

10.8.5.5 Fuzz-Face (Dallas Arbiter)

As a typical representative of the group of brute-force distortion-devices, we will in the following analyze the **Fuzz Face**, a small battery-powered effects device offered by Dallas Arbiter* from 1966. In the original version, 2 Germanium transistors (AC 128) took care of gain and distortion (**Fig. 10.8.37**); the output voltage could be controlled by the “Volume”-potentiometer while the “Fuzz”-potentiometer adjusted the degree of the distortion.

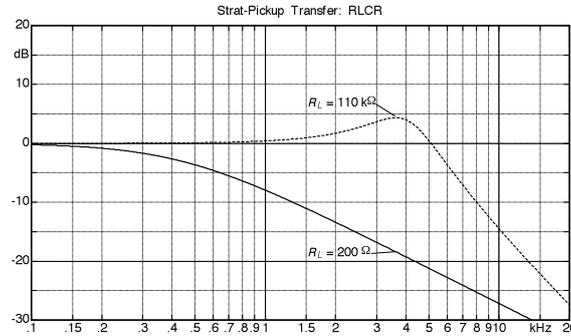
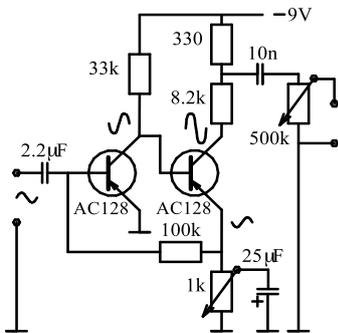


Fig. 10.8.37: Fuzz-Face: circuit (left), pickup-frequency-response (right, compare to Chapter 5.5.4) Details re. the circuit-board construction (and replication) are described by Martin Thewes in Gitarre&Bass, 09/2009.

The circuit is peculiar – starting with the input: due to the current-feedback (100 kΩ), the input shows very low impedance. For the usual pickup, it practically presents itself as a short, especially when the 1-kΩ-potentiometer is set such that the tap is connected to ground. For all measurements described in the following, the generator providing the input signal was connected via a 6.8 kΩ resistor. In this configuration, there is almost zero input voltage – this does not mean, however, that the circuit is not receiving any drive signal. In fact, the input operates under current control as a so-called “zero-ohm-node” known from recording-studio-technology. Due to the frequency-dependent source impedance of a magnetic pickup, the result is a veritable low-pass radically attenuating all treble above 500 Hz. The treble is revived, however, in the form of strong non-linear distortion-products generated via the high gain-factor of 100...2000 (**Fig. 10.8.38**). Because of the current-control, the gain must not be referenced to the input voltage, but to the quotient of collector voltage (T2) and generator voltage ahead of the 6.8-kΩ-resistor. This resistor is required due to the small input impedance; it models the pickup-resistance. Whether the resistor has a value of 5.2 kΩ or 7.3 kΩ is of no importance. As was the case for the Range-Master, charge-reversals in the capacitors cause shifts in the characteristic curve – this to a somewhat lesser extent but with the same tendency.

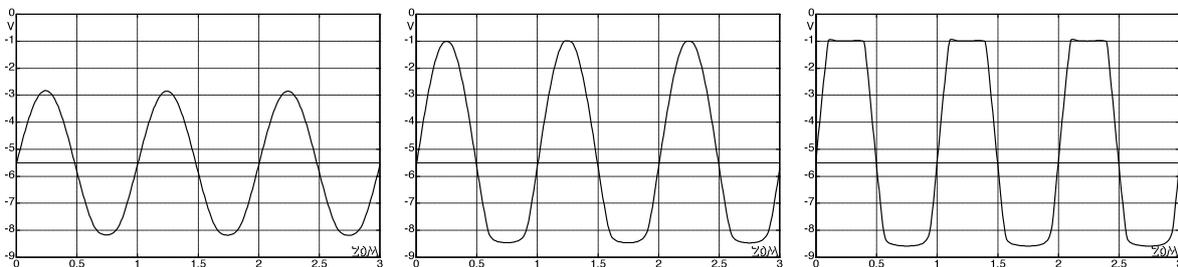


Fig. 10.8.38: Fuzz-Face: collector-voltage of the 2nd transistor for different drive-levels (500 Hz).

* First under the "Arbiter Electronics"-moniker, then under "Dallas Arbiter".