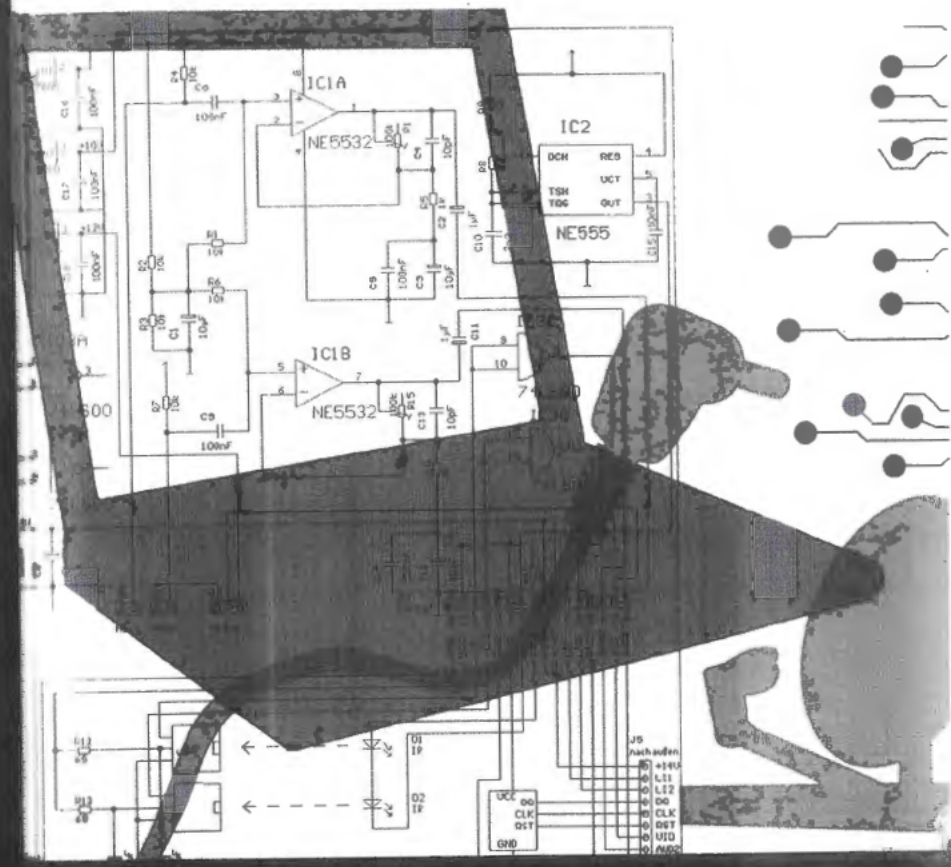
Collins

Dictionary of Electronics

DEFINITIONS FOR THE DIGITAL AGE



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tri-state logic see THREE-STATE LOGIC.

trivalent elements elements having three electrons in the outermost shell, acting as electron removers or hole donors in a semiconductor crystal.

troposcatter see TROPOSPHERIC SCATTER.

troposphere the region of the atmosphere between the Earth's surface and the *tropopause* at about 10km in altitude.

tropospheric scatter or **troposcatter** scattering of electromagnetic waves in the TROPOSPHERE because of the local variations in the refractive index. The scattering takes place in a forward direction, and can make possible communication distances of up to 2000 km for frequencies as high as 3GHz.

true RMS the measurement of the true ROOT MEAN SQUARE (sense 2) value of an ALTERNATING CURRENT quantity. Many AC meters operate by rectifying the AC and measuring the resulting unidirectional current. The meter resistors can be adjusted so that for a sine-wave input, the readings will correspond to the values of RMS current or voltage. This is not a true RMS reading, however, because using the meter on any other waveform with a different FORM FACTOR (sense 1) will give incorrect results. Only meters that operate on a square-law principle, such as MOVING IRON or HOT-WIRE INSTRUMENT will give true RMS values for any waveform.

trunk a main set of CABLES connecting from one main unit to another.

truth table a table that shows all of the possible inputs and outputs for a logic gate circuit. See also STATE TABLE.

Tschebycheff filter see TCHEBYCHEV RESPONSE.

T section a FILTER SECTION, one half-section of a LADDER FILTER, using two reactive elements in series and one in parallel, named after its shape. See also PI SECTION.

TT fuse a fuse that will rupture in 100 seconds for a twofold overload and in 150 milliseconds for a tenfold overload.

TTL see TRANSISTOR-TRANSISTOR LOGIC.

TTL levels the levels of +5V for logic 1 and 0V for logic 0, the normal operating levels assumed for TRANSISTOR-TRANSISTOR LOGIC digital devices.

T-type flip-flop a FLIP-FLOP circuit of the toggled (see TOGGLING) type. The T-type flip-flop has one input, the toggle input. Each pulse at this input will cause the output to reverse the output state between logic 0 and logic 1.

tube see CATHODE-RAY TUBE; VACUUM TUBE.

tube cathode poisoning failure of a cathode-ray tube due to surface contamination of the cathode. This can often be remedied by REACTIVATION, running the cathode at a temperature higher than normal for a short time, often with grid current flowing.

tubular capacitor a capacitor created by winding strips of metal and insulator into the form of the tube. See also PAPER CAPACITOR.

tubular plate battery a long life (15 years) version of lead-acid cell used for security systems.

tuned aerial (or **antenna**) or **resonant aerial** (or **antenna**) an aerial, such as a DIPOLE AERIAL, that is tuned in the sense of being cut to some multiple of the wavelength. This allows the formation of a STANDING WAVE on the aerial.

tuned amplifier an amplifier in which LOAD RESISTORS are replaced by RESONANT CIRCUITS so that amplification is a maximum at the frequency of resonance of the tuned circuit in each stage. See also STAGGER TUNING.

tuned circuit see RESONANT CIRCUIT.

tuned collector oscillator a form of OSCILLATOR with a RESONANT CIRCUIT connected to the COLLECTOR (DRAIN) and feedback to the BASE (GATE, SOURCE) through an additional winding.

tuned filter a filter that is designed to accept or reject a very narrow frequency band. See also TRAP.

tuned-load oscillator a form of OSCILLATOR in which both INPUT and OUTPUT of an AMPLIFIER are tuned to the same FREQUENCY. The feedback through STRAY CAPACITANCE causes the circuit will oscillate at the

tuned radio frequency or **TRF amplifier** or **TRF** an early form of radio reception that used

all tuned to the same radio frequency to receive transmission. This led to instability due to the FEEDBACK of signal from later stages to earlier stages, and was superseded by the SUPERHETERODYNE RECEIVER.

tuned transformer a transformer for RF whose primary and/or secondary windings have a capacitor connected across each so that they will be resonant (see RESONANCE) at some frequency.

tuner the portion of a RADIO RECEIVER that consists of the RF, IF, and DEMODULATOR stages. A separate tuner is often a part of a hi-fi system because, in general, the incorporation of a tuner and an amplifier in the same casing can lead to NOISE problems.

tuning capacitor a VARIABLE CAPACITOR used for adjusting the frequency response of a RESONANT CIRCUIT.

tuning drift variation of the tuned frequency of a RESONANT CIRCUIT, usually caused by changes in capacitance due to temperature change.

tuning indicator a device used to indicate the accuracy of manual tuning. At one time, a form of vacuum device known as the *magic eye* was used for this purpose, but in the few examples where tuning indicators are still used they consist now of meters, solid-state displays, or modern forms of VACUUM-FLUORESCENT DISPLAY.

tuning memory the NONVOLATILE memory used in a receiver to store tuning information.

tunnel diode a heavily-doped (see DOPING) P-N JUNCTION diode that contains a NEGATIVE-RESISTANCE region in its current-voltage CHARACTERISTIC. Because of this negative-resistance region, the tunnel diode will oscillate when biased into the appropriate region, and by connecting a suitable RESONANT CIRCUIT, usually a resonant cavity, the oscillations can be tuned to any desired frequency. The tunnel diode is normally used as a very low power microwave LOCAL OSCILLATOR.

tunnelling see QUANTUM TUNNELLING.

turn-off time the time for current to stop flowing in a THYRISTOR or TRIAC once the turn-off conditions have been reached.

turn-on time the time for current to reach its maximum level through a THYRISTOR or TRIAC following TRIGGERING.

turn-over frequency the frequency at which PRE-EMPHASIS starts to be used on an audio signal.

turns ratio the ratio of the number of secondary turns to primary turns in a TRANSFORMER.

turnstile aerial (or **antenna**) a form of aerial that consists of two crossed half wave DIPOLES with 90° phasing of signal, particularly effective as a RECEIVING AERIAL. See also SUPER TURNSTILE AERIAL.

turntable or **platter** a revolving circular platform for supporting a (gramophone) VINYL DISC. Ideally, a turntable should be metallic and heavy so that it has a large rotational momentum, assisting in maintaining a steady speed.

turret tuner a tuning system once used for TV receivers and FM tuners. This consisted of a cylinder that carried the tuning inductors inside with a set of connecting contacts outside. By rotating this cylinder inside a casing, the connections to each coil could be made, so tuning from one TV channel to another.

TV see TELEVISION.

TV capture card or **TV card** a card or board inserted into a computer in order to input and digitize television or video signals.

TV receiver see TELEVISION RECEIVER.

tweak to adjust for optimum performance.

tweeter a LOUDSPEAKER intended to reproduce high-frequency notes. See also SUB-WOOFER; WOOFER.

twin cable or **twin line** or **twin feeder** a CABLE made from two insulated close-spaced conductors. This cable has low radiation loss when used as a TRANSMISSION LINE. Compare COAXIAL CABLE.

twin core screened cable cable used for low-level signals so that balanced signals can be used along with electrostatic screening.

twin feeder see TWIN CABLE.

twin line see TWIN CABLE.