



2020

COMPANY PROFILE



Thin Film Technology Corp.



**Thin Film Technology Corp.**



**EiG**  
GROUP

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*Happiness Redefined*  
創造新幸福



A portrait of Mike Howieson, a middle-aged man with glasses, wearing a blue and white checkered shirt and a grey tie. He is smiling slightly and looking towards the camera. The background is a blurred green landscape with trees.

## Mike Howieson

Chief Executive Officer  
Thin Film Technology Corp.

## Constitution

Thin Film Technology Corp. (TFT) is the senior member in a new global high performance electronic passive components group, EiG Group. As the senior member, TFT leads by example in integrity, quality, discipline, and performance.

These internal principles are carried throughout the organization and out to our valued customers.

TFT's experience and performance will add value and competitive advantage to the TFT brand, establishing a foundation on which to build a sustainable, growing business.

-Est. 2019

# PASSIVE COMPONENT SOLUTION PROVIDER

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Thin Film Technology Corp. is a leading edge solution provider of high performance, passive electronic components for radio frequency, resistive, and capacitive applications servicing the automotive, consumer electronics, medical, military, data communication, FTTx, automatic test equipment, and aerospace markets.

Our mission is total customer satisfaction. We embrace strong relationships and teamwork in pursuit of our mission. TFT is committed to providing highly reliable, highly stable electronic solutions.

Our Sales Engineering business model helps us find the right solution for our customers. We assist our customers along the entire process, from modeling and simulation through mass production. Utilizing thin film, thick film, foil, LTCC, and emerging technologies we serve current and future electronic markets. TFT is your solution provider.

Thin Film Technology was incorporated in 1979 in Minnesota, USA. Today, we serve the global market from three locations.





# NEW ERA OF COLLABORATION

Thin Film Technology partnered with EiG Group in 2013 to expand its manufacturing capabilities in Asia.

Together, we built the Juneway Electronic factory in August 2014. EiG Group serves as an investor and as factory operations management and TFT provides technology and quality management. Juneway now serves as the lead manufacturing facility for TFT.

EiG Group, founded in 1968, has many similarly grouped companies that TFT can utilize to provide increased benefit and value to our customers, including research and development, component solutions, and electrical component factories.

Thin Film Technology, in collaboration with EiG, offers engineering and design services, quality management, as well as knowledge, skills, and intellectual property in thin film and current sense resistor technology.



# QUALITY COMPONENTS WORLDWIDE

Thin Film Technology delivers quality products and services to customers on an ongoing basis. The implementation and maintenance of ISO certified quality management systems helps us to obtain our mission of "total customer satisfaction" with production and operations worldwide.



## THIN FILM TECHNOLOGY

Component Design & Manufacturing  
Research and Development  
Engineering Services  
Quality Assurance Center  
Sales Center

### 01 CUSTOMER SATISFACTION

TFT's mission and quality policy focuses on customer satisfaction. TFT works actively to ensure the quality of our components and focus on meeting customer needs including on-time delivery.

### 02 ENVIRONMENTAL COMPLIANCE

- RoHS Compliance
- REACH Regulation
- Conflict Mineral Policy

### 03 LOW OHM INDUSTRY LEADER

TFT is an industry leader in the low ohm & CSR market, servicing some of the world's largest companies in current sensing applications, such as battery management and LED circuits.

# INDUSTRY PARTNERS PROVIDING VALUE



JUNEWAY ELECTRONIC  
TECHNOLOGY

Mass Production  
Prototyping  
Reliability Testing  
Research and Development  
Qualification Testing



YOKOHAMA  
ELECTRONIC DEVICES

Prototyping  
Production  
Engineering Services  
Research and Development



WALTER ELECTRONIC  
Sales Center (Fuses)  
Mass Production (Fuses)  
Prototyping

## UNITED STATES

TFT Headquarters  
Americas Sales  
Europe Sales  
Design & Engineering  
Quality Center  
Logistics Center

## CHINA

CSR Components  
HF Components  
Fuses  
Research & Development  
Logistics Center

## TAIWAN

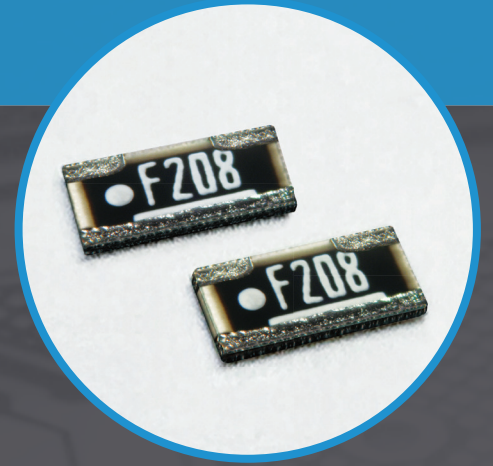
Asia Sales  
Thin Film Components  
Thick Film Components  
Capacitors  
HF Components  
Logistics Center

## JAPAN

CSR Components  
HF Components  
Thin Film Components  
Incubation Center  
Prototyping

# PRODUCTS FOR YOUR PROJECT

## LEADING THE INDUSTRY IN LOW OHM, CURRENT SENSING & RF COMPONENT DESIGN



### Current Sense Resistors

TFT offers the superior line of Current Sense Resistors on the market.

Our two terminal and four terminal Kelvin sense resistors offer the most accurate PCB mounted current sensing on the market with superior construction and an industry leading foil element. Our Current Sense Resistors are ideal for LED RC circuits, automotive ECU, and LED lighting, charging and battery applications and includes anti-sulfur options. This line offers highly competitive pricing for any application.

### Thin Film Chip Resistors

TFT has been a thin film specialist since 1979.

Thin Film Chip Resistors are the ultimate combination of accuracy, reliability, and are cost effective. Our time tested Nickel Chromium thin film resistors offer TCR's as low as 2ppm/°C, tolerances to 0.01%, and series that have typical load life stability of 100ppm to 10,000 hours.

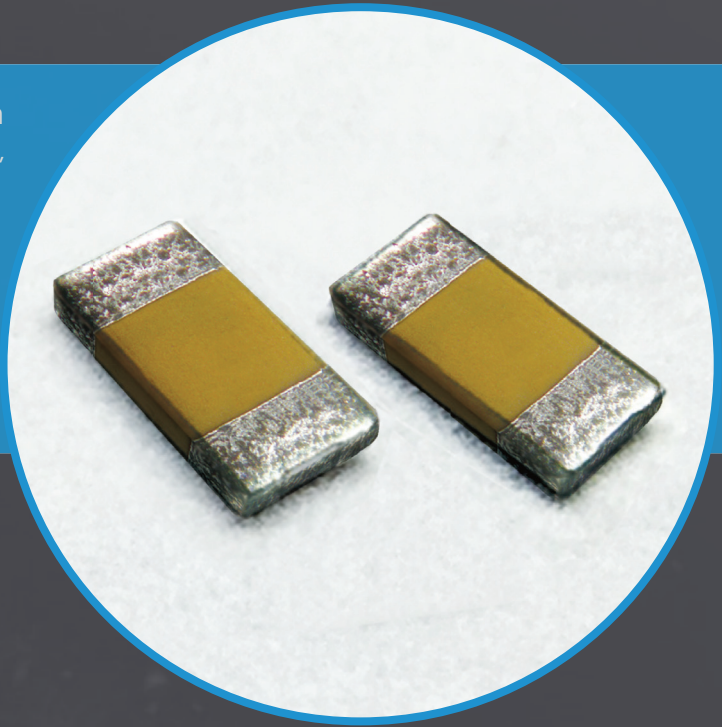
### High Frequency Components

TFT offers a variety of RF Devices for wideband applications.

Our RF Filters (including mm wave), resistive power splitter, temperature variable attenuators, standard attenuators, and low cost attenuators cover DC to 40GHz and offer many sizes, mounting styles, and temperature slopes. They are ideal for most RF surface mount applications needing good return loss. Thin Film Technology Corp also offers a complete line of LTCC RF Filters for applications DC- 6GHz.



With a full offering of passive components including thin film, thick film, and current sense resistors, MLCCs, fuses, and high frequency components Thin Film Technology can find the right product for your project.



## Thick Film Chip Resistors

TFT has Thick Film Chip Resistors for a variety of applications.

Thick Film Chip Resistor series include high power, high pulse power, high resistance values, high precision, high voltage, automotive grade, and 100% lead free. Our thick film chip resistors are of the highest quality and offer ideal pricing for high volume applications. With sizes as small as 01005 and parts that handle up to 2W, this line offers something for every circuit.

## Multi Layer Ceramic Capacitors

TFT offers a complete line of Multi Layer Ceramic Capacitors (MLCC).

Covering voltages up to 3000V and sizes as low as 0201 covering X7R, NP0 (C0G), X5R, and Y5V dielectric types, these MLCCs cover applications for general purpose applications, automotive, high voltage applications, and applications requiring flexible terminations to prevent capacitor cracking. TFT offers competitive pricing for every volume and market.

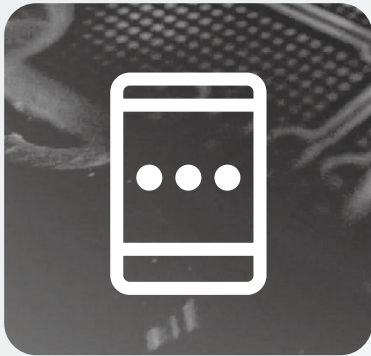
## Fuses

TFT partners with Walter Electronic to offer a variety of fuses.

Walter Electronic Co. Ltd has been producing miniature glass-tube fuses, ceramic tube fuses, micro fuses and subminiature fuses for over 49 years. TFT partners with Walter Fuse under the EIG Group to offer surface mount fuses, micro fuses, subminiature fuses, ceramic tube fuses, thermal cutoff fuses, and power fuses.

Visit [www.walterfuse.com](http://www.walterfuse.com) to see Walter Electronics fuses offered by Thin Film Technology Corp.

# SOLUTIONS FOR YOUR INDUSTRY



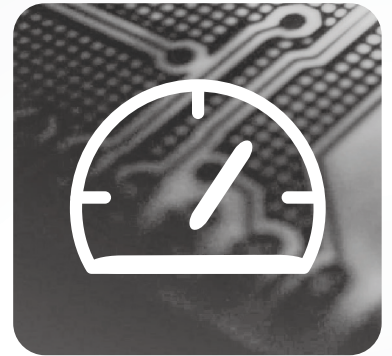
## COMPUTER

TFT uses cutting edge technology in products such as high performing current sense resistors, thin film resistors, and HF components due to continued investment in new product development. Computing and hand held devices is TFT's largest market segment with products for battery packs, flat panel LCDs, touch-screen controllers, servers, mm wave radio, etc.



## DATA / IOT

TFT produces a wide range of resistors, capacitors, and RF products to suit the needs of high frequency communication with future outlook for 5G and mm wave technology. The rapid prevalence of mobile computing devices in our everyday life has fueled an unprecedented need for higher speeds, lower thermal emissions, and longer battery life.



## TEST & MEASURE

TFT supports test and measure customers through value-driven sales engineering and highly reliable passive products. With the need for test and measure equipment to accurately characterize the latest technology and meet the newest standards, it is important that the components perform above and beyond these standards.



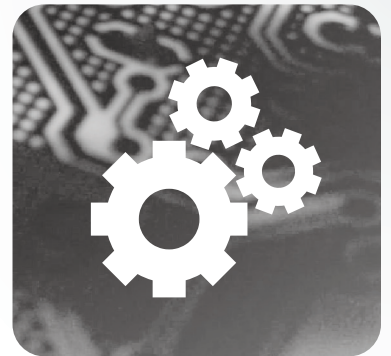
## AUTOMOTIVE

TFT developed a wide variety of passive products that have passed the stringent reliability testing needed to be AEC-Q200 qualified. TFT supports many different series of resistors, current sense resistors, and capacitors for automotive, lighting, computing, drive train, and battery systems.



## ENERGY

TFT has heavily invested into smaller, higher power passive components produced with industry leading current sensing accuracy. These products meet advancing technology's demand for higher power, longer battery life, more accurate current sense feedback loops.



## INDUSTRIAL

TFT has many options designed to suit medical and industrial needs for higher accuracy and lower drift passive components. Medical and industrial equipment now requires more stable operation and monitoring within harsh environments.

## COMPUTER

### Applications

- Smartphones
- Battery Packs
- Notebooks
- Networks
- Servers
- Desktops
- Tablets
- LCD Displays

## DATA / IOT

### Applications

- Wireless (4G/5G)
- mm Wave
- FTTH/FTTx
- MOCA
- WiMax
- VSAT
- LoRa
- Wifi

## ENERGY

### Applications

- Solar Inverters
- Industrial Motors
- HVAC
- Generators
- UPS
- Lighting

## INDUSTRIAL

### Applications

- Controls
- Wearables
- Equipment
- Bench top
- Hand Held
- ATE

# PASSIVE COMPONENTS FOR YOUR APPLICATION

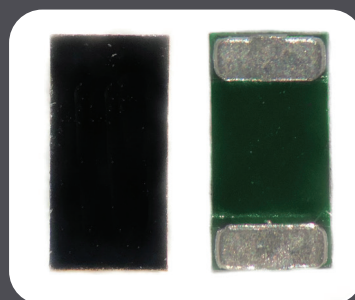
TFT is a brand known and trusted by many of the top OEM's and ODM's around the world and should be any engineer's first choice in chip resistors.

### Meeting Industry Requirements

Higher data rates require higher power with increased reliability. As the industry moves from 4G to 5G technology performance will be key. Ensuring that circuit and component design utilizes the best available technologies and construction will be paramount.

## PRODUCT HIGHLIGHT

High Current 0201  
0 Ohm Jumper Chip



### Advantages

These resistors help to reduce noise through the use of linear construction and a low resistance metal alloy resistive element, removing sources of parasitic noise and providing a more direct current flow. These jumpers provide thermal efficiencies through lower maximum resistance ratings, making them ideal for applications such as next generation 5G cellular devices and battery packs where overheating and power usage are a factor.

- Low TCR
- Long Term Stability
- Low Thermal EMF
- Reduced Noise

### Specifications

- Cu Alloy Foil Resistive Element
- Low Profile
- RoHS Compliant
- Lead Free
- Anti-Sulfur
- 0201 Case Size (English)  
1mOhm mx Resistance



# LETTER FROM THE CFO

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Thin Film Technology continues to grow by being adaptable and consistently reinvesting in new capabilities and products. Although TFT's revenue comes from the sale of highly innovative products, our sales stem from our unique Sales Engineering business model.

TFT doesn't just stop at form, fit, and function of a product. Our sales engineers focus on knowing and understanding what our customers really need from components in terms of reliability and performance. We find and develop components to meet those needs, verify performance and reliability, and work with customers' engineers to design superior products for the end consumer.

TFT understands the importance of adapting to the changing needs of customers and the industry. That is why TFT reinvests its profits into product development, new production capabilities, and added capacity. By investing in our customers' satisfaction and success, we build long term relationships that produce growth.

**TOM LIETHA**

Chief Financial Officer

Thin Film Technology Corporation

## MEET OUR DIRECTORS

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**FRED OLINGER**

QUALITY DIRECTOR



**MARK BROMAN**

ENGINEERING & SALES  
DIRECTOR



**CINDY  
THELEMANN**

OPERATIONS DIRECTOR





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