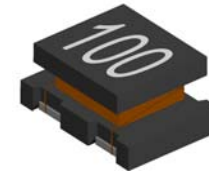


-> **CR : Automotive Grade Chip Resistor**

Size : 0402~2512

Resistance range : 0R~100M

# Miniature Power Inductors



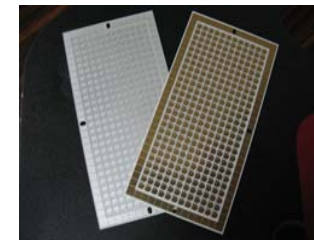
Old line : 1.5KKpcs - China

New line : 2KKpcs – Taiwan

\* Automatic Machine Production with short L/T: 3~ 4 wks

\* Miniature size with High Current

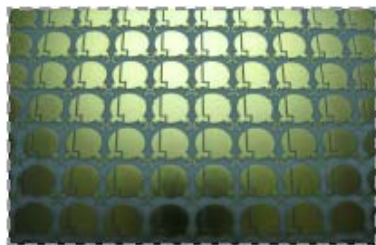
Especially for Size : [322515](#) / [322520](#)



# Heat-Dissipation Ceramic Substrate

Thin Film Process for LED Metallized substrate Solution in Solar Industry / LED Industrial

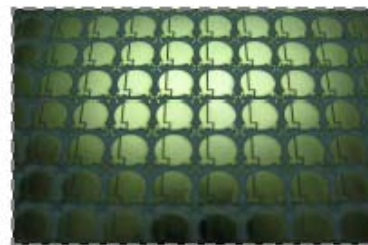
Total Solution on Metallization :



Electroplating Au



Electroplating Ag



Electroless Au



Electroless Ag

Application :

For Flip Chip Package / For HCPV (High concentrated photo voltaic )

Solar Package / SMD Type Design / COB for LED Modules