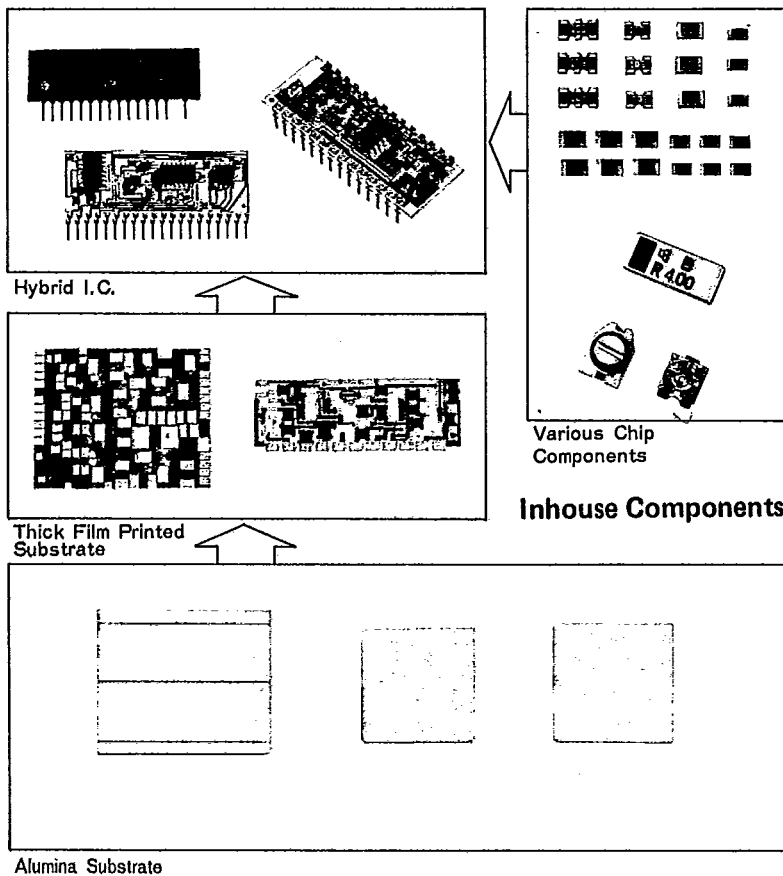
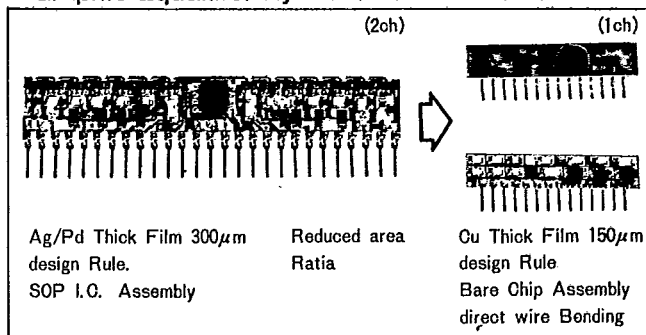


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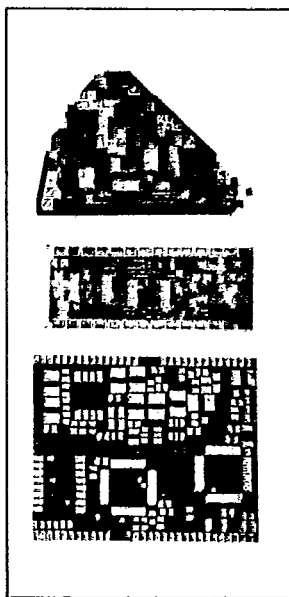
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**KYOCERA TOTAL HYBRID SYSTEM**

**Features of KYOCERA'S Total Hybrid System**

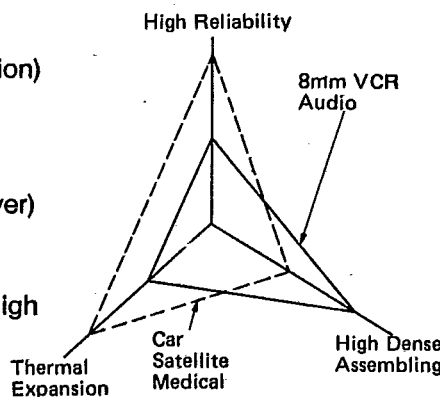
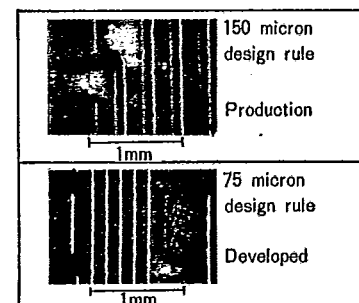
- 1) Kyocera meets its customers' needs by capitalizing on its leading manufacturing and engineering capabilities to deliver consistently manufactured, and high reliability products
- 2) Vertical integration allows Kyocera to supply its customers with products such as alumina substrates, thick film printing, surface mount components, and hybrid IC's at any stage in their manufacture.
- 3) This vertical integration of leading-edge technology for each component allows for miniaturization of the finished hybrid, and provides for excellent high frequency response, and high reliability.

**Graphic Equalizer Hybrid I.C for Car Audio**

**THICK FILM PRINTED SUBSTRATES**

Any type of thick film printed substrate can be achieved by utilizing Kyocera's own thick film manufacturing technology. Kyocera's advanced techniques allow for the printing of precious metals, such as Ag, Au, or Ag/Pd as well as nonprecious metals like Cu.


**Technology of Kyocera thick film printed substrate**

- 1) Laser cutting technology  
Dia 0.2mm hole  
 $\pm 0.25$ mm laser cutting tolerance
- 2) Printing technology  
150 micron design rule (pattern width and separation)  
0.2mm dia via hole metallization.  
Full printing of multi-layer (pad, resistor and glass-layer)
- 3) Trimming technology  
High precision trimming  
Low resistance trimming  
High power resistance trimming

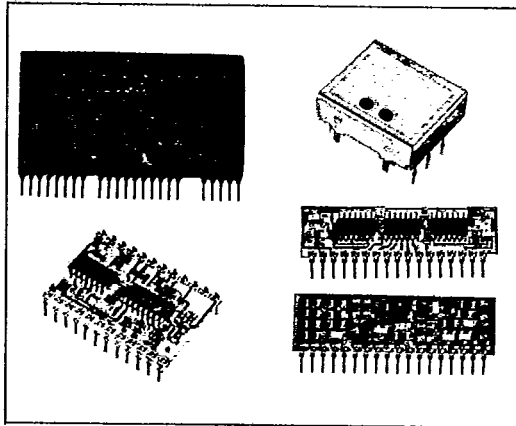
**Application**

**New Theme**


Kyocera's three years of experience in Cu paste technology has made higher conductor and component density possible with the following capabilities:

- 75 micron design rule
- pad printing on isolation glass layer

## HYBRID IC'S

Kyocera hybrid i.c.'s can respond to a wide range of market requirements by utilizing a variety of in house components, high assembly technology and high precision trimming technology.



### ■ Kyocera Hybrid IC Technology

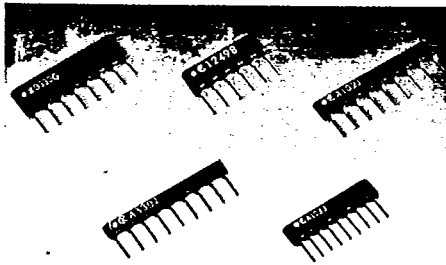
- 1) Substrate • Ceramic thick film substrate (Ag/Pd, Cu) Glass epoxy, Phenol substrate
- 2) Mounting Technology • Chip-on-board (direct wire bonding on copper high speed mounting)
- 3) Trimming Technology • Pre-function trimming circuit by laser trimming (trimming of voltage, trimming of frequency)
- 4) Test Technology • High speed screening by hi-rel inner tester

### ■ Application

- 1) VCR, TV • Color, Brightness control, Video camera control module
- 2) Car Audio • Noise-cancellor/multiplexor, Graphic Equalizer
- 3) Car Engine Room • Various engine control circuit
- 4) Industrial • Computer peripheral, Telecommunication equipment, VCO (voltage control oscillator)

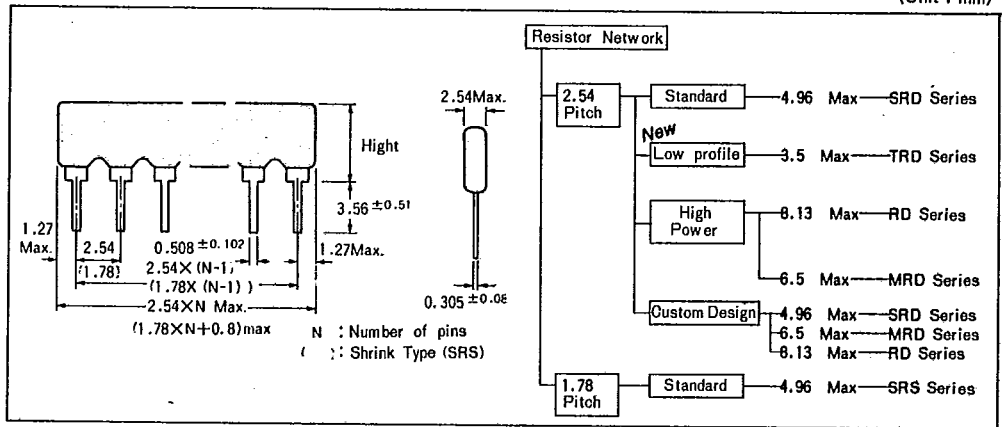
## THICK FILM RESISTOR NETWORKS (RD, MRD, SRD, TRD, SRS SERIES)

This series of conformal coated SIP resistor networks utilizes high reliability printed thick film resistors, laser trimmed to precise values.



### ■ Dimensions

(Unit : mm)



### ■ Nomenclature

**SRD SA 09 PC 104 J**  
 ① ② ③ ④ ⑤ ⑥

- ① : Thick Film Resistor Network Profile ("SRD series")
- ② : Circuit Type (SA Circuit)
- ③ : Number of Pins (9 Pins)

- ④ : Pitch of Pins (P : 2.54mm, O : Center lead) (S : 1.78mm)
- ⑤ : Resistance (3 digit Coading (Unit : Ω))
- ⑥ : Tolerance (J : ±5%)

### ■ Specifications

ITEM	RATING
Rated power	125mW/element (at 70°C), 25mW/element (RN) 125mW X Number of elements/package (at 70°C)
Maximum working voltage	150V
Nominal resistance range	22Ω to 1MΩ (Option of sip : 10 to 20Ω, Option of dip : 1 to 2.2MΩ)
Resistance tolerance	F : ±1% (51Ω min.), G : ±2% (22Ω min.), J : ±5%
Working temperature range	-55°C to +125°C
Standard pin configuration	Sip : 4 to 14 pins

### ■ Standard Circuit Schematic

