

## Product Guide

# Burn-in Sockets

Yamaichi Electronics' Test Solutions evolve alongside the progress of semiconductor devices.

## Universal Pitch Sockets

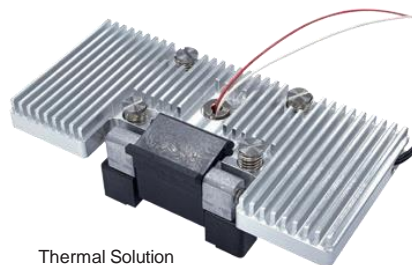
BGA, LGA, QFN, Others (0.3 mm Pitch – Irregular pitch available from 0.3mm pitch)



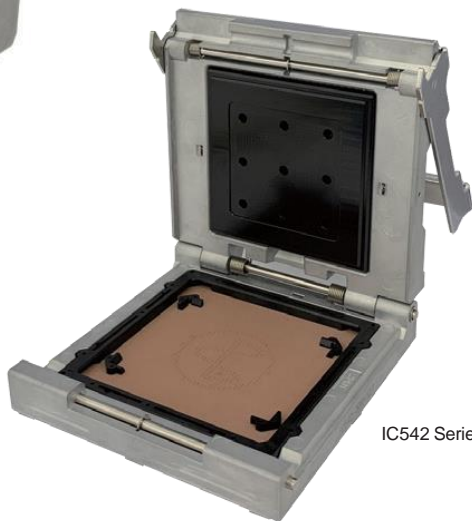
IC564 Series



IC561 Series



Thermal Solution



IC542 Series

## High Power Socket

BGA, LGA (0.8mm, 1.0 mm Pitch)



IC567 / IC630 Series

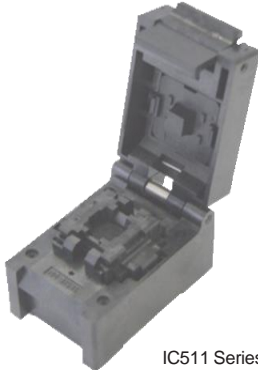


IC603 / IC604 Series

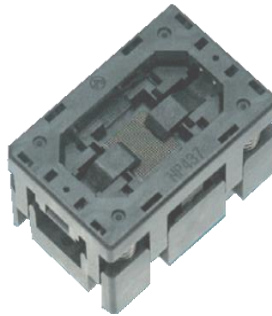
# Burn-in Sockets

## Sockets for Grid-Array Package

### BGA (0.35, 0.4 mm Pitch)



IC511 Series

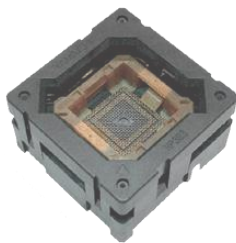


NP437 Series

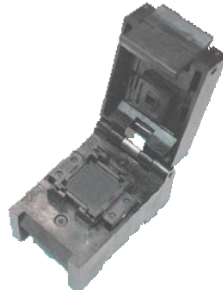


NP597 Series

### BGA (0.5 mm Pitch)

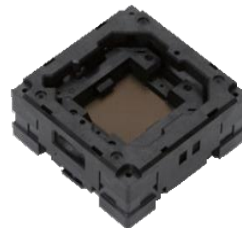


NP383 Series



IC409 Series

### BGA (0.65 mm Pitch)

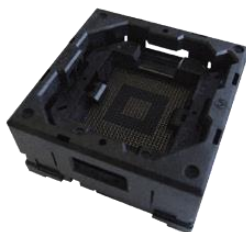


NP631 Series



IC280 Series

### BGA (0.8 mm Pitch)

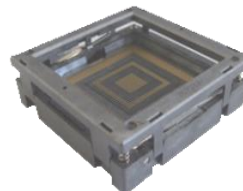


NP566 Series



IC280 Series

### BGA (1.0 mm Pitch)



NP483 Series



IC280 Series

# Burn-in Sockets

## Sockets for Grid-Array Package

BGA (1.27 mm Pitch)



NP276 Series

LGA (0.65, 0.75, 0.80, 1.00 mm Pitch)



NP364 Series



NP404 Series



IC280 Series

## Sockets for Lead Frame Package

QFP (1.27 mm Pitch)



IC357 Series



IC51 Series

QFN



NP506 Series



IC609 / IC610 Series

SOP/TSOP



IC354 Series



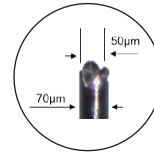
IC369 Series



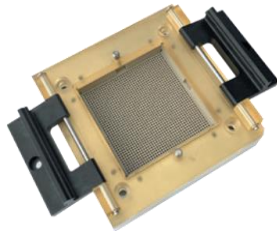
IC51 Series

# Test Sockets

## Probe Pin Test Sockets



Precision manufacturing ability

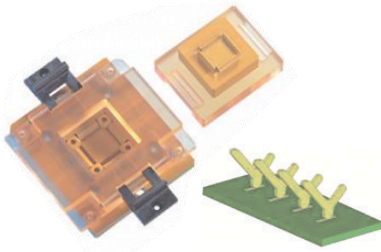


IC Socket for high pin count package

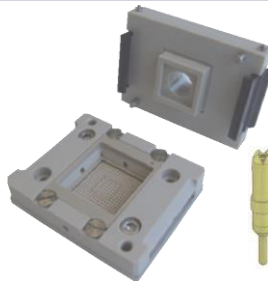


Clam Shell Type

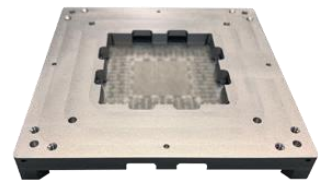
## High Frequency Test Sockets



Y - Contact



Short Probe Pin



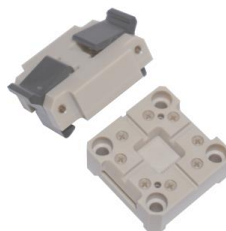
Coaxial Socket

## Kelvin Socket



Kelvin Socket

## Sensor Socket



Magnetic Sensor Socket

## FPC Test Sockets



FPC Test Socket

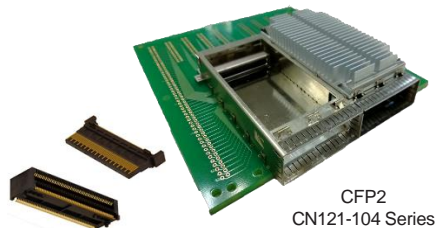
# High Speed Connectors

## CFP Series Connectors and Mechanical Units

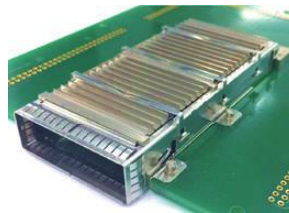
### CFP Multi-Source Agreement (MSA) Compliant

CFP Family Connector and Mechanical-Unit for 40 Gbps, 100Gbps, 200Gbps, & 400Gbps Ethernet.

#### CFP2 Connector & Mechanical-Unit

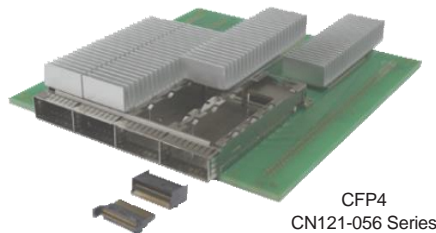


CFP2  
CN121-104 Series



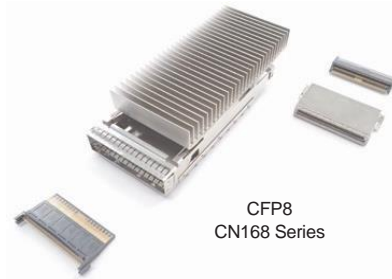
CFP2 Mid Mount Type  
CN121-104 Series

#### CFP4 Host & Mechanical-Unit



CFP4  
CN121-056 Series

#### CFP8 Host & Mechanical-Unit



CFP8  
CN168 Series

#### CFP Host & Mechanical-Unit



CFP  
CA009 Series

## Advanced MC Connector CN074, CN080 & CN084 Series

### PICMG AMC, 0-Compliant Advanced MC Connector

#### Advanced MC Connector for Advanced TCA



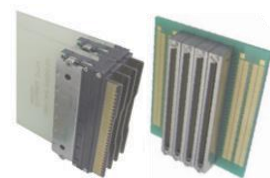
CN074 Series

#### Advanced MC Connector for Micro TCA



CN080 Series

#### MCH Plug Connector for Micro TCA



CN084 Series



# SFP/SFP-DD/QSFP/OSFP/QSFP-DD/OSFP-XD/ Host Connectors & Mechanical-Units

SFF Committee Compliant (MSA) Compliant

## OSFP Host & Mechanical-Unit



CN176 Series

## QSFP-DD Connector & Mechanical-Unit



CN174 Series

## SFP Connector & Mechanical-Unit



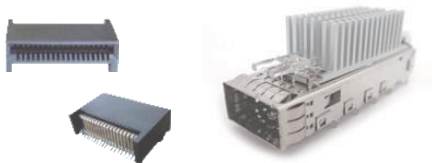
CN109S-020 Series

## SFP-DD Connector & Mechanical-Unit



CNU109S-040 Series

## QSFP Connector & Mechanical-Unit



CN120 Series

## OSFP-XD Connector



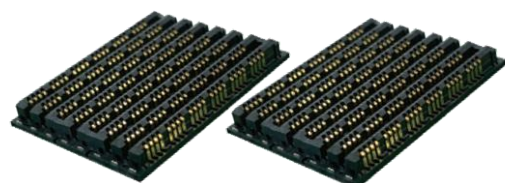
## Mezzanine Connector

### YGM-320 PAM4-56G



CN201

### YTM Series PAM4-112G



RC Series

# Connectors for In-Vehicle Equipment

230/314 Pin On Board Module Card Edge Connector



CN113 Series

FPC/FFC Connector Flip Lock Type 125°C Heat-resistant Type



HF601 Series

FPC/FFC Connector Non-ZIF Type 125°C Heat-resistant Type



HF513 Series

SD Card Connector for In-Vehicle One Action Lock Type



FPS009-4200 Series

Micro SD Card Connector for In-Vehicle One Action Lock Type



PJS008-4100 Series

SIM Card Connector for In-Vehicle One Action Lock Type



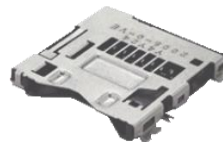
FM006-2340 Series

SD Card Connector for In-Vehicle Push-in/Push-out Type with Card Stay Detection Switch



FPS009-2920 Series

Micro SD Card Connector for In-Vehicle Push-in/Push-out Type 2-Beam Contact Installation



PJS008-2005

Automotive Camera Module Connector Coaxial / Differential



HC Series

Board to Board Connector Floating Type



Y-HFB Series

Coaxial Connector of Next Generation



Y-MFC Series

Differential Transmission Connector for High Speed Ethernet



Y-HDE Series

Y-Quad Connection Boxes



Y-Quad Series

FAKRA Coaxial Connector Series



HF106 Series

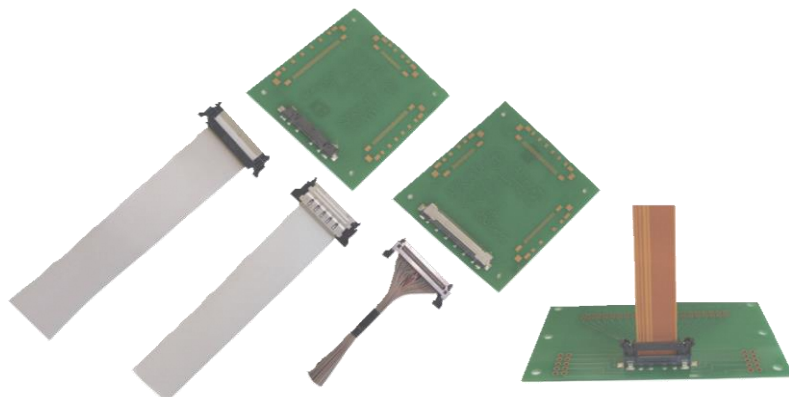
HSD Connector STD. Type



HF109 Series

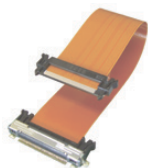


# High-Speed Connection System -YFLEX Cable & Connector-



## Connectors for High-Speed Transmission

### Plug (Side-Lock Type)



YFLEX®+HF507 Series



Discreat Adapter+HF507 Series



High-Speed FFC+HF507 Series

### Receptacle HF507 Series



HF507S-\*\*-01~04 Series



HF507-\*\*-06 Series



HF507S-\*\*-72 Series

### Receptacle (Flip-Lock Type) HF601 Series



HF601-22-03 Series



HF601-\*\*-12 Series



HF601-\*\*-02 Series

### FPC/FFC Connector with Lock Type



Center-Lock Type HF512 Series



FPC/FFC Connector Non-ZIF Type 125°C Heat-resistant Type  
HF513 Series

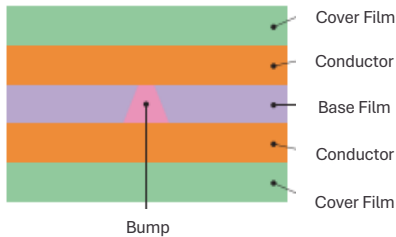
# Flexible Printed Circuit Board YFLEX

YFLEX is a flexible wiring board with an insulating base material of low-loss liquid crystal polymer (LCP).

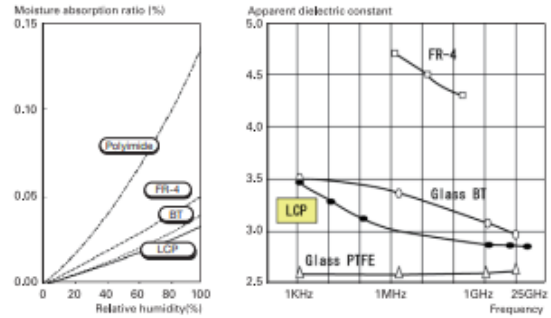
YFLEX can be used for 28- and 56- Gbps-class-high-speed transmission applications required in the 5G, telecommunications, and millimeter-wave radar markets and high-flexibility performance requirements.

## Basic Structure (Double – Layer)

### Structure of Double-Sided YFLEX



## Moisture Absorption & Dielectric Constant



## Material

Base Film	Liquid Crystal Polymer (Thickness 25- $\mu$ m, 50 $\mu$ m)
Conductor	Copper (Thickness: 9- $\mu$ m, 12- $\mu$ m, 18- $\mu$ m, 35- $\mu$ m)
Inter-Layer Connection (Conductive Bump)	Ag Conductive Paste
Cover Film	Thermosetting Resist, Photo Resist, Polyimide Film

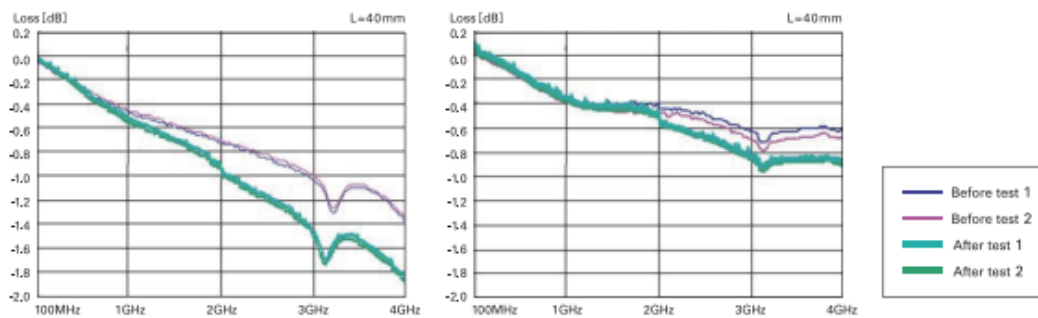
## Design Specs (Double-Layer)

Item	Standard	Minimum
Wire Width/ Space	60/60- $\mu$ m	25/35- $\mu$ m
Bump Diameter	250- $\mu$ m	150- $\mu$ m
Land Diameter	400- $\mu$ m	250- $\mu$ m
Maximum Current per Bump	100mA (bump: $\phi$ 250- $\mu$ m)	50mA (bump: $\phi$ 150- $\mu$ m)

## Test Data

Item	Condition	Result
Resistance Value per Bump	Room temperature, normal humidity	Within 6m-
Temperature Cycle Test	+55 C ~ +125 C 1,000cyc	Resistance Change: Within 10%
High Temperature Test	+85 C 1,000h	Resistance Change: Within 10%
Low Temperature Test	-40 C 1,000h	Resistance Change: Within 10%
High temperature constant humidity test	+85 C 90%RH 1,000h	Resistance Change: Within 10%
Ion migration test	+85 C 90%RH 60VDC 1,000h	No Change
Peeling test	90 peels	0.8 KN/m or Above
Solder resistance test	+260 C 20sec	No Change
Moisture absorption	+23 C 24 h	0.04% or Below
Thermal expansion coefficient	TMA method	Longitudinal: 17 ppm, Lateral: 17ppm
Dielectric constant	Bridge method *2	2.8
Dissipation factor	Bridge method *2	0.0025

## Comparison of Insertion Loss ( Before/ After Temperature- Humidity Cycling Test Using a Network Analyzer)

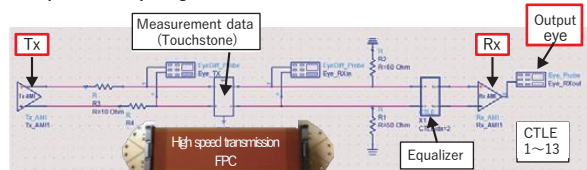


## High Speed Transmission FPC

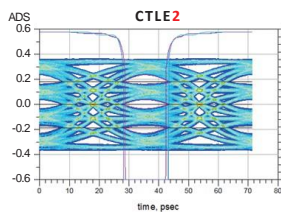


It is different from the actual machine due to draft circuit analysis.

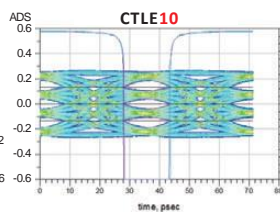
### 56Gbps PAM4 eye diagram



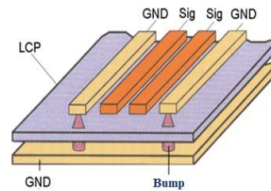
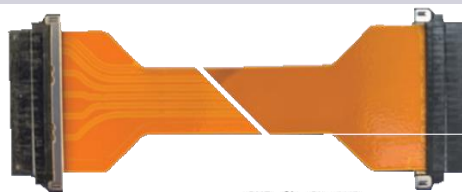
HF513 FPC L=100mm  
HF513 & High speed transmission FPC



HF513 FPC L=200mm  
HF513 & High speed transmission FPC



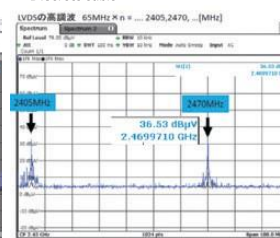
## Noise Resistant FPC



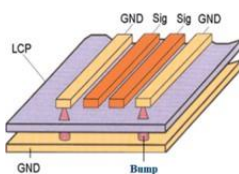
### Noise-resistant FPC(YFB Series)



### Discrete cable



## Slit FPC



## Oil Resistant FPC

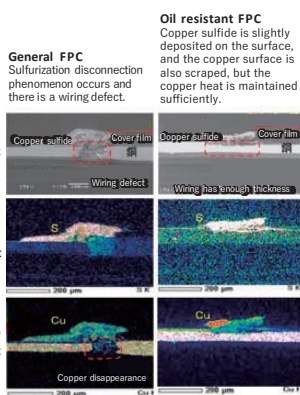


Cutting surface

Cross-sectional photograph after the test SEM photo

Element mapping photo Sulfur component

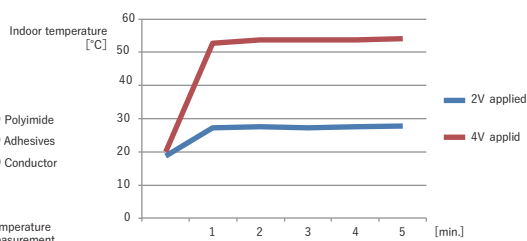
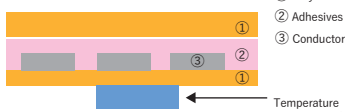
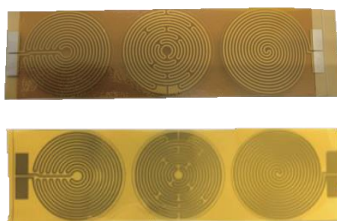
Element mapping photo Copper component



**Oil resistant FPC**  
Copper sulfide is slightly deposited on the surface, and the copper surface is also scraped, but the copper heat is maintained sufficiently.

**General FPC**  
Sulfurization disconnection phenomenon occurs and there is a wiring defect.

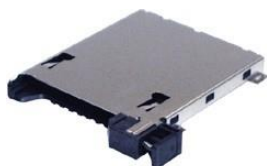
## Heater FPC



Sample no.	Indoor temperature	After 1 min.	After 2 min.	After 3 min.	After 4 min.	After 5 min.	Voltage (V)	Current (A)	Power (W)	Wiring width (mm)	Wiring length (mm)	Power density
2V applied	18.8	27.4	27.8	27.5	27.8	27.9	2.0	0.07	0.14	0.25	250	0.10
4V applied	20.1	52.9	53.7	53.7	53.9	54.2		0.14	0.56	0.25	250	0.40

# Memory Card Connectors

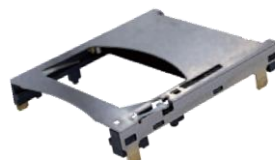
## SD Card Connectors FPS009 Series



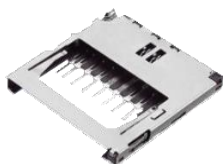
FPS009-4200 Series



FPS009-2920 Series



FPS009-2913 Series



FPS009-230\* Series



FPS009-2960 Series



FPS009-2940-0 Series

## Micro SD Card Connectors PJS008 Series



PJS008-2004 & 2005



PJS008-21\*0 Series



PJS008-4100 Series



PJS008U-3000-0



PJS008U-0002

## Micro SIM Card Connectors FUS006 Series



FUS006-8500 Series



FUS006-3210 Series

## SIM Card Connectors FMS Series



FMS006-3\*\*\* Series



FMS008-600\* Series



FMS006-234\* Series



FMS006-5\*\*\* Series

# Industrial & Communication System Connectors

## Push-Pull Circular Connector



Y-CIRC Series  
Y-CIRC P

## M12 Circular Connector



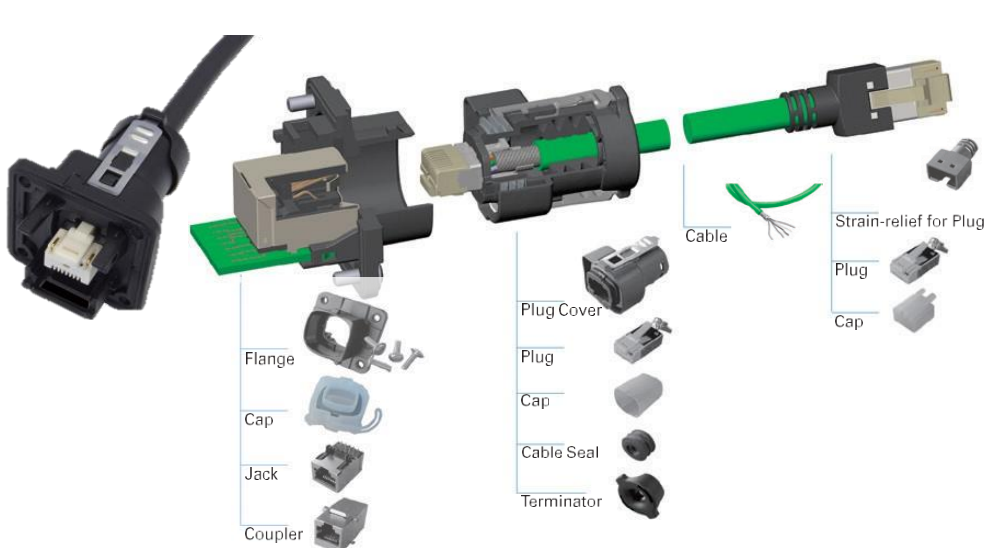
Overmold type

Y-CIRC Series  
Y-CIRC M

Push-pull lock type

Field assembly type

## Dust & Water-Proof Modular Connection System CN078 Series



Ultra-Low Profile RK45 Vertical Type  
CN078 Series



## Flat Cable Connector

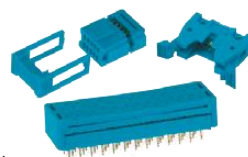


FA Series  
【2.54mm Pitch】

## MIL Standard Connector



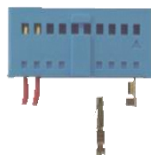
NF Series  
【1.27mm Pitch】



## Crimp Connector for Loose Wires



UF Series  
【2.54mm Pitch】



Contact 66

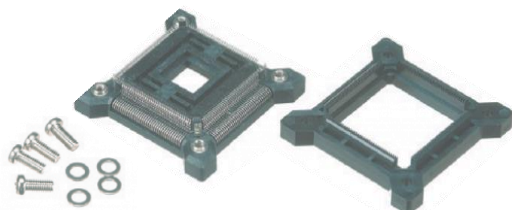
## Midplane B to B Connector for Burn-In Equipment 180°C Heat-resistant Type



CN136 Series

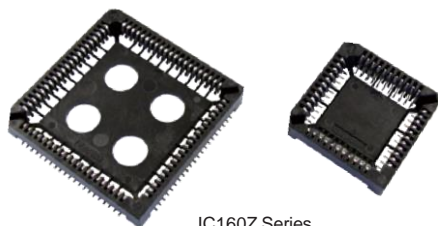
# IC Production Sockets

## QFP



IC149 Series

## PLCC



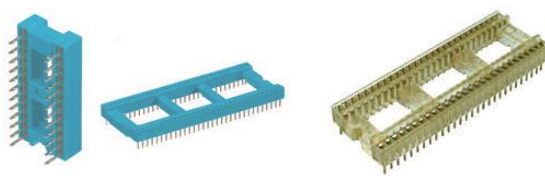
IC160Z Series

## SSDIP



IC326 Series

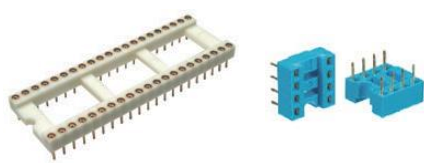
## SDIP



IC38 Series

IC310 Series

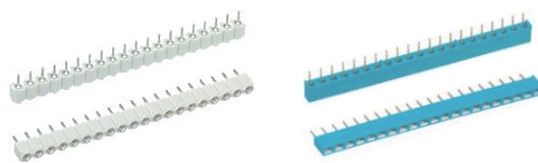
## DIP



IC26V Series

IC30 Series

## SIP



IC26V Series

IC30 Series

# Optical Products

## Tunable Laser Light Source Products

### Tunable Semiconductor Laser

#### KLS-201A Series



Supports 1 $\mu$ m / 1200nm / O / S / C / L / U band  
Narrow spectrum line width with excellent  
monochromaticity Low noise light source with low RIN

### Fixed-Wavelength Semiconductor Laser FLS & FLM



FLM



FLS

Any wavelength can be selected from 1180-1370nm /  
1400-1680nm Lineup of driver built-in type (FLS) and LD  
module unit (FLM)

## Optical Module Products

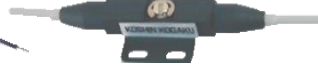
### 2port optical filter module



TFM / FC



WTFM / FC



FBPF

### 3port tunable filter module



TMUX

## Optical Thin Film Products

### For Visual Equipment Products



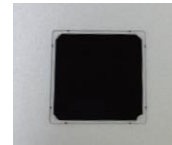
UV/IR Cut Filter



Dichroic Mirror



Cold Mirror

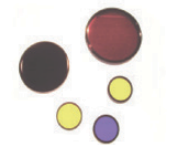


Low-reflection Film ND Filter

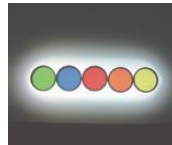
### For Analysis Products



Band-pass Filter

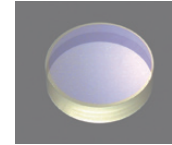


Excitation Filter

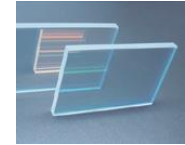


Fluorescence Filter

### For Industrial Products

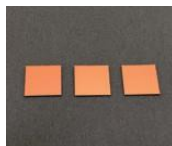


Laser Mirror Coating



High-power Laser Mirror

### For Optical Communication Products



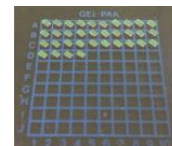
LIDAR, Spatial Sensing  
Filter



Anti-Reflection Coating



Band Pass Filter



Short Pass Filter



Polyimide Filter



# Locations & Contacts

## **YAMAICHI ELECTRONICS U.S.A., INC.**

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