

The BA2531 pulse controller performs the biasing of a transistor Drain in Pulsed RF device Operating Life Test application.

It can operate either as an "Efuse" function, using constant Drain voltage while the current is pulsed by the gate bias, or as a "one level" pulse generator, by switching alternatively the ground and the power supply voltage.

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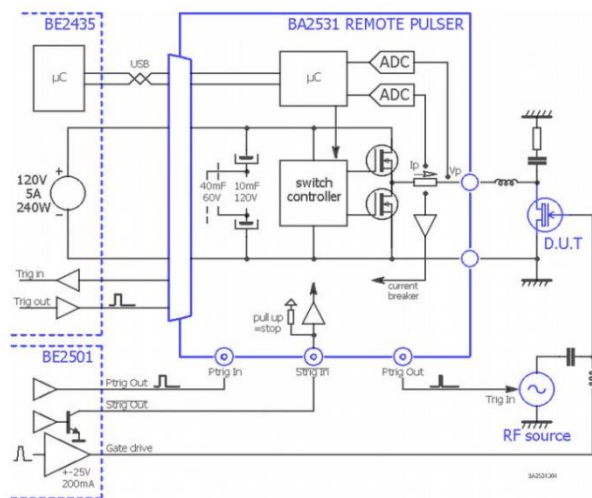
Main Features:

- up to 120 V, 30 A Pulse controller.
- Large current pulses even at low frequency.
- Large Capacity included
- Located close to device under test (DUT)
- Output voltage and current measurement sampling is synchronized to pulse trigger
- Ultra-fast stop in performed by a programmable over current breaker and also by a start/stop trigger.

System description

The BA2531 pulse controller needs a DC power voltage source, an USB host controller and a master trigger generator.

All these 3 features are offered with the Bilt system by using BE2435 power supply module and BE2501 pulsed source module for gate biasing and overall synchronization.



Pulse specification

Parameters	Conditions/Comments	Min	Max
Duty cycle	Any level, according to power limits	0%	100%
Frequency		0.1 Hz	100KHz
Pulse width	$I_{max} = 30A$	1µs	10s
Timing resolution		20ns	
Pulse settling time	0% to 95%, no load		100ns

System Specifications

Operating area

Parameters	Conditions/Comments	Max 60V setup	Max 120V setup
maximum input voltage		60V	120V
Storage Capacitor		40mF	10mF
Overall ESR from capacitor to output contacts		35mΩ	50mΩ
Voltage drop during pulse, related to ESR	30A	1V	1.5V
Voltage drop rate during pulse, related to capacitor	30A	0.75V/ms	3V/ms
Pulse current		30A	
Average current		5A	
RMS current		10A	
Pulsed Power		3000W	
DC Power		220W	

Pulse specification

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Frequency		0,1Hz	100KHz
Pulse Width	I _{max} = 30A	1μs	10s
Timing Resolution		20ns	
Pulse Settling time	0% to 95%, no load		100ms

Measurement specification^(*)

Parameters	Conditions/Comments	Voltage	Current
Measurement range		-5V / 125V	-1A / 33A
ADC Resolution	16 bits	2.1mV	550μA
Settling time	99.9%	0.5μs	0.5μs
Resolution of the sampling time		20ns	20ns
Absolute accuracy	Offset + gain	20mV + 0.1%	20mA + 0.3%

(*) Measurement is performed only when using the BE2435 or BE2436 power supply and driver module.

System Specifications

Trigger specification

Signal	Level specification	Purpose
Ptrig In	50Ω input / 1,5V _{th} / 5V _{max} / rising edge	pulse synchronisation input, initiates each pulse period
Ptrig out	50Ω output / 5V level	RF source pulse synchro or actual pulse output tracking
Strig In	10KΩ pull up input / 1,5V _{th} / 5V _{max}	Stop & Start synchro: Low=enable / High disable
Strig Out	50Ω output / 5V level	RF source on/off control

Current breaker specification

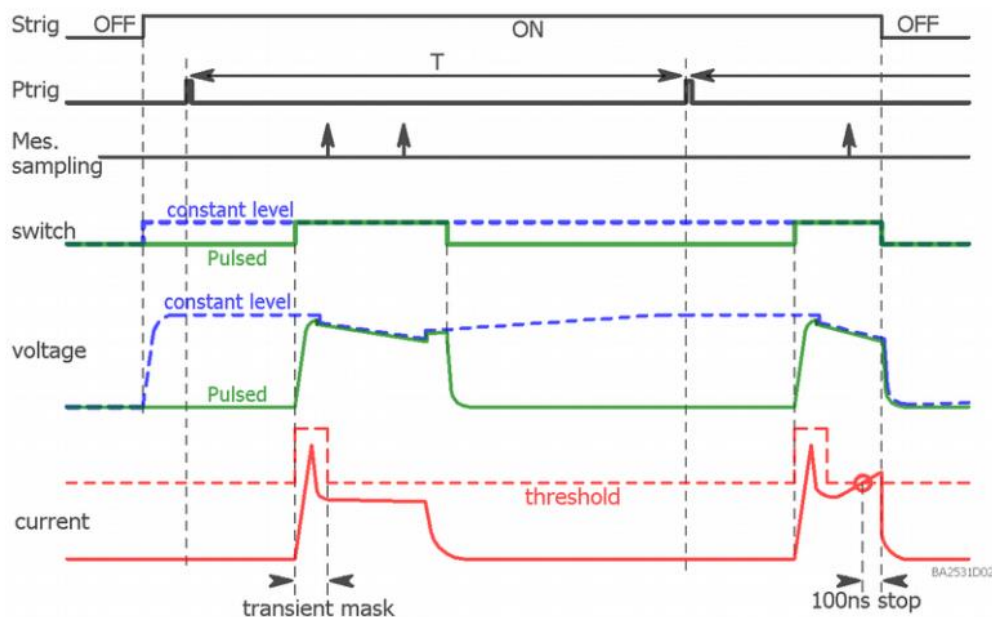
Parameters	Conditions/Comments	Value
Threshold setting range		1A / 33A
Threshold setting resolution		12 bits, 10mA
Threshold setting accuracy	Offset + % of current	100mA + 0.3%
Response time	Current step / threshold + 20%	100ns

The Strig trigger performs overall synchronization of start, stop, and emergency stop.

Using either constant level or pulsed mode, the Ptrig signal performs overall synchronization of the power pulse, the measurement sampling time, and also the transient mask.

The transient mask allows the user to define a larger current breaker level at the time the voltage and/or the current is switched on. Then, the current breaker level after complete settling can be set closer to the expected level.

System Specifications



Reliability with large capacitors and random interruptions of the mains

As soon as the BE2501 gate driver is in default state, including mains interruption at run-time, the OFF state of the Strig signal will force the Drain pulser to shutdown.

Both BA2531 remote pulser and BE2431 voltage source module are designed to deal with the energy stored into the large capacitor, and the Drain will be definitively out of voltage as soon as an emergency stop is processed.

Therefore, the system operates safely without requiring any inverter for the mains continuity

Mechanical outlines and connections

outline dimensions: width 116mm high 63mm length 174mm.

Front panel:

- power output: Phoenix MSTB serie 2 terminal screw thread 5.08mm pitch using up to 2.5 mm 2 wires
- 2 Led indicators: Green Led = output on/off, Red led = over_current latch

Back panel

- SUBD15 / DC power input and USB control (including 5V internal circuitry biasing)
- 4 SMB coaxial connectors Strig In, Strig Out, Ptrig In, Ptrig Out.
- Led indicator: Green Led = internal power supply

System Specifications

Related products

BE2430	Voltage DC source 120V 5A
BE2501	Pulsed source $\pm 25V$ 200mA
PN1602	Product Note: RF device operating life test

Standards, Calibration, Warranty and Maintenance

Bilt system is compliant with the applicable European Directives and holds the CE mark.

Any iTest product comes with a two-year parts and labour guarantee and a calibration certificate if applicable. A telephone support service is also available for the same period.

Our calibration laboratory performs according to ISO/CEI 17025 "General requirements for the competence of testing and calibration laboratories". All measurements are traceable to the International System of Unit.

The recommended calibration interval of this product is 2 year.

On request, Itest can proceed to scheduled calibration (in our workshop or at the customer's site).

Maintenance can also be performed on-site or in our workshop.

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