

Dee/Mitch-dyne II

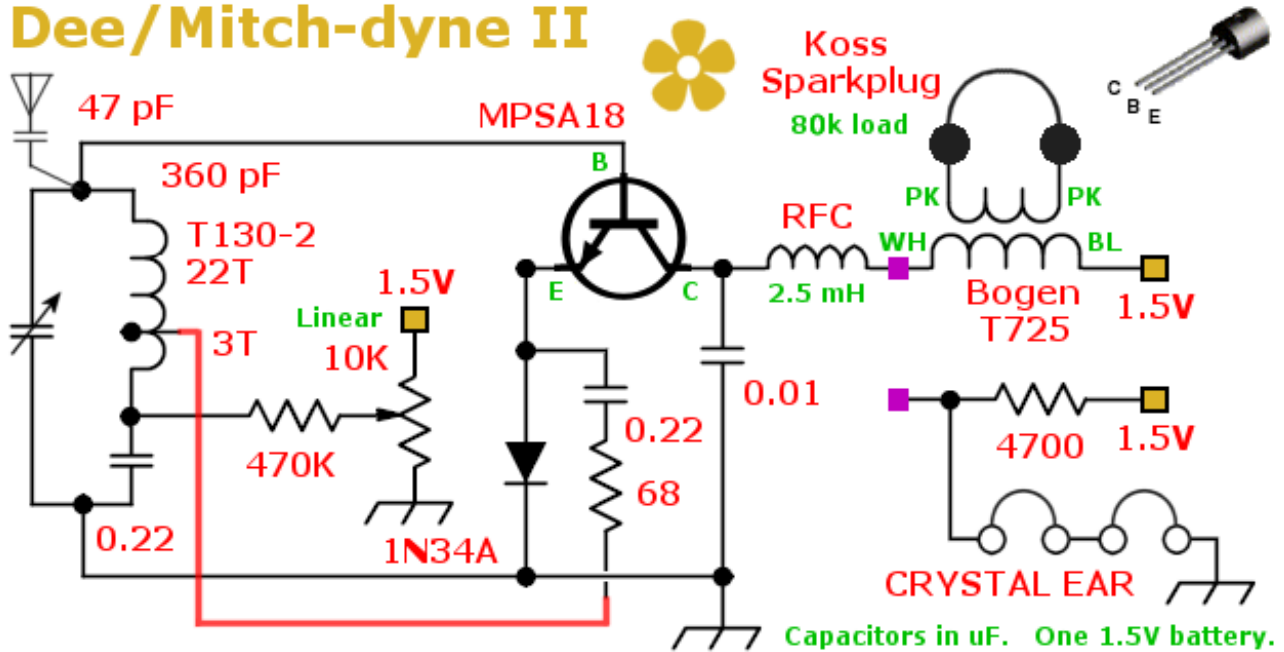
ONE-TRANSISTOR 1.5-VOLT DX

VERSION 2 ©2011

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The [Dee/Mitch-dyne II](#) is a single-transistor regenerative radio. The circuit uses common-collector mode at RF and common-emitter mode at AF. Coverage is 60M to 31M; but is alterable. A [MPSA18](#) NPN transistor (1.5 dB noise figure) provides an hfe, or current gain, of ~570. Similar; two, three, and four transistor; receivers were designed by [Sir Douglas Hall](#), as far back as 1964.

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The [Dee/Mitch-dyne II](#) design boasts: only 14-parts, 1.5 Volt power, low-cost, effortlessly miniaturized, and high performance. An emitter diode *blocks half* the radio energy, which is then fed back into the tank (above using a Hartley configuration). The fixed resistor (alter to suit your needs) on the emitter creates 38k ohms of input impedance. Input impedance equals load times hfe. Regeneration is controlled via base current. The alternative design (see purple square) uses two crystal earphones in series and *no AF transformer*. Using a T50-2 toroid and trimmer pots, a hobbyist can *shoehorn the radio to fit inside a matchbox*. Also, unlike a JFET, a BJT is very robust.

The Dee/Mitch-dyne II solves the problems that are usually attributed to BJT regenerators. Tank Q is maintained by a high input impedance. Yet our BJT has a higher transconductance than a FET, triode, or pentode. The fact that a BJT's current and voltage gains are not driven by its supply voltage was validated by use of a 1.5V power supply. [The Dee/Mitch-dyne II is both sensitive and selective and will change how you view bipolar junction transistor regenerative receiver performance.](#)

This circuit was named after my mom and dad: great parents are one of God's finest gifts.



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