

# LTC 1010

## APPLICATION CARD No. 1



### Metallic and thick-film resistors

#### Measurement capabilities

- Carbon, metallic, wire, printed or sputtered resistors
- Leaded, chip or array size from 0201
- Value range from 0.01 W to 100 W (optionally up to 10 MW)
- Max. power load 12 VA (can be modified)



#### List of elementary defects detected by LTC 1010

- Poor connection between lead and end-cap
- Poor connection between end-cap and resistive layer
- Unacceptable quality of input material (e.g., material purity)
- Material inhomogeneities and cracks
- Spiraling defects
- Post-trimming groove dendrites



#### Benefits of using LTC 1010

- 100% production assessment test (25 measurements per sec.)
- Development of advanced components
- Quality testing e.g. for automotive, military
- Selection of components for audio applications
- Easy to go with your industrial automation (GPIB and I/O handler integrated)

#### Location of LTC 1010 in production process

- During final stage of manufacturing prior to taping and packaging
- AQL, SPC checks
- Incoming inspection
- Onboard tests
- Test house

## Our assistance

- Step-by-step introduction
- Development and production of testing tools & machinery
- Flexible modification of LTC 1010 to satisfy all customers' needs
- Sample laboratory tests free of cost
- Reliability confirmation via accelerated life tests at VS Technology lab



**address:**

VS Technology, Ltd.  
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# LTC 1010

## APPLICATION CARD No. 2



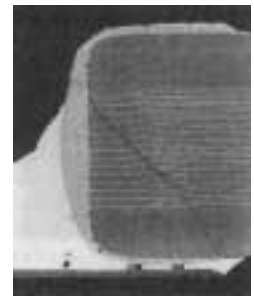
### Ceramic capacitors

#### Measurement capabilities

- MLCC and other ceramic capacitors
- Leaded, chips or array size from 0201
- Capacity range from 0.01 pF upwards
- Max. power load 12 VA (can be modified)

#### List of elementary defects detected by LTC 1010

- Poor contact between electrode and lead
- Iron ion induced contamination of dielectric layers
- Mechanical instability caused by cracks in the dielectric
- Poor quality of ceramics substrate
- Longitudinal gaps between layers in MLCC
- Cracks in MLCC conductive paths



#### Benefits of using LTC 1010

- 100% production assessment test (25 measurements per sec.)
- Development of advanced components
- Quality testing e.g. for automotive, military
- Selection of components for audio applications
- Easy to go with Your industrial automation (GPIB and I/O handler integrated)

#### Location of LTC 1010 in production process

- During final stage of manufacturing prior to taping and packaging
- AQL, SPC checks
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# LTC 1010

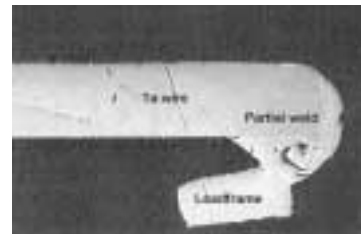
## APPLICATION CARD No. 3



### Tantalum and Niobium capacitors

#### Measurement capabilities

- Tantalum, niobium and solid aluminum capacitors
- Conductive polymer and  $\text{MnO}_2$  cathode, multinode design
- Chips, drops or leaded
- Capacity range from 1 pF to 10 mF
- Max. power load 12 VA (can be modified)



#### List of elementary defects detected by LTC 1010

- Quality of anode to lead-in bonds
- Degree of anode body delamination from lead-frame pocket
- Performance of cathode layers
- Successful prediction of post-stress failures
- Poor interface between graphite and silver layers
- Sintering efficiency
- Anode mechanical defects like cracks, low crush



#### Benefits of using LTC 1010

- 100% production assessment test (25 measurements per sec.)
- Development of advanced components
- Quality testing e.g. for automotive, military
- Selection of components for audio applications
- Easy to go with your industrial automation (GPIB and I/O handler integrated)

#### Location of LTC 1010 in production process

- During final testing prior to taping and packaging, after leads formation
- AQL, SPC checks
- Incoming inspection
- Onboard tests
- Test house

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# LTC 1010

## APPLICATION CARD No. 4



### Foil capacitors

#### Measurement capabilities

- Foil or plate based capacitors
- Conductive polymer and  $MnO_2$  cathode, electrolytes
- Chips, drops or leaded
- Capacity range from 1 pF to 100 mF
- Max. power load 12 VA (can be modified)



#### List of elementary defects detected by LTC 1010

- Poor contact between foil and lead-in wire
- Defects in dielectrics
- Quality of base material
- Electrolyte checks
- Assembly faults



#### Benefits of using LTC 1010

- 100% production assessment test (25 measurements per sec.)
- Development of advanced components
- Quality testing e.g. for automotive, military
- Selection of components for audio applications
- Easy to go with Your industrial automation (GPIB and I/O handler integrated)

#### Location of LTC 1010 in production process

- During final testing prior to taping and packaging
- AQL, SPC checks
- Incoming inspection
- Onboard tests
- Test house

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# LTC 1010

## APPLICATION CARD No. 5



### Quality and reliability testing of interconnections

#### Measurement capabilities

- Relays and relay arrays
- Switches
- Circuit breakers
- Fuse checks
- Bulb contact checks
- Connectors
- Max. power load 12 VA (can be modified)



#### List of elementary defects detected by LTC 1010

- Poor connection between switching contacts
- Quality and reliability of contact plating
- Insufficient contact pressure
- Contact interface effects (e.g., between spot-welded or pressed-in parts)
- Corrosion status of contacts

#### Benefits of using LTC 1010

- 100% production assessment test (25 measurements per sec.)
- Development of advanced components
- Quality testing e.g. for automotive, military
- Easy to go with Your industrial automation (GPIB and I/O handler integrated)



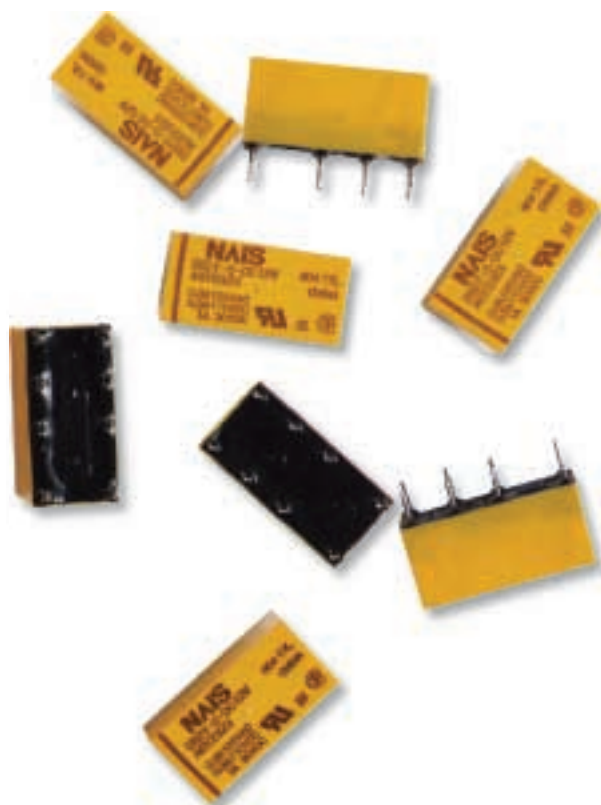
#### Location of LTC 1010 in production process

- During final testing prior to taping and packaging
- AQL, SPC checks
- Incoming inspection
- Test house



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# LTC 1010

## APPLICATION CARD No. 6



### Layer potentiometers and trimmers

#### Measurement capabilities

- Potentiometers, trimmers
- Layer: Wire, Polymer, Carbon ...
- SMD, board-on, panel devices
- Value range from 0.01 W to 100 W (optionally up to 10 MW)
- Max. power load 12 VA (can be modified)



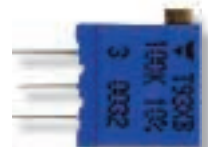
#### List of elementary defects detected by LTC 1010

- Inhomogeneities in resistive layers
- Cracks in resistor layers
- Wiper malfunction
- Poor connection between lead and resistive layer
- Mechanical grooves under wiper



#### Benefits of using LTC 1010

- 100% production assessment test (25 measurements per sec.)
- Development of advanced components
- Quality testing e.g. for automotive, military
- Easy to go with Your industrial automation (GPIB and I/O handler integrated)



#### Location of LTC 1010 in production process

- During final testing prior to taping and packaging
- AQL, SPC checks
- Incoming inspection
- Onboard tests
- Test house

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# LTC 1010

## APPLICATION CARD No. 7



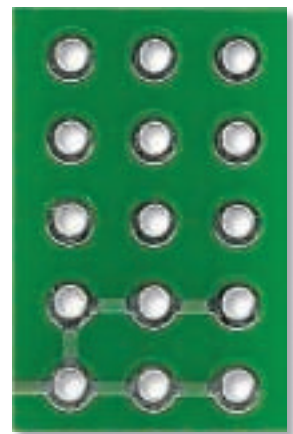
### Printed Circuit Board testing

#### Measurement capabilities

- Single or multi layer PCB
- Resistance from 0.01 W to 100 W (optionally up to 10 MW)
- Max. power load 12 VA (can be modified)

#### List of elementary defects detected by LTC 1010

- Microcracks in conductive patterns
- Poor quality of grummets or bushings
- Detection of potentially defective bonds in multilayer PCB's
- Interconnection performance of soldered-in connectors
- Detection of empty or cold soldering

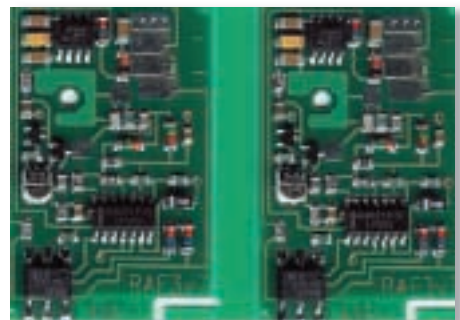


#### Benefits of using LTC 1010

- 100% production assessment test (25 measurements per sec.)
- Development of advanced components
- Quality testing e.g. for automotive, military
- Easy to go with Your industrial automation (GPIB and I/O handler integrated)

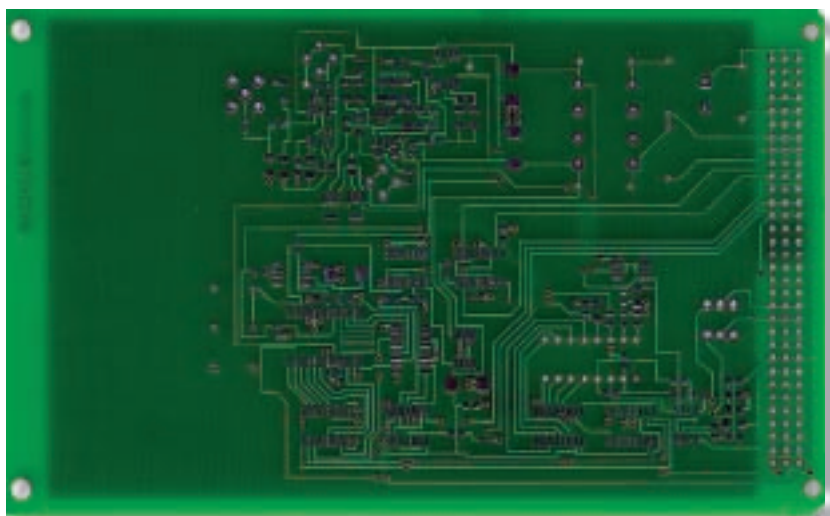
#### Location of LTC 1010 in production process

- During final testing prior to mounting devices
- AQL, SPC checks
- Incoming inspection
- Test house



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# LTC 1010

## APPLICATION CARD No. 8



### Unipolar, semiconductor devices

#### Measurement capabilities

- diodes, transistors, solar cells, LED's .....
- SMD, leaded
- Resistance from 0.01 W to 100 W (optionally up to 10 MW)
- DC bias up to 10 V (can be modified)
- Max. power load 12 VA (can be modified)



#### List of elementary defects detected by LTC 1010

- Cracks in the substrate
- Batch the variances

#### Benefits of using LTC 1010

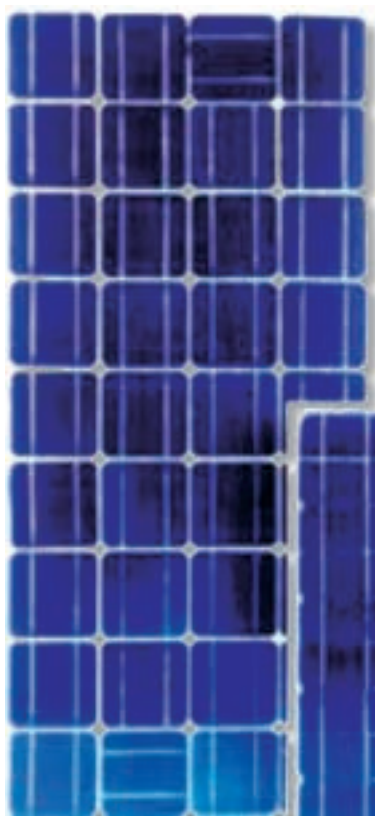
- 100% production assessment test (25 measurements per sec.)
- Development of advanced components
- Quality testing e.g. for automotive, military
- Low noise products
- Easy to go with Your industrial automation (GPIB and I/O handler integrated)

#### Location of LTC 1010 in production process

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