

## RF device Operating Life Test

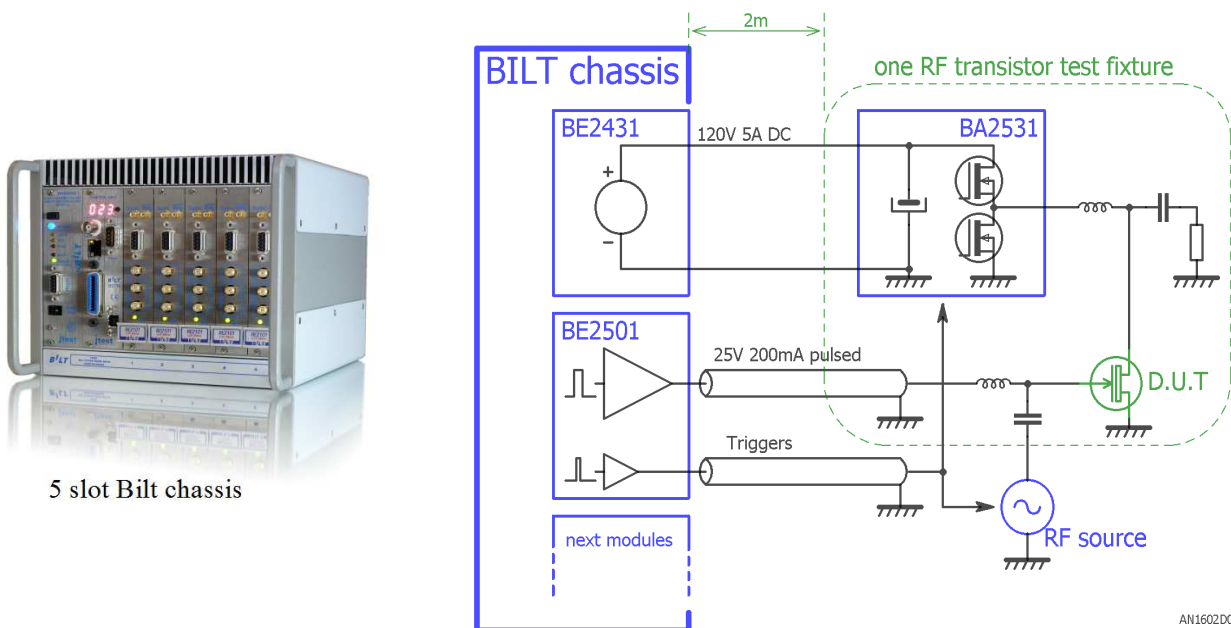
The Bilt system offers a highly integrated and low cost solution for biasing RF transistors in any pulsed mode application. The pulse can be performed by switching either the Gate, the Drain or/and the RF signal.

The pulse sequence is fully programmable using a time resolution of 100ns. Drain and Gate are monitored synchronously for voltage and current measurement.

The BE2531 drain pulse controller, located close to the device and fitted with a very large capacitor, delivers large current pulses at low frequency while maintaining a small voltage drop.

### Safe operation is guaranteed by:

- A very fast Drain current breaker, also called "Efuse" function
- A Drain DC power supply designed to drive safely a very large capacitor value and a switching load.
- A fast trigger performs the shutdown of the Drain before any gate bias interruption.



AN1602D01

One RF transistor biasing requires 2 modules plugged inside the Bilt chassis:

- BE2431 - The Drain power supply, up to 240W, is a 2 slots wide module.
- BE2501 - The Gate source, delivers both the pulsed signal and triggers for synchronization.

The next module slots inside the Bilt Chassis are available for either:

- building a multichannel test bench
- adding additional modules for devices requiring more than one Drain and one gate signal.
- adding additional functions: RF control module, thermal control module, auxiliary DC source...

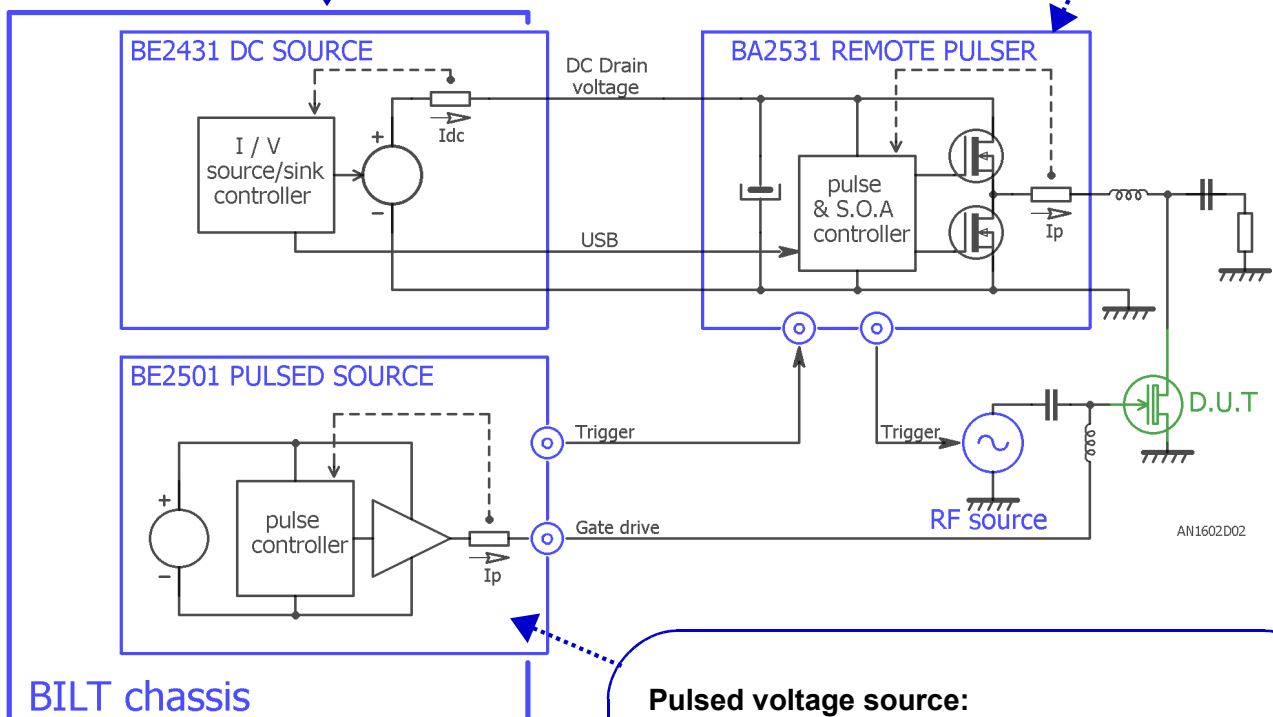
**Focus on the Bilt system solution:**

**BE2431 isolated DC voltage source:**

- ▶ up to 120V or 5A
- ▶ 18 bit programming resolution
- ▶ stable for any load capacitor
- ▶ 240W source and 25W sink capability
- ▶ remote sense voltage read back
- ▶ programmable DC current compliance
- ▶ USB interface to the remote pulser

**BA2531 remote pulse controller**

- ▶ 2 fast power switches: pulse level & ground
- ▶ up to 120V 30A pulsed, 5A dc
- ▶ large storage capacitor rated 60V or 120V
- ▶ 100ns smart ultra fast current breaker
- ▶ 100ns resolution programmable timing
- ▶ 1µs pulse measurement settling time
- ▶ 16 bit voltage and current read-back sampler



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**Software features:**

- ▶ Driver for EasyStress software, to perform any multichannel and user configurable test bench.
- ▶ Complete free software package provided, including a turnkey PC software and NI Labview® drivers

**Pulsed voltage source:**

- ▶ Up to ±25V ±200mA
- ▶ Linear power amplifier, 50Ω output impedance
- ▶ 2 levels: quiescent & pulsed
- ▶ 20 ns resolution programmable timing
- ▶ 0,5µs pulse measurement settling time
- ▶ 16 bit voltage and current read-back sampler
- ▶ 2 current ranges: ±5mA and ±200mA
- ▶ triggers in/out for overall synchronization

**Pulse control and monitoring:**

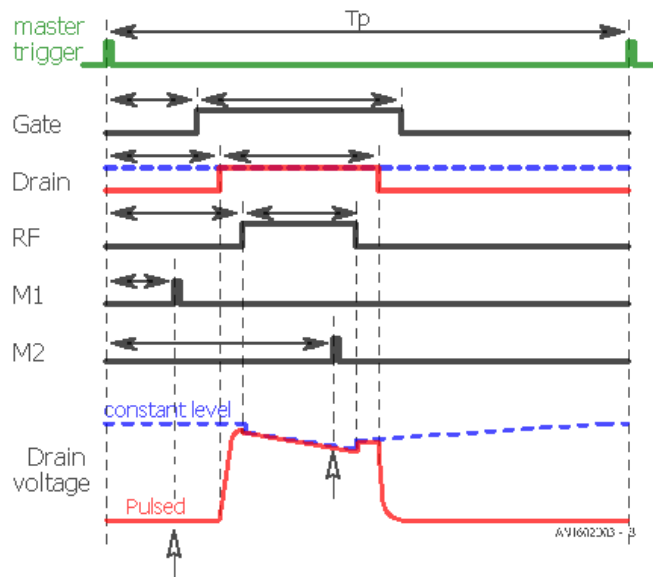
The switching operation is defined by programming for each signal:

- pulse enable or constant level
- pulse position
- pulse length

Then, according to the 2 sampling time positions M1 & M2, measurements are proceeded continuously for both current & voltage, Drain & gate.

These 8 channel measurements are both available for displaying at run-time and memorization of the drift throughout the test.

The example shows sampling M1 before the pulse (fixed by design) and M2 inside the pulse (fixed by user).



**Working point area**

The actual drain working point limits are interdependent, as illustrated on the table below by 5 examples.

The critical value can be either:

**F** the Switching frequency, **D** the drain current duty cycle, **Ton** the pulse drain current length, or **Ip** the pulse drain current level, **Vd** the drain voltage level, **Pdc** the average drain power.

When power limits are reached, the resulting drain voltage **Vdrop** is at its maximum.

	timing F,D,Ton	Ip	Vd <sup>(2)</sup>	Pdc	Vdrop <sup>(1)</sup>
<b>Largest current and power pulse</b>	1 / 120Hz * 12% = 1ms	30A	60V	220W	1,8V
<b>High voltage &amp; high current</b>	1 / 600Hz * 6% = 100µs	30A	120V	220W	1,8V
<b>Largest DC &amp; RMS current</b>	1 / 250Hz * 25% = 1ms	20A	45V	220W	1,2V
<b>shortest pulse, highest frequency</b>	1 / 100KHz * 20% = 2µs	9A	120V	220W	0,5V
<b>minimum current level for Efuse protection</b>	1 / 10KHz * 10% = 10µs	0,3A	120V	3,6W	0

(1) Vdrop is a maximum value, calculated for constant drain voltage mode.

(2) When using a voltage greater than 60V, the storage capacitor value is divided by 4.

### Product summary

<a href="#"><u>BN103</u></a>	5-slot chassis, USB, Ethernet, 100-230V power line, 250Watts	
<a href="#"><u>BE2501</u></a>		+25V 200mA pulsed voltage source module
<a href="#"><u>BA2531</u></a>		120V 30A remote pulse controller
<a href="#"><u>BE2431</u></a>		120V 5A 240W DC source module

**Email us: [contact@bilt-system.com](mailto:contact@bilt-system.com)**  
**[www.bilt-system.com](http://www.bilt-system.com)**

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