

EEVblog Electronics Community Forum

A Free & Open Forum For Electronics Enthusiasts & Professionals

Welcome, **Guest**. Please login or register.
Did you miss your activation email?

 This topic ▾ Search Forever ▾ Login

Login with username, password and session length

- Home
- Help
- Search
- About us
- Links
- Login
- Register

EEVblog Electronics Community Forum » Products » Other Equipment & Products » Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

<< previous next >>

Pages: [1] Go Down

PRINT SEARCH

Author

Topic: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco) (Read 3446)

0 Members and 1 Guest are viewing this topic.

thm_w

Super Contributor



Posts: 5505

Country:

Non-expert

Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

< **on:** April 22, 2023, 12:55:51 am >

<https://www.aliexpress.us/item/1005004651567587.html> - \$20



Neat mini multi-functional tester. Can be used to test:

- FET/IGBT/transistor breakdown
- zener diodes
- LED forward voltage (the series string ones)
- MOVs

Spec: 120V-2700V, 0.2mA-3.8mA

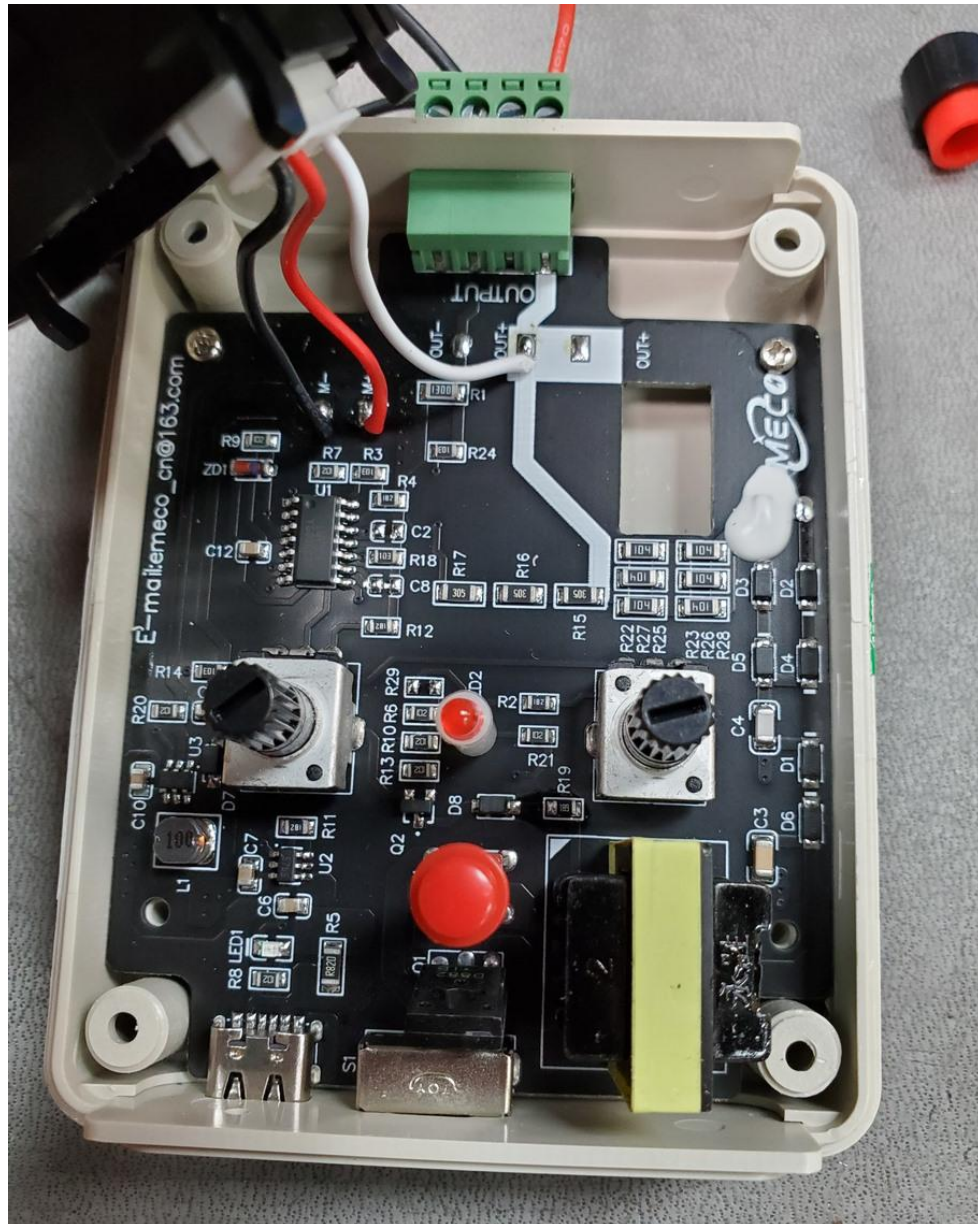
The calibration seems good for how cheap it is, I don't have a high-res meter on hand but the current into a short circuit is 3mA about as advertised. Voltage read was within 1V at 500V. You can test lower than 120V if needed, but that is the lowest open circuit voltage you can generate.

Output is DC but pulsed. Have not checked the waveform yet.



Inside:

- 4-digit LED panel meter
- Slim lipo cell (protected)
- Flyback transformer w/ voltage multiplier



Testing some stuff laying around here:

- White LED reverse = 35V
- 1N4005 diode = 1580V
- 100V WIMA cap = 590V
- IRFB3077 (75V FET) = 84V
- 25V X7R 0805 = 358V! then it popped, short circuit. All the other tests were non-destructive at 0.2mA.

Be SUPER careful when testing large capacitors, as the unit will charge them up to high voltages and only very slowly discharge them.

A "discharge" button might be a nice feature to have, or a dedicated capacitor terminal with a built in resistor.

The leads are silicone wire which is good. Croc clips are not exactly ideal. Not sure what I would replace it with though. Maybe a small plug in PCB, or ZIF socket?



2023-04-21 16.04.01a.jpg (198.66 kB, 1008x650 - viewed 1488 times.)



2023-04-21 15.55.25a.jpg (182.03 kB, 685x885 - viewed 1515 times.)



2023-04-21 16.17.29a.jpg (292.7 kB, 907x1138 - viewed 1518 times.)



2023-04-21 16.18.25a.jpg (136.54 kB, 1008x602 - viewed 211 times.)

< Last Edit: April 22, 2023, 01:17:22 am by thm_w »

Logged

Profile -> Modify profile -> Look and Layout -> Don't show users' signatures

The following users thanked this post: fpluzzi, edavid, jdev99, alm, Jacon, schmitt trigger, magic

pope

Regular Contributor



Posts: 180

Country:

thm_w

Super Contributor



Posts: 5505

Country:

Non-expert

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

< Reply #1 on: May 02, 2023, 03:01:08 pm »

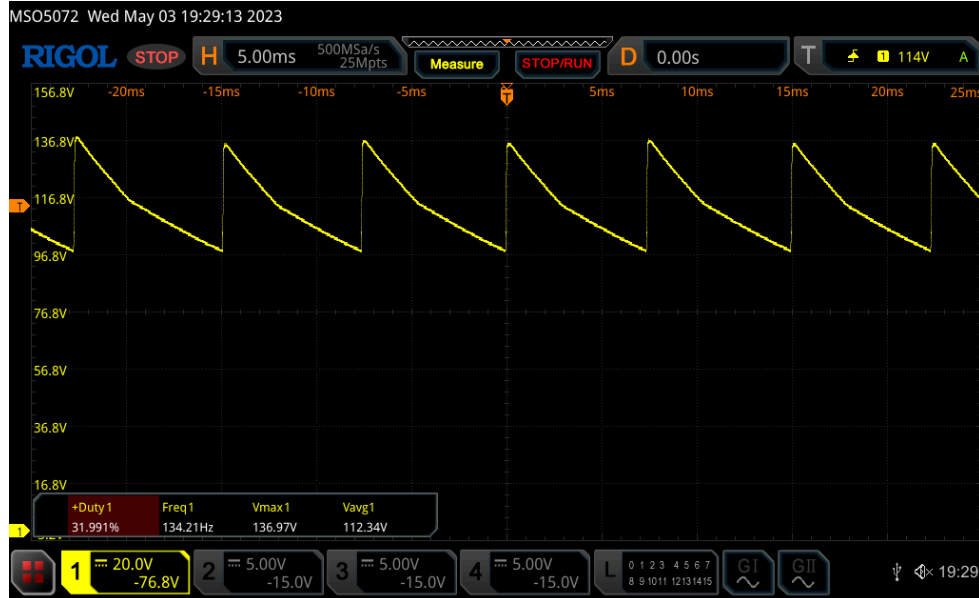
nice ,thanks for the link

Logged

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

< Reply #2 on: May 04, 2023, 08:26:43 pm »

Here is the scope waveform:



The device is set at 114V but you can see some 130Hz spikes going up to 137V.

If you want a more accurate DC breakdown voltage, you can add a ~1uF cap on the output to smooth out the voltage. With this capacitance it takes about 5-10s for the high voltage to discharge to a safe level.



RigolDS2.png (68.98 kB, 1024x630 - viewed 1270 times.)

Logged

Profile -> Modify profile -> Look and Layout -> Don't show users' signatures

daisizhou

Re: Completely non-sketchy \$20 2700V transistor

Frequent Contributor



Posts: 425
Country: 🇨🇳

Calambres

Frequent Contributor



Posts: 315
Country: 🇪🇸



breakdown tester (Emeco)
« Reply #3 on: May 05, 2023, 08:45:03 am »

Is there a schematic for it?

Logged

daisizhou@sina.com #=#@



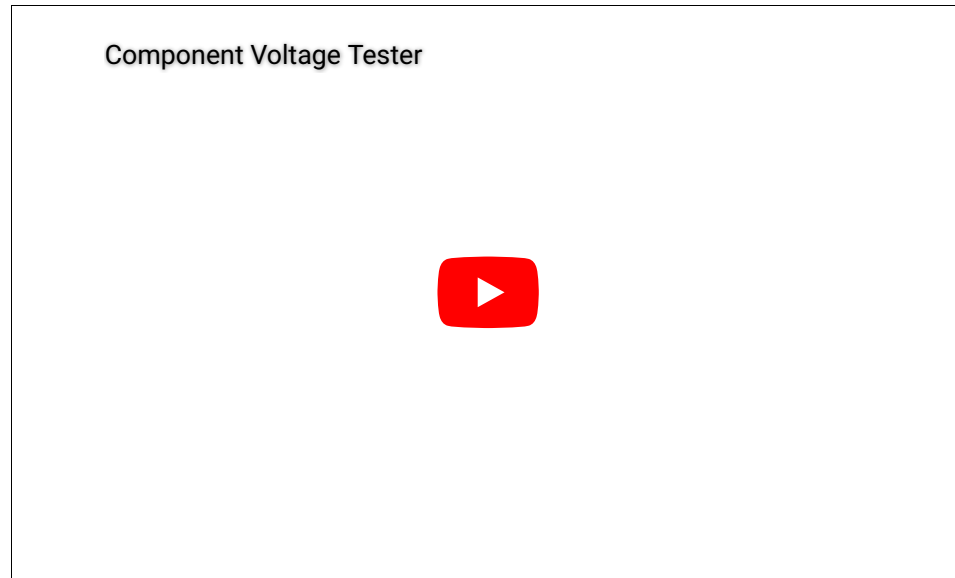
Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

« Reply #4 on: May 05, 2023, 05:13:07 pm »

Funny how Ali Express is selling you a device to check the fake components they also sell you.

Just ordered one 🤔

See:



Logged

www.pisotones.com

The following users thanked this post: fpluzzi, thm_w, elecdonia, schmitt trigger

schmitt trigger

Super Contributor



Posts: 2065
Country: 🇮🇹



Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

« Reply #5 on: May 05, 2023, 05:29:01 pm »

That is a fully complete business model.

Logged

The following users thanked this post: duckduck

thm_w

Super Contributor



Posts: 5505
Country: 🇨🇦

Non-expert



Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

« Reply #6 on: May 05, 2023, 09:46:50 pm »

I like the youtube guy feels the need to hold on to the transistor while its being tested 🤔

Quote from: daisizhou on May 05, 2023, 08:45:03 am

Is there a schematic for it?


No, you could try emailing the address on the PCB.
Or if you want I can take more photos. Its not terribly complex.

Logged


Profile -> Modify profile -> Look and Layout -> Don't show users' signatures

 **daisizhou**
 Frequent Contributor

 Posts: 425
 Country: 

 **Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)**
 < **Reply #7 on:** May 06, 2023, 12:26:18 am >


I can't see the exact model of the SOP14 chip.
If you can hope to get a clearer picture

 Logged

daisizhou@sina.com #=@

Someone
 Super Contributor


 Posts: 4210
 Country: 



 **Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)**
 < **Reply #8 on:** May 06, 2023, 01:14:12 am >


Quote from: thm_w on May 04, 2023, 08:26:43 pm

If you want a more accurate DC breakdown voltage, you can add a ~1uF cap **on the output** to smooth out the voltage. With this capacitance it takes about 5-10s for the high voltage to discharge to a safe level.

Thats a quick method to turn it into a death inducing widget, large capacitance + high voltage = high energy. The output needs a very limited energy to be safe, 3mA continuous is already a little iffy but 1uF takes it way off into dangerous.

 Logged

thm_w
 Super Contributor

 Posts: 5505
 Country: 
 Non-expert

 **Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)**
 < **Reply #9 on:** May 08, 2023, 08:58:49 pm >

Quote from: daisizhou on May 06, 2023, 12:26:18 am

I can't see the exact model of the SOP14 chip.
If you can hope to get a clearer picture


Here are some better photos.
U1 - LMV324
D1-D6 - U1M 1kV diode
Q1 - 2SD882



 2023-05-06 16.21.19a.jpg (790.45 kB, 2016x1512 - viewed 145 times.)



 2023-05-06 16.22.10a.jpg (491.58 kB, 1348x1308 - viewed 110 times.)


 Logged

Profile -> Modify profile -> Look and Layout -> Don't show users' signatures

The following users thanked this post: daisizhou

 **Fraser**
 Super Contributor


 Posts: 12887
 Country: 

 **Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)**
 < **Reply #10 on:** May 08, 2023, 09:23:25 pm >

Just ordered one of these. Currently \$13 but \$16 delivered to the UK with taxes pre paid. Great value and an easy way to apply a useful high voltage to a DUT 🤖 My lab breakdown voltage tester is around 19" wide, 6" high and 10" deep.... Weighing about 15kg..... not exactly portable !

Fraser

 Logged

daisizhou

Frequent Contributor



Posts: 425

Country:

If I have helped you please consider a donation : <https://gofund.me/c86b0a2c> **Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)**< **Reply #11 on:** May 09, 2023, 12:54:33 am >

Thank you, looking forward to further user experience

Logged

daisizhou@sina.com #=@

 took

Super Contributor



Posts: 10304

Country:

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)< **Reply #12 on:** May 10, 2023, 03:27:15 pm >

2700V on a basic terminal block? Eww.

Logged

 MathWizard

Super Contributor



Posts: 1018

Country:

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)< **Reply #13 on:** May 10, 2023, 04:23:46 pm >

Some LCD TV's output a few hundred volts, even just for strings of LED's. I can't remember what voltage CCFL tubes in TV's use, or Plasma TV's.

But has anyone adapted a LCD TV PCB, to use for higher voltage testing ? Maybe change the output caps to something smaller, although I think some are pretty small already. And set some current limits.

Logged

 thm_w

Super Contributor



Posts: 5505

Country:

Non-expert

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)< **Reply #14 on:** May 10, 2023, 10:35:54 pm >

Quote from: MathWizard on May 10, 2023, 04:23:46 pm

Some LCD TV's output a few hundred volts, even just for strings of LED's. I can't remember what voltage CCFL tubes in TV's use, or Plasma TV's.

But has anyone adapted a LCD TV PCB, to use for higher voltage testing ? Maybe change the output caps to something smaller, although I think some are pretty small already. And set some current limits.

CCFL might be good to 1200 or 1600V. Some have no output capacitance.

You can get CCFL inverters for a few dollars, but you still have to add the enclosure, LED voltmeter, battery, high voltage diode, etc.

Logged

Profile -> Modify profile -> Look and Layout -> Don't show users' signatures

 pope

Regular Contributor



Posts: 180

Country:

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)< **Reply #15 on:** May 17, 2023, 09:01:23 am >

Quote from: took on May 10, 2023, 03:27:15 pm

2700V on a basic terminal block? Eww.

You mean it's not exactly safe, right?

Logged

 Fraser

Super Contributor



Posts: 12887

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)< **Reply #16 on:** May 22, 2023, 12:18:22 pm >

My high voltage generator just arrived and, for the money (\$13) it is great value. Perfect for the insulation breakdown tests I want to do up to around 1KV. For my tests I do not need my sophisticated lab gear, just a way to generate high voltages in a controlled manner. I could have built my own but at the price of this unit, that makes little sense. This unit could make the basis of a very neat high voltage tester field kit. Thanks to the OP for posting about this 'gadget'.

Country:

Fraser

Logged

If I have helped you please consider a donation : <https://gofund.me/c86b0a2c>

The following users thanked this post: thm_w, Jacon, RAPo

Calambres
Frequent Contributor



Posts: 315
Country:



ledtester
Super Contributor



Posts: 2944
Country:

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

< Reply #17 on: May 22, 2023, 04:20:33 pm >

Mine arrived a week or so ago. Works pretty well!

Logged

www.pisotones.com

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

< Reply #18 on: June 29, 2023, 05:22:39 am >

Is there a battery in the device or can one be added? This page shows one underneath the PCB:

https://www.iccfl.com/product_info.php?products_id=29787&osCsid=251g3gtsnkhbqruplo5jndsm93

and also an email address: emeco_cn@163.com



transistor-withstand-voltage-tester-17.jpeg (65.17 kB, 653x830 - viewed 59 times.)

< Last Edit: June 29, 2023, 05:25:44 am by ledtester >

Logged

Fraser
Super Contributor



Posts: 12887
Country:

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

< Reply #19 on: June 29, 2023, 01:29:31 pm >

The unit contains a LiPo pouch cell so is self powered and recharged using a USB charger.

Logged

If I have helped you please consider a donation : <https://gofund.me/c86b0a2c>

Seekonk
Super Contributor



Posts: 1937
Country:

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

< Reply #20 on: June 29, 2023, 01:57:15 pm >

Reminds me of when I repaired car radios and amplifiers in the late 60's. Transistors were often in a series with each higher number being a higher voltage. I bought the cheapest low voltage TO-220 and selected them for breakdown voltage. A dab of paint would mark them. The very few with low voltage went into car radios and the rest went into home stereos. My home built used a scope. Every once in a while, I would see a strange anomaly on the smooth trace. I threw those out as I figures they might end up as a return repair.

The meter on this one appears to be a discrete unit. I think I would add a switch to the voltage divider for a X10 reading. Most of what I do is lower volts.

Logged

Old Printer
Frequent Contributor



Posts: 735
Country:

Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)

< Reply #21 on: July 10, 2023, 02:03:18 am >

Wacky shipping times. US to US order July 10 - delivery Sept 10. China to US - delivery August 5th?? Same total cost \$18.45 USD.

Logged

 **bateau020**

Regular Contributor



Posts: 222

Country:  **Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)**< **Reply #22 on:** August 25, 2023, 05:57:48 pm >

Just got one. Ordered a version with banana plugs, got the one with green "phoenix" connector, which is the most sold version it seems. Just be aware of it. It does look like I got an "original" Emeco, not a clone.

My remarks:

Pro:

* Current setting is cautious. The actual current, when limited, is about 25-50% lower than set on the dial. The current spikes just before it goes into limiting are however pretty close to, but not exceeding, the set current. I like that. In the low setting (200uA), mine spikes to about 190uA, and settles at 140uA. Much better than my Brymen BM878 insulation meter, that has this the other way around. It's current spikes are 250% of the advertised 1mA limit (which is already too much for my taste).

* Voltage reading is pretty close to what my other meters say.

* The Volt meter autoranges: at lower voltages, the reading is XXX.X instead of XXXX. So this is not needed:

Quote from: Seekonk on June 29, 2023, 01:57:15 pm

I think I would add a switch to the voltage divider for a X10 reading. Most of what I do is lower volts.

* The battery charge circuit looks basic, but at least it's not a close-to-zero-cost trickle charger, it switches off when the battery is full. The absence of a properly placed lens or hole for the charge indicator led is not a problem: it is bright enough to be noticed.

* The manufacturer does seem to improve the product over time: mine has a dab of silicone over one of the caps (C3) in the HV section, and some plastic coating in places, that did not seem to be there in earlier versions (example: the picture above).

Con/remarks:


* If you want to replace either the banana sockets or the "phoenix" connector with shrouded banana sockets: not enough space inside. Will have to do that differently.

* The "phoenix" connector seems to be a low quality clone. I removed the non-used pin to increase spacing, but even the slightest contact of my correctly temperature controlled hakko desoldering iron to the pins melted the connector's plastic. Anyway, not a biggy, just be extra careful if you want to have a go at it.

Fun:

* You can use this tool to visually show the self healing of X2 caps. Just take an old Rifa cap, slowly crank up the voltage to make it spark (internally). The cap recovers, and you will see it spark elsewhere when you raise the voltage. Nice.

< Last Edit: August 25, 2023, 06:21:54 pm by bateau020 >

 Logged


The following users thanked this post: thm_w

 **elecdonia**

Frequent Contributor




Posts: 397

Country:  **Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)**< **Reply #23 on:** August 25, 2023, 06:56:27 pm >

Quote

Fun: * You can use this tool to visually show the self healing of X2 caps. Just take an old Rifa cap, slowly crank up the voltage to make it spark (internally). The cap recovers, and you will see it spark elsewhere when you raise the voltage. Nice.

Cool! A device capable of destroying RIFA capacitors without generating smelly smoke! 🤖

 Logged


I'm learning to be a leading-edge designer of trailing-edge technology.

 **krypton2035**

Super Contributor



Posts: 2445

Country:  **Re: Completely non-sketchy \$20 2700V transistor breakdown tester (Emeco)**< **Reply #24 on:** August 25, 2023, 07:33:43 pm >

I bought one a few months ago, almost just when they went out.

I bought a model without the battery, planning to power it with usb...

alas ! this was a bad idea. I struggle to make this work, finally I plugged a battery and it worked fine.

indeed a nice little device to test for high voltage.

I use it mainly to test led strips.

 Logged

the ESR Repository @ <http://krypton2035.free.fr/esr-repository.html>
the LCR Meter Repository @ <http://krypton2035.free.fr/lcr-repository.html>
the Shorty-with-display mΩ short finder @ <http://krypton2035.free.fr/Projects/shorty-display.html>

Pages: [1] [Go Up](#)

[PRINT](#) [SEARCH](#)

[« previous](#) [next »](#)

Share me



[EEVblog Electronics Community Forum](#) » [Products](#) » [Other Equipment & Products](#) » [Completely non-sketchy \\$20 2700V transistor breakdown tester \(Emeco\)](#)

[EEVblog Main Site](#)

[EEVblog on Youtube](#)

[EEVblog on Twitter](#)

[EEVblog on Facebook](#)

[EEVblog on Odysee](#)

SMF 2.0.19 | SMF © 2021, Simple Machines

Simple Audio Video Embedder

SMFAds for Free Forums | Powered by SMFPacks Advanced Attachments Uploader Mod

[XHTML](#) [RSS](#) [Mobile](#) [Mobile](#) [WAP2](#)