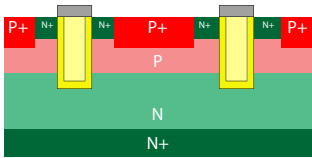


# Measuring Gate Resistance & Capacitance



Faults in the processing of the gate region on a Power MOSFET may cause increased gate resistance leading to device failures in the field.

The ipTEST Rg test generator performs an AC test to measure the gate resistance and capacitance of MOSFET and IGBT devices.

## ipTEST Rg Features

- Accurate measurement of gate resistance and capacitance
- Fast DSP analysis of current and voltage waveforms
- Open / Short / Kelvin test
- Drain-source shorting relay
- Rapid test time, typically <25ms
- Dual-device application adaptor available
- 8 additional relay drive outputs
- Compact dimensions

## Key Specs

Frequency:	0.9766MHz
Gate Voltage:	2V pk-pk Max
Drain Bias:	±30V Max
Gate Bias:	Gate Bias: ± 10V

## ipTEST Rg Test Generator

The ipTEST stand-alone Rg generator is designed to measure MOSFET and IGBT Gate resistance and capacitance.

The generator applies a programmable AC voltage up to 2V pk-pk at a nominal frequency of 1MHz across the DUT gate-source junction and resolves the resulting current and phase angle into the DUT gate resistance and capacitance.

Designed to be small and compact to take minimal space on a rotary handler, the generator features a programmable Gate bias of up to ±10V and Drain bias up to ±30V.

Go/no-go Kelvin tests are also performed by the Rg generator as well as provision for a low-capacitance adaptor for testing dual devices in a single package.

The fastest power discrete semiconductor testers in the world

# ipTEST Rg

## Gate Resistance

### Test Generator



### Why Measure Gate Resistance?

Faults in the processing of the gate on a Power MOSFET may cause increased gate resistance leading to device failures in the field caused by slow switching and consequent overheating.

Detecting these gate failures is not possible using DC test equipment as the capacitive gate is a high impedance to DC signals.

### Principle of Operation

ipTEST uses the fast digital signal processing (DSP) techniques to produce the AC test waveforms, measure and calculate the test results in less than a millisecond.

The ipTEST Rg test generator measures the gate resistance and gate capacitance of insulated gate semiconductor devices (FET, IGBT) by applying an AC voltage at a nominal frequency of 1MHz. It then measures the current, voltage and phase angle to resolve the gate resistance  $R_g$  and the gate capacitance  $C_g$ .

Capacitance measurement fixtures can be purchased for use with the Rg Generator which provide a method for testing the  $C_{iss}$ ,  $C_{oss}$  and  $C_{rss}$  parameters of a MOSFET.

The built-in intelligence also enables a calibration/compensation process, where the parasitic impedance of the contacts and test leads to the handler are "nulled" from the measurement giving improved accuracy.

### ipTEST Mostrak M2 Test System

The Rg test generator is part of the Mostrak M2 test system. The fastest and most productive power discrete semiconductor testers on the market.



High Voltage  
Off-state tests

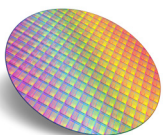
Low Voltage  
On-state tests

Dynamic  
Switching tests

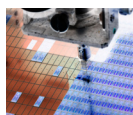
Avalanche  
UIS tests

Gate Resistance  
& Capacitance

Thermal  
Die-Attach tests



Wafer



Die



Discrete



Module

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