

HOT IRON #125, May, 2024

THE JOURNAL OF THE CONSTRUCTOR'S CLUB

Technical Editor: Please send technical questions [to Peter, G6NGR](#)

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Our wonderful hobby includes participants with a great deal of electronic knowledge as well as those just beginning their journey. Our quarterly newsletter tries to publish a little something for each!

* **Hot Iron's Reference Data document** is a library of tables and other information needed when working with electronics. Rather than repeating these many pages in every Hot Iron edition, we have elected to put them in a separate [document which you can access here](#).

* [Introduction to HF Packeteering in the Modern Age](#). This informative article by N6CTA provides everything one needs to know about the subject. The link was found on a recent issue of [Amateur Radio Weekly](#).

* [AM Broadcast Coverage Night Patterns for U.S. and Canadian MW stations](#) (created by NF8M). Pick any MW frequency and see the typical coverage areas. A unique service!

* **Antenna Headings:** Frank, W4NPN, just installed a 144 foot triangular Delta Loop with the apex at the top (50 feet), fed at a corner with twinlead, to replace an ancient inverted Vee which was destroyed by a winter storm. It faces a 60 degree orientation and he wanted to know what geographical areas this favored. Fortunately, VU2NSB provides a handy tool to show compass bearings to "everywhere" once your Maidenhead grid square is entered. [Here is the link to that handy tool](#).

* **A tribute to a long-time ham radio and audio expert:** Bob Heil, of Heil Sound, died February 28th at age 83. Bob was a long-time ham and created and sold many sound-related products such as microphones. He was also responsible for the popular [Pine Board Project](#), a simple AM QRP tube transmitter with an excellent audio section.

* Frank has a question about the Pine Board Project: What changes would be needed to the low-z microphone pre-amp circuit if a carbon mike was to be used? The carbon mike is also a low-Z device that needs about 6V to activate it. Frank has a few carbon mike telephone elements that he would like to find a use for, but no commercial low-Z mikes. Please contact him at fbw4nnp@gmail.com

* [Amateur Radio Weekly](#) has many topics of interest; here's a sample:

- Issue 320: [Differences and benefits of popular Ham Radio logging apps](#)
- Issue #320: Inverter talk
- Issue #320: Spectrum Analyzer Buyer's Guide
- Issue#321: Noel Martin's (F4JJD) 2024 Amateur Radio Booklet (lots of data!)
- Issue #321: RSGB has updated their list of world-wide beacons
- Issue #322: Dayton Convention videos, May's Solar Storm, FCC database
- Issue #323: OwenDuffy's article about tuners & internal losses. RFI from a UPS
- Issue #324: SDR adventures, Tiny GS network
- Issue #325: Morse Code, Ham Radio films
- Issue #326: Trees as antennas? CW bandwidth
- More, and look at the archived issues

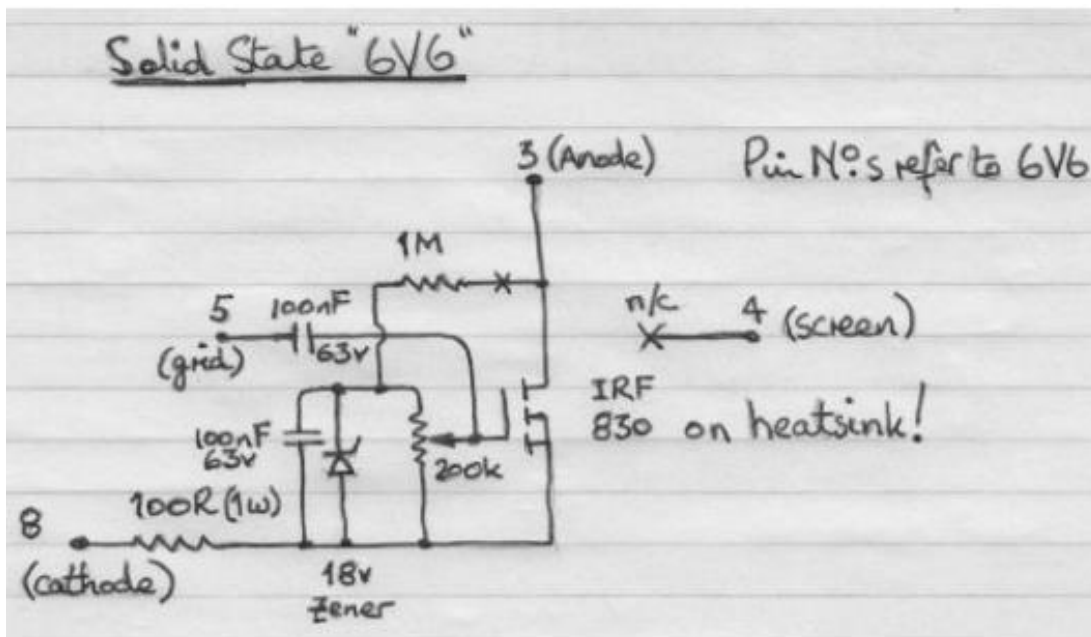
* Similarly, [Zero Retries has articles of interest](#):

- #140: Pwr Amp suitable for Software Defined Transmitters, AI in electronic warfare
- #152: Teensy SDR project, Photon Radio (!)
- #151: The Modern Ham, Raspberry Pi, Stuff You Should Know
- #150: MJF wind down, more
- #149: Jam-resistant Ukrainian drones, new designs, IPv6
- #148: Meshtastic, Meshmail, more
- Look at the archived issues for much more

* **Need an RF probe?** ZS6GM provides one in the [March 2024 AWA Newsletter \(#212\)](#). There have been many designs in the past and this is one of the easy ones. You can use this one with any scope. It rectifies RF and provides a DC voltage proportional to the RMS AC voltage. Using the scope's DC input results in an RF voltmeter. Using the scope's AC input will demodulate an AM signal. Neat!

* [Hot Iron #15](#), [Hot Iron #16](#) and [Hot Iron #17](#) all have articles and some ideas about the use of oscilloscopes.

* Page 14 of [Hot Iron #103](#) shows how to make a MOSFET version of the venerable 6V6 tube, It's a useful idea. I wonder if it could be applied to a 6L6 to get 10-15 watts?



These *Hot Iron* back issues contain a wealth of information!

* **Reforming old electrolytics – an old topic!** (*Hot Iron* #103) Restarting / Using old electrolytics...

Much utter tripe, waffle, or bunkum has been written about “ageing” and “reforming” electrolytic capacitor plates or insulation, especially by the “audiophool” web pages I come across occasionally. The simple truth is that electrolytics must have volts applied to create the insulating layers between the plates, and must leak a mA or two for the electrolyte (the clue is in the name...!) to form the oxide insulation layers. Most manufacturers form the “plates” during test: if put into service within a year or two of manufacture, you’ll have no bother. The problem comes in an electrolytic that’s been in storage (or otherwise unused) for years: the thing is condemned to the rubbish bin as it leaks like a sieve when first re-powered. Easy answer: set up a DC power supply to stress the electrolytic capacitor to ~70% of it’s rated voltage, and feed the volts to it via a 15 watt lamp (yes, I use a lot of incandescent lamps - they are cheap, and do what they say on the tin) or lamp plus a power dropper resistor if the voltage is greater than the lamp spec. The lamp will probably glow dimly on applying the 70% volts: the plates start “forming” and you should see (if the electrolytic capacitor’s half decent) the glow fade after a short time. Ramp up the applied volts (a Variac or lamp dimmer are useful to control the AC volts to the DC bias supply), noting how the lamp glows brightly again, then fading as the leakage drops. Finally apply full rated volts, plus a few extra, to really thicken up the insulating layer. If the lamp glows brightly and doesn’t fade after a while, the old electrolytic capacitor’s not up to the original rating and shouldn’t be trusted unless you’ve absolutely nothing else to replace it - but expect it to go !BANG! at the most inconvenient time!

* Christian, G5DOC writes about [Meshtastic-enabled LoRa devices](#)...this is new to Frank and quite interesting! [Hackaday also has an article](#) about LoRa networks – give it a read. Oh, wait – there’s more: [Go here to read about mesh-compatible LoRa](#).

- * Tom Salzar's [February 23rd Random Wire Review](#) has a lot of articles of interest such as:
 - Why we need Shortwave, and, A text file for the internet
 - He also has a [long article about his journey through Ham Radio](#), which many of us can relate to.
 - More, and look at the archived issues – there is a lot there!
- * Have to clean a potentiometer? There are many choices including DeOxit, FaderLube, WD Specialist Contact Cleaner, MG No-Trol and Servisol 10. There are doubtless other brands. Isopropyl Alcohol can also be used in a pinch as it will remove most grime and is not harmful to electronics. It is used in some of the cleaners mentioned above. A blast of pressurized air following the liquid cleaning can help dry the pot and blow away debris loosened by the cleaner.
- * [Want HF Propagation Tools?](#) Weather forecasts? Solar Data? NASA/JPL Favorites? Go to Paul Herrman's (N0NBH) extensive website about these and many other subjects. [In addition, this link provides an explanation of Paul's website.](#)
- * [HamRadioWorkbench.com](#) has a lot of nifty podcasts, projects and articles to peruse.
- * [The Random Wire newsletter](#) has a lot of computer articles in it and it informs us that the *Analog Engineer's Pocket Reference* (a handbook) is available from Texas Instruments as a free download. [Go here to get or read a copy](#) (it's a .pdf download). Look under the "Miscellaneous" column of the website page that appears when you click the "Go here..." link.

YouTube Channels we have found (please let us know of others that you know about):

[HB9BLA Wireless](#) by Andreas Spiess HB9BLA

[KM6LYW Radio](#) by Craig Lamparter KM6LYW (home of the [DigiPi project](#))

[Modern Ham](#) by Billy Penley KN4MKB

[Tech Minds](#) by Matthew Miller M0DQW

Other Ham-related Newsletters (please let Frank know of others not listed here):

- * [73 from G5DOC](#) covers many subjects. From this link, scroll to the end to find many subjects to investigate
- * [The Communicator](#) has been recommended by VE7SAR – give it a look!

- * [Here's a link to the ARRL newsletter](#), which has many pages of news of interest to us hams.
- * [DxZone publishes a substantial list](#) of amateur radio newsletters. Have a look!
- * [The QRZ Forum](#) contains news, technical information, discussions and equipment evaluations; there is much to read here!
- * [This DX Engineering website](#) has 31 pages of news and general information about ham radio. Many antenna and feedline articles are included.
- * [QRP Guys](#) advertises kits and circuits
- * [QRP ARCI](#) is a club for low power enthusiasts worldwide.
- * [The American QRP Club](#) is for builders, experimenters, and low power enthusiasts.
- * [VK3YE's QRP website](#) is not a club but it provides a lot of information about QRP operations.
- * [The DXZONE](#) provides a list of QRP websites
- * Check out the various sections of www.w4nnp.net, the website where the *Hot Iron* newsletters are hosted. There is much more there! Another rabbit hole.

Future Quarterly Newsletter Content – some subjects we are considering:

Crystals and Crystal Oscillators, a VFO issue, Regenerative Receiver designs, Classic Xmtr designs, Power Supplies. What interests you? Let us know!

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