Hybrico

H SERIES

HYBRID THICK FILM CIRCUIT MODULES

- *Combines thick-film, SMD and chip-and-wire Technology for optimum price and reliability*
- *Double-sided, multilayer construction with via-holes and components on both sides*
- *Function trimming of circuit performance*
- *Manufactured to customer specification*
- *The quality system corresponds to ISO9001*

Electrical Data

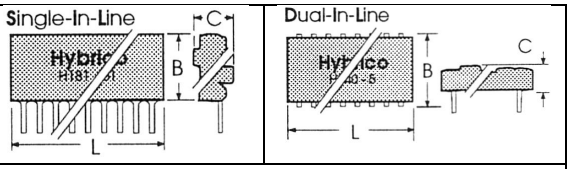
Printed resistors			**Notes**
Power rating at 70°C	Watt	3.0	Area of resistor equivalent to IEC 2220 size
Resistive range	Ohm	0.5 – 10G	Area of resistor equivalent to IEC 0805 size
Limiting element voltage	Volt	15K	Area of resistor equivalent to IEC 2220 size
TCR		50	Only for resistors from 1K to 500K ohm, otherwise 100
Tolerance	%	5.0 – 0.25	

Substrate and insulation layers			**Notes**
Dielectric strength	Volt/mm	800	
Insulation resistance	Ohm	100G	Minimum value. Higher value on request
Thermal conductivity	Watt/mm°C	0.017	

Finished circuit			**Notes**
Attached components			Consult manufacturers for data
Operating temperature range	°C	-55 to 125	Special circuit to 200°C

Physical Data

Dimensions (mm) and Weight (g)							**Number of**		Single-In-Line / Dual-In-Line
Type	L		B		C	Wt	Termi-nals	Lay-ers	
	Max	Min	Max	Min	Min	Min	Max	Max	
SIL	90	5.0	35	3.0	1.1	1.0	70	20	
DIL	90	5.0	90	5.0	2.5	2.0	140	20	Standard terminal spacing is 2.54 mm. 1.27 is available



Construction
The interconnections are screen printed on the substrate and fired at 850 °C. The resistors are laser trimmed and additional components, IC's, and termination are placed on the substrate and soldered or glued. Wire bonding is done and the IC's are globe topped. For environmental protection the circuit can be encapsulated in resin.

Terminations
Tinned stamped brass contacts

Marking
The standard marking for the circuit are : Hybrico, the type number and the batch number.

Solvent Resistance
Circuit and marking withstand all standard industrial cleaning fluids

Flammability

The module will not burn or emit particles

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Performance Data

		Maximum	Typical	Notes
Load life stability	%	0.2	0.1	1000 hours at 70°C at rated power
Load life stability	%	0.3	0.2	Shelf life one year
Long-term damp heat	%	0.3	0.1	40°C/93°RH/56 days
Temperature rapid change	%	0.2	0.1	100 cycles -55 to 125°C
Resistance to solder heat	%	0.2	0.1	260°C in 10seconds 3mm from the body
Vibration	%	No drift	No drift	20G in 2hours

All other parameters			**Notes**
			Consult component manufacturers for data

Application Notes

By functional trimming of the hybrid module a close tolerance of a specific parameter is obtained. Please consult the data sheet of our T-series for further information features.

With special design and choice of materials frequency range from dc up to more than 1GHz can be achieved.

If small dimensions are required, dense packing is possible, on condition that larger drift of the module is accepted

Please consult the data sheet of our M-series for further information on these features.

The thermal conductivity of ceramic substrates is 60 times higher than printed board material. This will ensure the optimum thermal matching between the components in the module.

In higher power applications glueing the hybrid module directly to a heat sink will provide a strong cooling of IC's and provide possibilities for power rating of resistors above 50 watt..

Circuit simulation

To ensure the optimum choice of component values, tolerances, Hybrico has the capability to run simulations of critical circuits.

The simulation can also involve thermal properties.

Testing

All circuits are 100% tested for all relevant functions either on pc-based test system or by specially made go no-go test boxes

Quality

All procedures from design to final inspection and shipment are described and monitored. The quality system correspond to ISO 9001

Packaging

The modules are mounted on anti-static foam and packed in cardboard boxes. Quantity per box is dependent on the dimensions of the circuit.

Any quantity can be ordered.

Ordering procedure

Before production orders can be entered, development and prototypes must be ordered. To quote, we need your circuit diagram, piece part list, pin-out, dimensions of the module and test specifications.

When reordering, please specify the H type number, your module has been given

Hybrico A/S. A C. Hansensvej 10
DK-3600 Frederikssund. Denmark
☏ : +45 47313477 🖷 : +45 47383777
@: info@hybrico.dk Web: www.hybrico.dk