

A wide-angle, nighttime photograph of the Tokyo skyline. The Tokyo Tower is the central focus, brightly lit with yellow lights. The surrounding city is a dense collection of skyscrapers and buildings, many of which are also illuminated, creating a vibrant, colorful scene against the dark night sky.

# CORPORATE INTRODUCTION

## 2019



# Contents

---

- 1. Corporate Overview**
- 2. Global Operation Network**
- 3. Fujikura Products Introduction**
  - 1. Applications**
  - 2. Details**
  - 3. New Technologies**
- 4. CSR**

# Corporate Overview

## Introduction

---

Establishment: Feb, 1885

Sales/Year: 710.7 Billion JPY  
(FY2018)

Headquarter: Tokyo Japan

President & CEO: Mr. Masahiko Ito

Employees: 58,422 - consolidated/worldwide

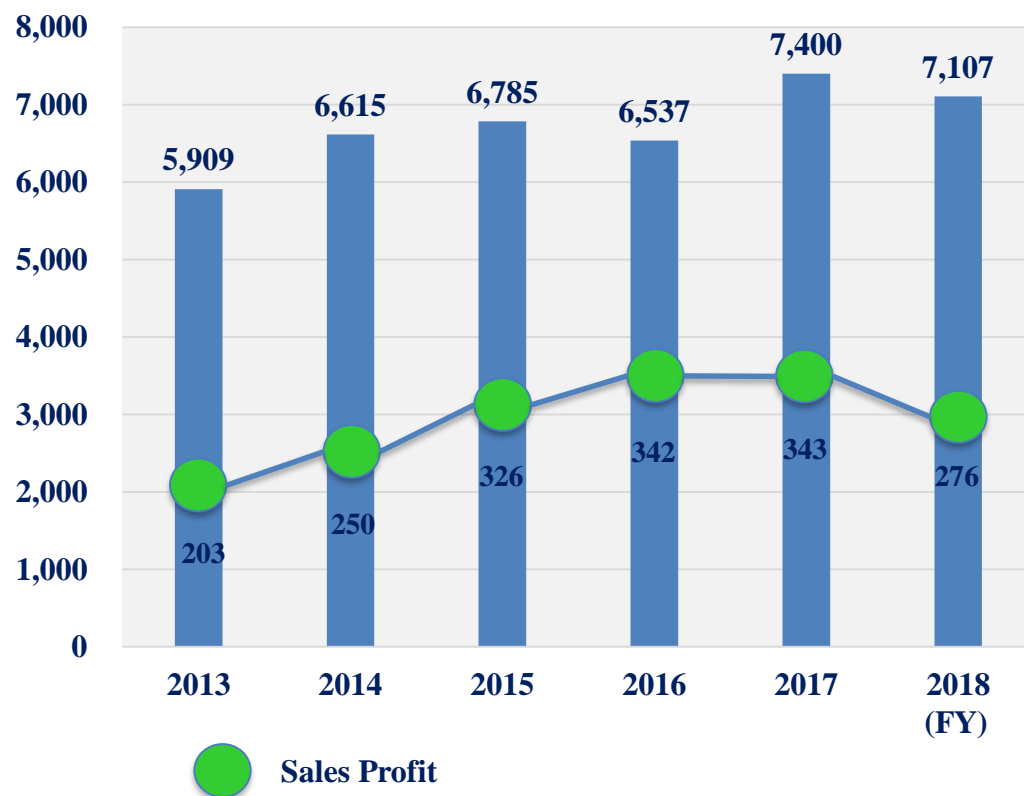
Main products: Electronics materials & systems,  
Automotive products,  
Optical transmission systems,  
Metal cables & systems,  
Network systems, etc.



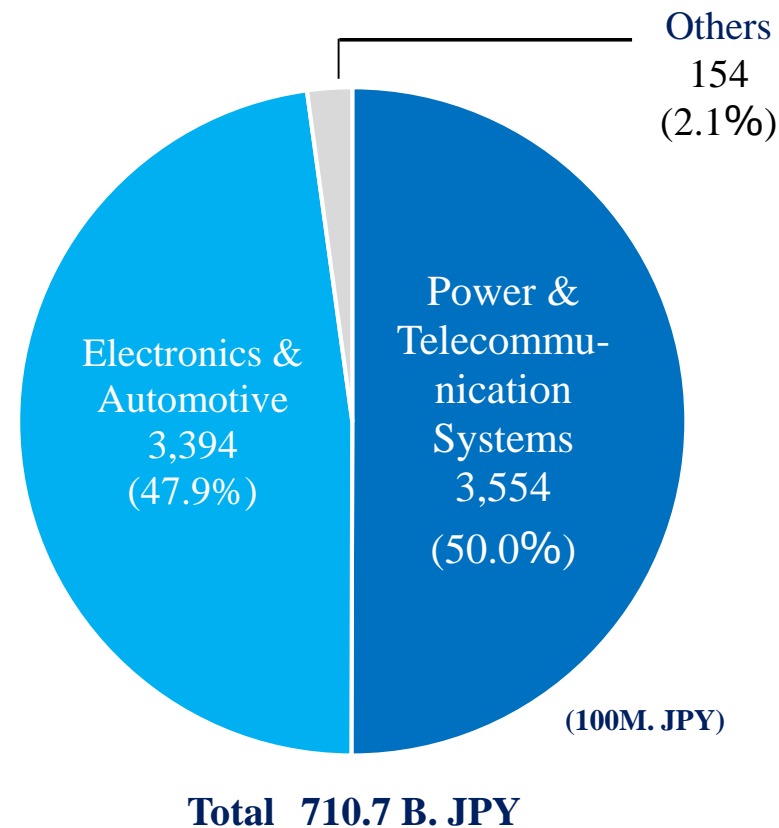
# FY2018 FINANCIAL HIGHLIGHTS

## Net Sales History

(100M. JPY)

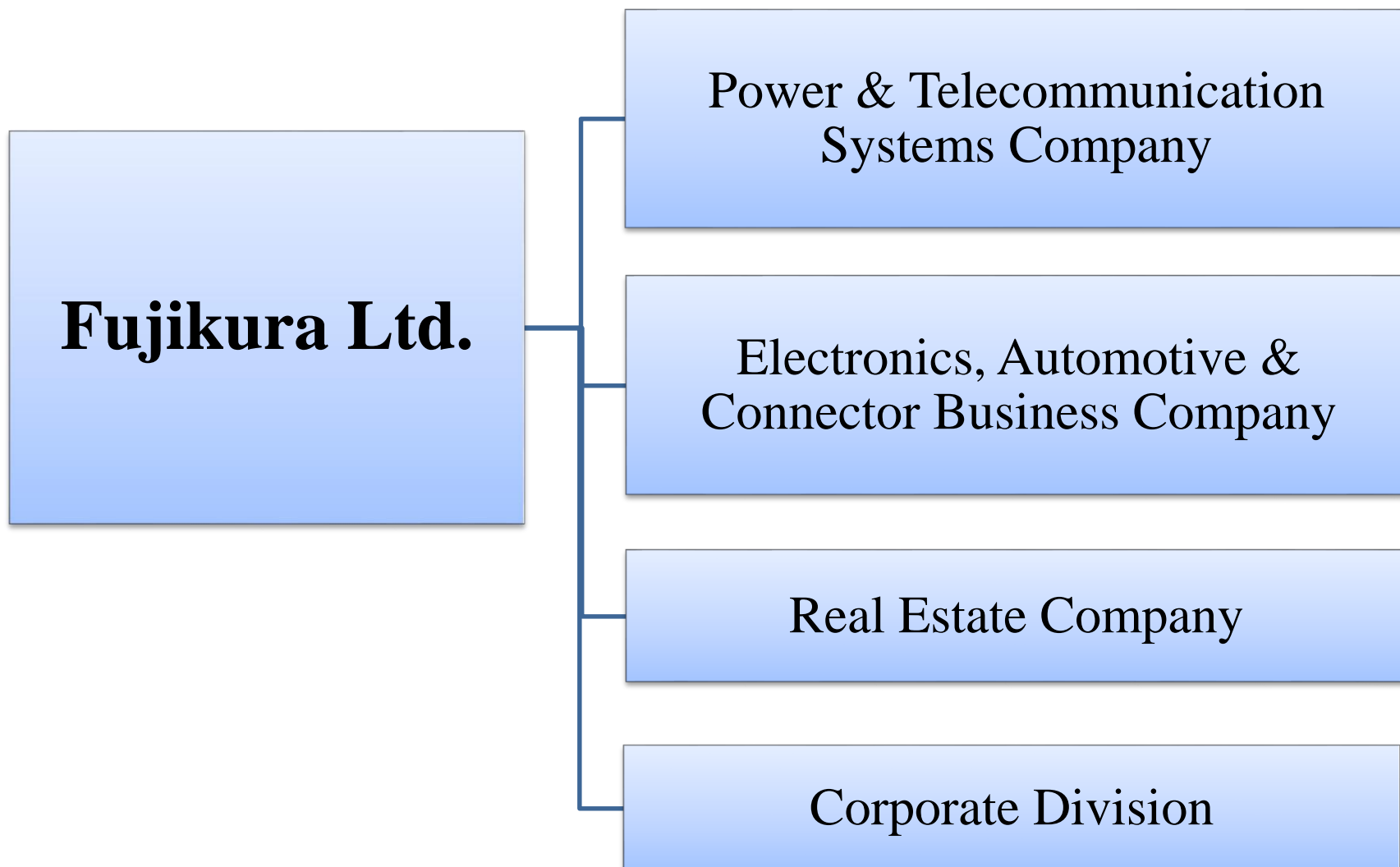


## Net Sales by Segment FY2018



# Company Organization

---



**Electronics,  
Automotive & Connector  
Business Company**

**Electronics**

- Flexible printed circuits (FPC)
- Membrane switch module
- Thermal solution

**Automotive**

- Wire Harness
- Junction Box
- Membrane Sensors (SBR)
- Components

**Connectors**

- Optical Connector
- Coaxial Connector
- FPC/FFC Connector

**Power & Telecommunication  
Systems Company**

**Power Cables & Systems**

- Optical Ground Wire (OPGW)
- Industrial Cables
- Eco Wires and Cables

**Telecommunications**

- Fusion Splicer
- Optical Fiber / Cable
- Connectors for Optical Fiber Cable

# Corporate Overview

## Global Major Business Footprint

### Europe:

Germany, Netherlands, Czech Republic, Russia  
Romania, Spain, UK, Ukraine

**Europe**  
**20**  
companies

**Asia**  
**44**  
companies

**Japan**  
**38**  
companies

**North America**  
**24**  
companies

**North America:**  
Canada  
U.S.A.  
Mexico

### Asia:

Thailand  
Vietnam  
Malaysia  
Singapore  
Indonesia  
China  
Korea  
India  
Saudi Arabia

**Total 140** companies

**South America:**  
Brazil  
Paraguay

**South America**  
**12**  
companies

**Africa:**  
Morocco

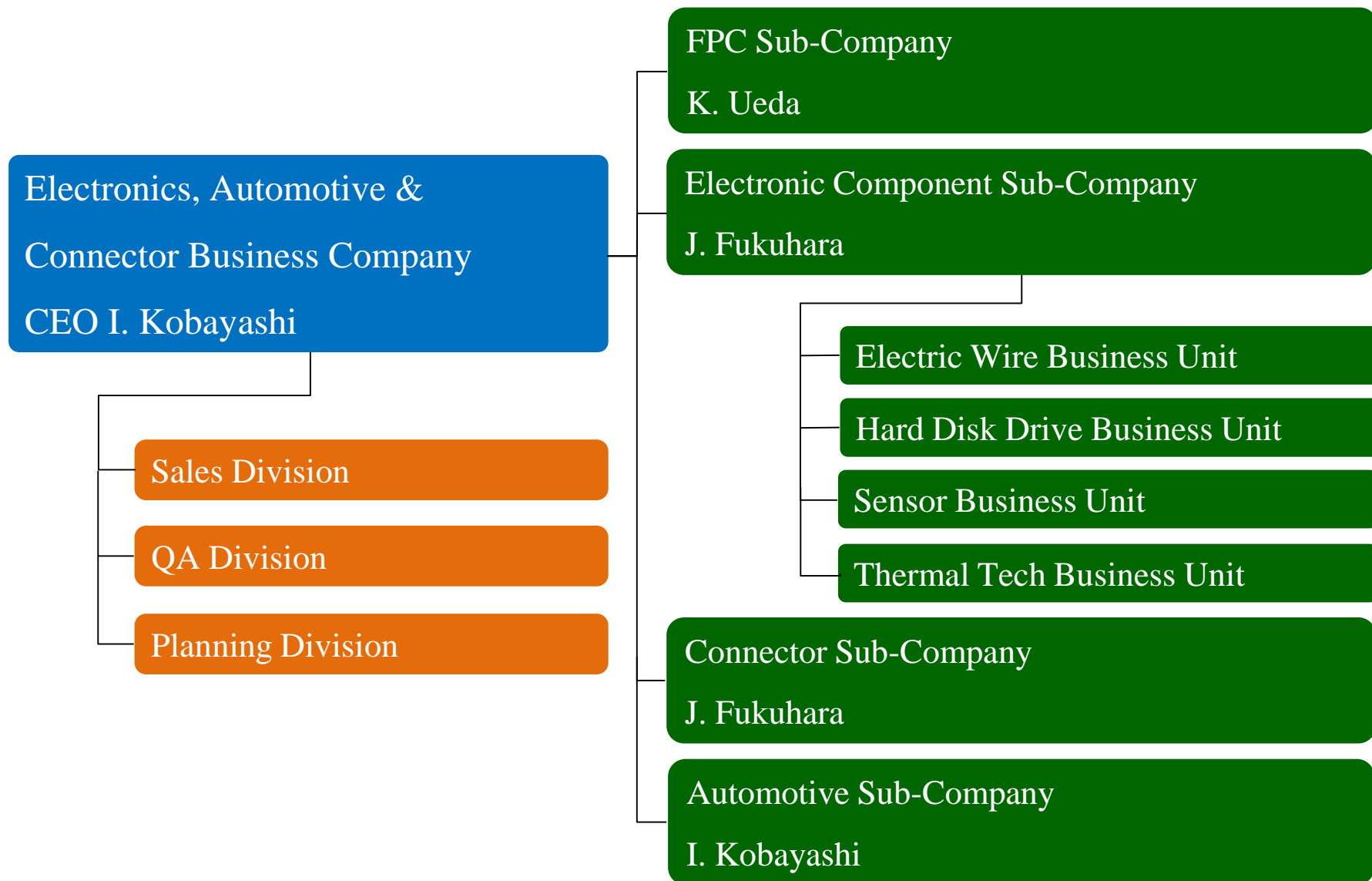
**Africa**  
**2**  
companies

Fujikura Group

**58,422 people**



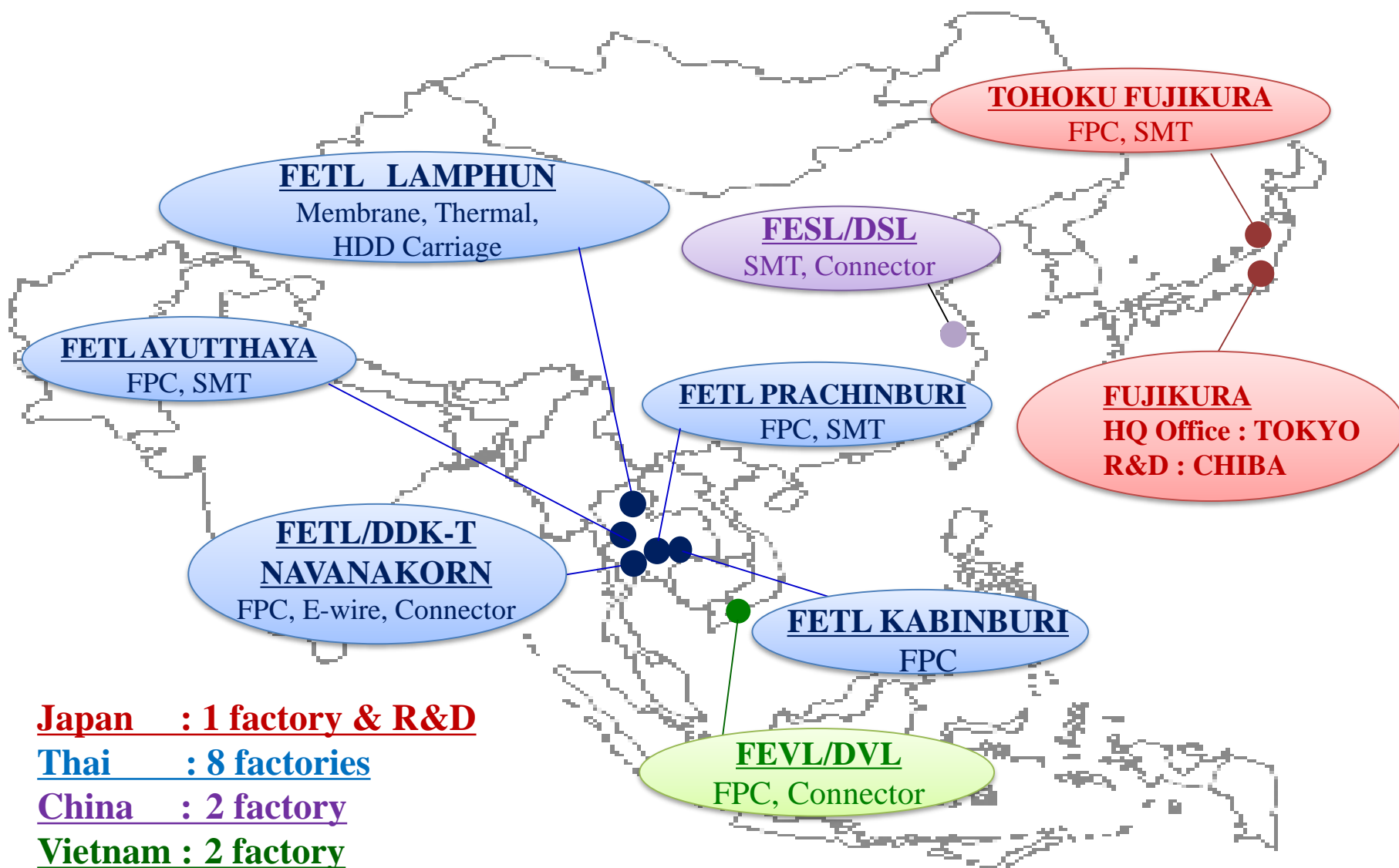
# Company Organization





# Fujikura Electronics

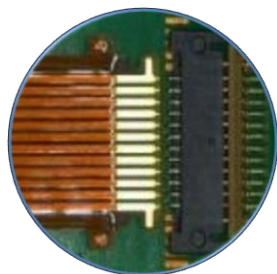
## FPC Facilities Network



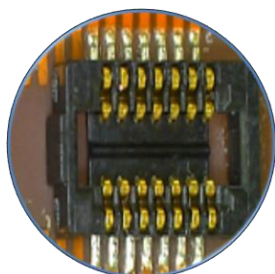
# Application (Smartphone)



**Heat Pipe**



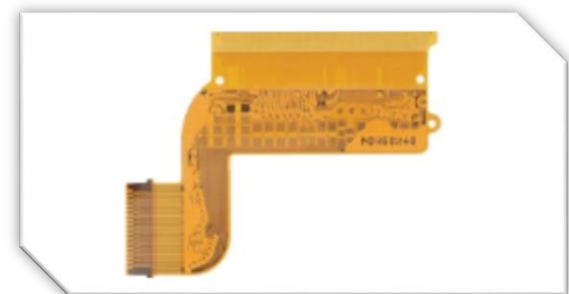
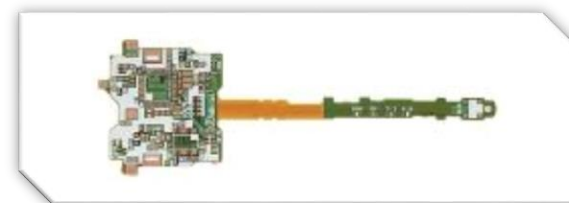
**FPC connector**



**BtoB connector**



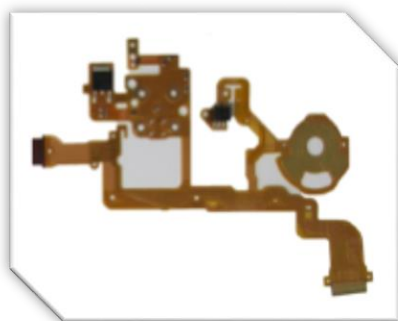
**FPC**



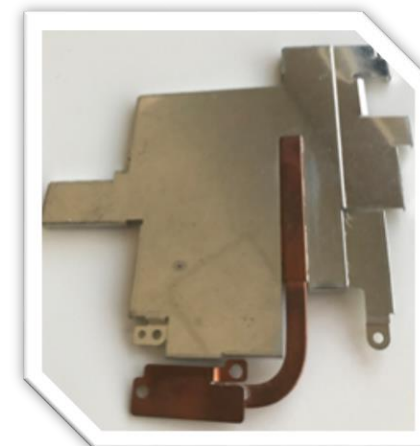
# Application (Digital Camera)



**Micro Coaxial Cable**



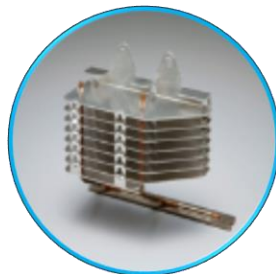
**FPC**



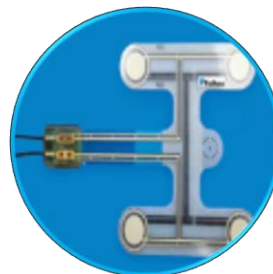
**Heat pipe**

# Application (Automotive products)

**Heat sink  
and  
Heat pipe**



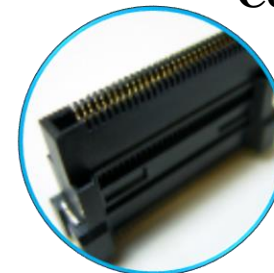
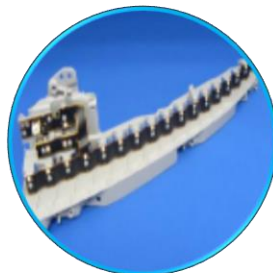
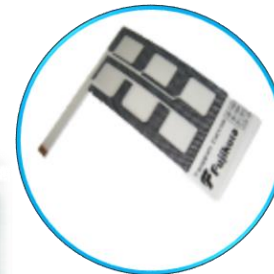
**Membrane  
Sensing**



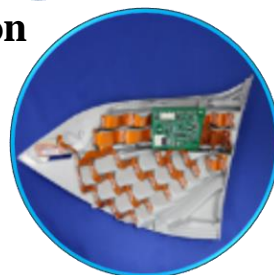
**Wire harness**



**Automotive  
Connectors**



**FPC Application  
For Lamp**



**Battery  
Management  
Systems**

**ADAS  
(LiDAR • Mm-wave Antenna)**

**Micro  
Coaxial  
Cable**

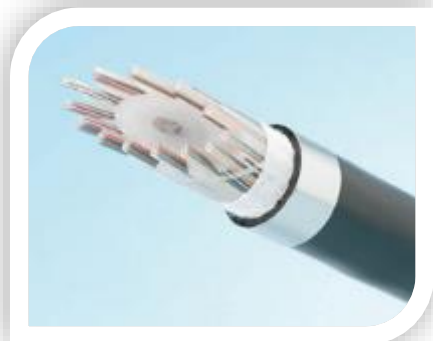




# Application (Data Center)



**Micro Coaxial Cable**



**Optical fiber cable**



**Vapor chamber  
/ Heat sink**



**Optical connector**

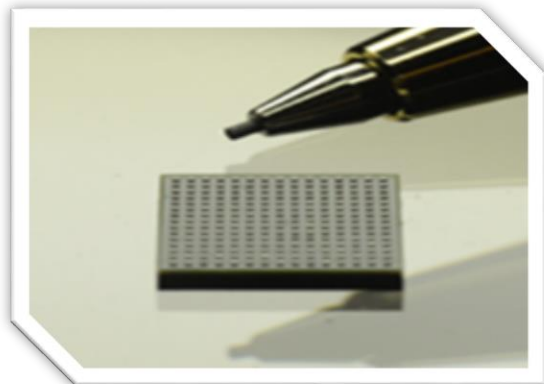


**HDD Assemblies**



**Cold plate**

# Application (Medical products)



**WABE Package®**

**Hearing aid**



**Endoscope**



**FPC**



**Micro Coaxial Cable**



**Pressure sensor**



**Medical monitor**



**Oxygen concentrator**



**Oxygen sensor**

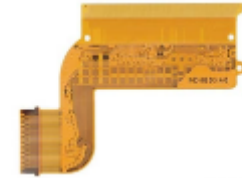
## Flexible Printed Circuit (FPC)



**Assembled FPC**



**Multi-Layer FPC**



**Two-Sided FPC**

### Features

- ◆ Can be used to assemble a wide variety of electronic component (ex. Connector, Chip, Sensor, LED, Semiconductor)
- ◆ High reliability and space-savings are achieved by eliminating coupling parts such as connectors
- ◆ Can be used to control impedance for high-speed signal transmission

### Applications

- ◆ Digital Camera, Smartphone, Tablet, Automobile (Light), Camera Module, Small size medical component, Wearable component etc.

**“MP mainly in Thailand, Prototype mainly in Domestic Plant (Tohoku) ”**



## Membrane Circuit



**Membrane for keyboard**



**Membrane Switch**

### Features

- ◆ Various circuits can be fabricated on the flexible and pliable film
- ◆ Low cost due to printing on PET films
- ◆ Adaptable to many structures  
(ex. Switch, Sensor, Component assembly, Special Ink)

### Applications

- ◆ Keyboard(PC, Electronic piano), Automobile (Seat), Medical Components, Film Antenna etc.

## Sensors



**Pressure Sensor**



**Oxygen Sensor**

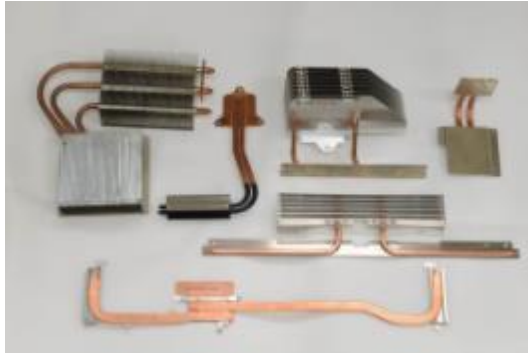
### Features

- ◆ Corresponds to variety of pressure sensing due to variety of reference (**Press.**)
- ◆ Long-life service (over 3 years), Maintenance-free, No need of reference gas (**Ox.**)
- ◆ Uses Low cost Mold packaging

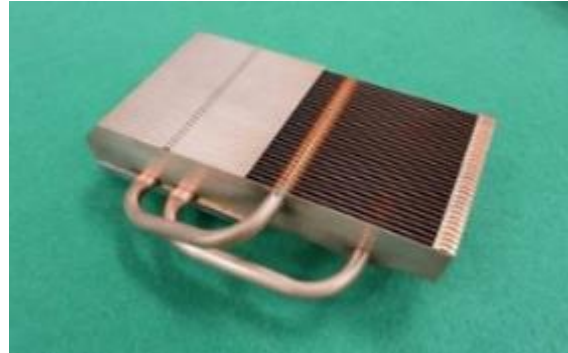
### Applications

- ◆ Coffee Machine, Manufacturing equipment, Robots, Home electronics, Games (**Press.**)
- ◆ Oxygen Sensor module, Oxygen analysis scale, Medical component etc. (**Ox.**)

## Thermal Products



**Heat Pipe Assemblies**



**Heat Sink**  
(Heat Pipe assembled)



**Cold Plate**

### Features

- ◆ Outstanding Heat Conductivity, Quick Thermal Response
- ◆ Self active, Maintenance-free, No Maintenance cost (**Heat Pipe**)
- ◆ High capacity cooling system, High reliability and Mass production experience (**Cold Plate**)

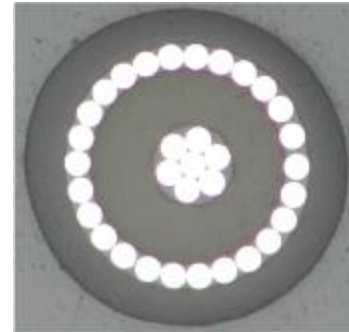
### Applications

- ◆ Mobile devices, Automobile, Telecom network, Data center, Super computer, Electric generation (solar power, wind power) etc.

## Micro-Coaxial Cable(MCX)



**MCX**



**Inner structure of MCX**

### Features

Unique high performance for bending and twisting enables to correspond to hinges with complicated movements.

- ◆ Excellent electrical performance that enables to achieve high-speed transmission
- ◆ Able to design freely, Short lead time, Variety of connector assemblies

### Applications

- ◆ Lap top, Cell-phone, Cameras (for Security, Digital, Video), Head Mount Display, Copy machine, Scanner etc.

## HDD Assemblies



**Actuator Assembly**



**Actuator Assembly with Assembled FPC**

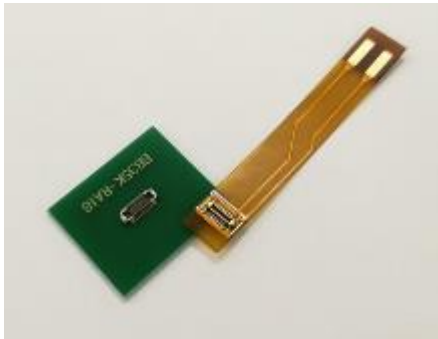
### Features

- ◆ Possible to apply Electroless Nickel Phosphorous plating on an actuator
- ◆ Can be used for various types of VCM Magnet wire, Heat Resist Bond Coats, and Wire diameter and tension to specification
- ◆ High reliability due to variety of analysis equipment and air cleanliness
- ◆ Actuator with FPC, Bearing insertion assembly is available

### Applications

- ◆ Data center, PC, Video recorder, External for security camera

## Connectors



FPC/BB



Circular



Coaxial

### Features

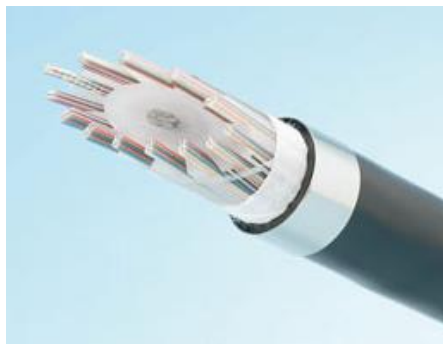
Wide variety from signal to large current, small to large applications. (FPC/BB)

- ◆ Can withstand extreme vibrations and temperatures. It is also used for highly reliable connections with moisture and chemical resistance. (Industrial Machinery)
- ◆ Suitable for high speed and long distance transmission. Wide frequency transmission is possible. (Coaxial)

### Applications

- ◆ Smartphones, industrial equipment, Robots, sensors, medical equipment, telecommunications equipment, measuring equipment, Automotive equipment

## Optical fiber cable, Optical connector, Fusion splicer



Optical fiber cable



Optical connector



Fusion splicer

### Features

- ◆ High technology of optical fiber cable  
SWR (Spider Web Ribbon) & WTC (Wrapping Tube Cable)
- ◆ Fusion splicer global No.1

### Applications

- ◆ Data center
- ◆ FTTx: "Fiber to the x" x = Home, Antenna, Building, Desktop  
Connecting anything to optical fibers



# Research & Development



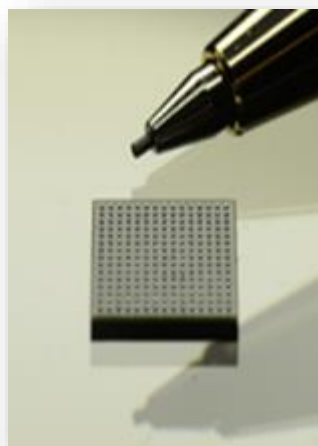
**Superconducting wire**



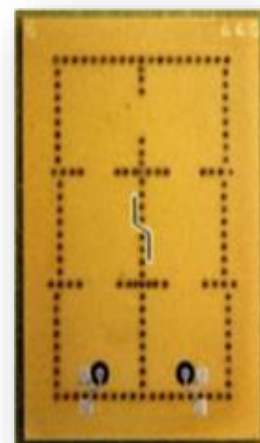
**Dye-sensitized solar cell**



**Fiber laser**



**WABE Package®**



**Millimeter Wave wireless products**

# Research & Development

## Superconducting wire

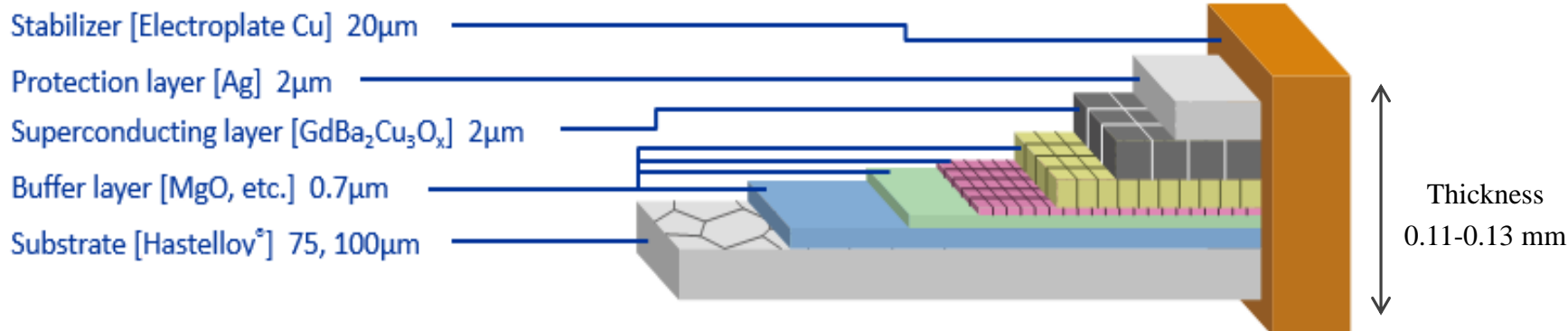


Superconducting wire



5 T large Y-based HTS magnet

### <Structure>



### Features

- ◆ Higher operation temperature
- ◆ Higher critical current at higher magnetic field
- ◆ Fujikura's original manufacturing techniques: IBAD, PLD

### Applications

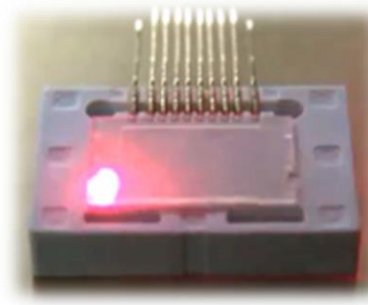
- ◆ Marine Motor, MRI, NMR

# Research & Development

## Fiber Laser



Cutting



Welding



Surface treatment

### Features

- ◆ High energy beam which are generated by Fiber Laser can finely process thick metal.
- ◆ Integrated production system for the main parts of Fiber Laser.
- ◆ Realizing on-site fiber fusion and repair.

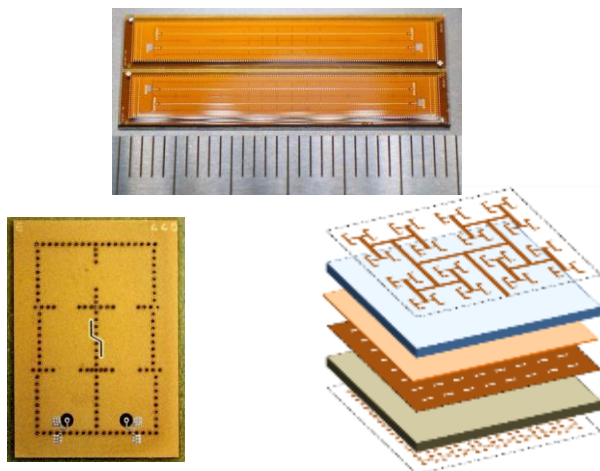
### Applications

- ◆ Cutting : Al (20mm), Copper (6mm), Brass (17mm), SUS (20mm)
- ◆ Welding : Short time processing by using high energy beam
- ◆ Surface treatment : Imprinting on various materials

# Research & Development

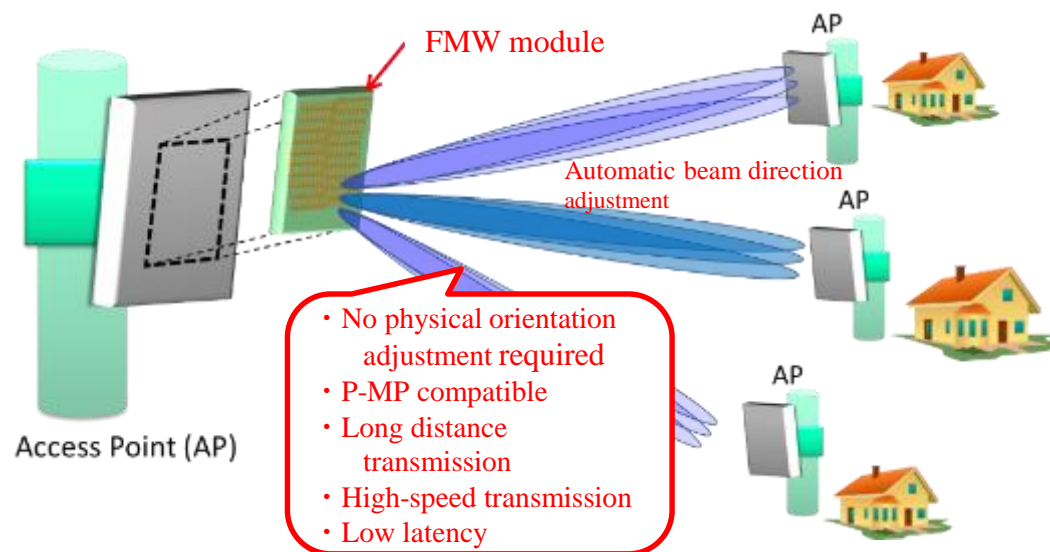
## Mm-Wave products

### Millimeter wave device



Millimeter wave antennas, filters, and duplexers using quartz and LCP

### Millimeter wave communication module



FMW module=Fujikura Millimeter Wave module

### Features

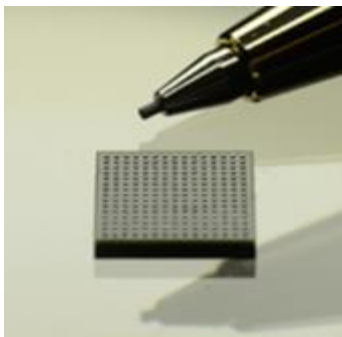
- ◆ Long distance and high speed transmission based on low loss high frequency substrate technology.
- ◆ Beam forming function that can be connected to multiple devices simultaneously.
- ◆ Integrated development from device, board and module design, manufacturing and evaluation.

### Applications

- ◆ Millimeter-wave communication base station
- ◆ Communication equipment for fixed wireless access network (FWA)

# Research & Development

## WABE Package®



WABE Package®

Wafer And Board level Embedded Package



WABE Package® section structure

### Features

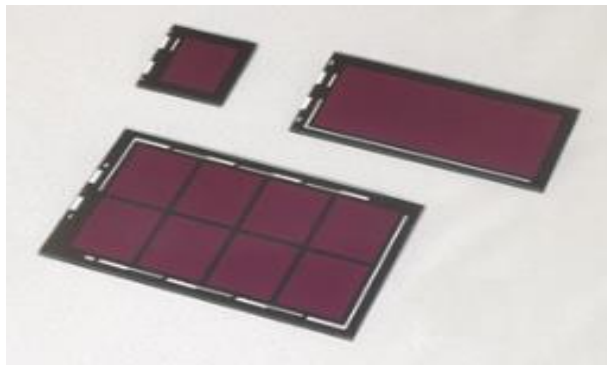
- ◆ Electronic circuit can be ultra-miniaturized.
- ◆ Short wiring reduces noise and transmission loss.
- ◆ Built-in IC is embedded and protected with insulating resin on the board, so connecting reliability is high.

### Applications

- ◆ Nano size medical device, Wearable device, etc.

# Research & Development

## Dye-sensitized solar cell



DSC module panel



Sensor station    Sensor node

### Features

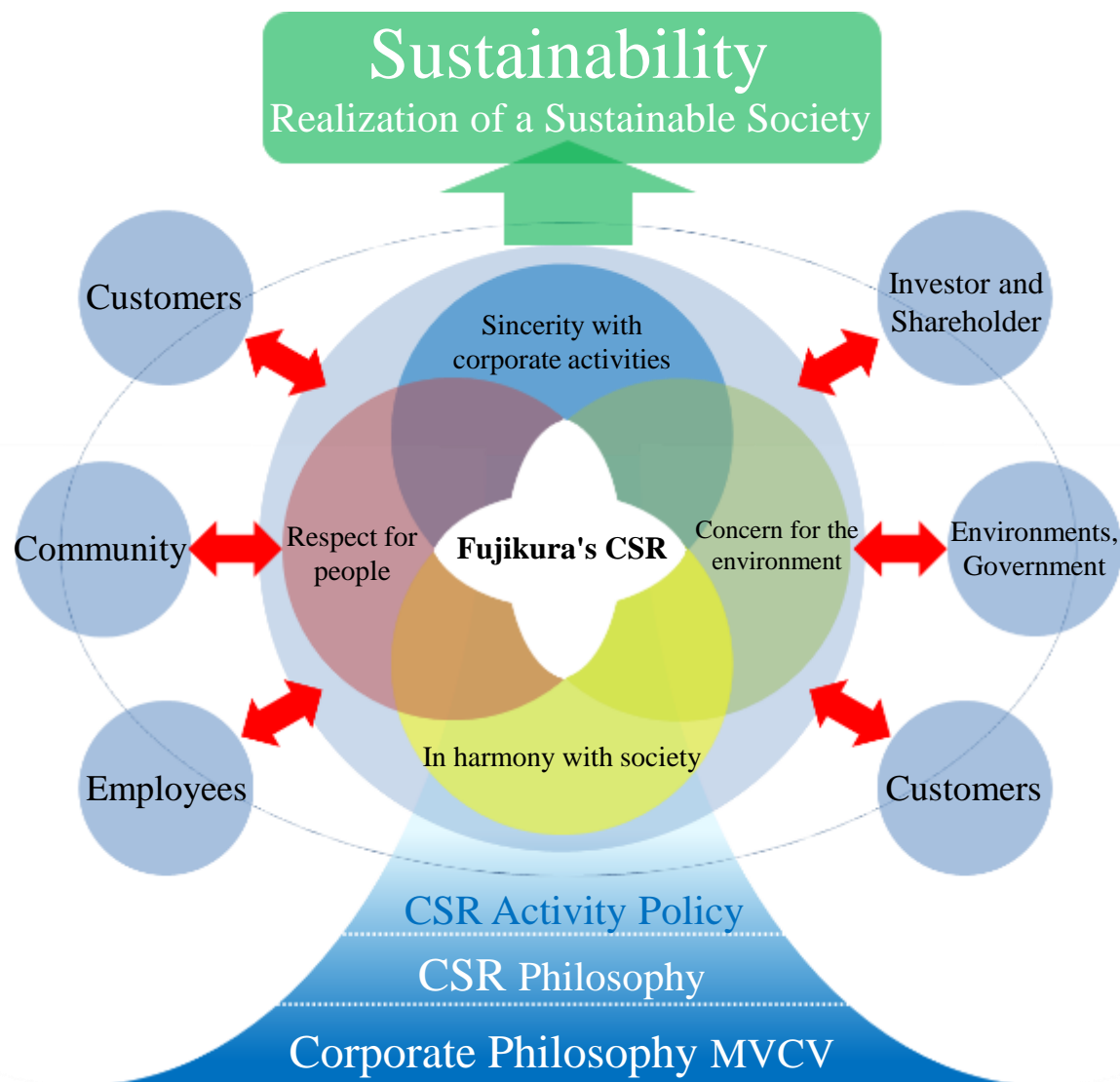
- ◆ Generating high electric power in low light condition.
- ◆ High durability and long-term reliability.
- ◆ Can be customized as a source power source for electronics.

### Applications

- ◆ Monitoring sensor system  
(Infrastructure, Health, House, Farm, and Buildings etc.)



# Corporate Social Responsibility (CSR)



"Kiba-Sennen" Forest



"Fujikura-Gakuen"



Discussion about workstyle reforms with stakeholders





Kiba office R&D 7<sup>th</sup> floor

- A space where diverse people from companies, organizations, research institutions, governments and local governments gather to seek for value of co-creation
- Various seminars and events  
⇒ Forming a community where collaborations beyond organizational boundaries are created



A wide-angle, high-angle photograph of the Tokyo skyline at night. The city is densely packed with illuminated skyscrapers and buildings, with the Tokyo Tower standing out prominently in the center-right, glowing with warm yellow lights. The sky is a deep blue with some light clouds.

Shaping the future  
with “tsunagu”  
technology.

Welcome to Fujikura !

