decoder

What is a TUN?
What is 10 n?
What is the EPS service?
What is the TQ service?
What is a missing link?

Semiconductor types

Very often, a large number of equivalent semiconductors exist with different type numbers. For this reason, 'abbreviated' type numbers are used in Elektor wherever possible:

- '741' stand for $\mu A741$, LM741, MC641, MIC741, RM741, SN72741, etc.
- 'TUP' or 'TUN' (Transistor, Universal, PNP or NPN respectively) stand for any low frequency silicon transistor that meets the following specifications:

	UCEO, max	20V
	IC, max	100 mA
	hfe, min	100
	Ptot, max	100 mW
	fT, min	100 MHz

Some 'TUN's are: BC107, BC108 and BC109 families; 2N3856A, 2N3859, 2N3860, 2N3904, 2N3947, 2N4124. Some 'TUP's are: BC177 and BC178 families; BC179 family with the possible exception of BC159 and BC179; 2N2412, 2N3251, 2N3906, 2N4126, 2N4291.

- 'DUS' or 'DUG' (Diode Universal, Silicon or Germanium respectively) stands for any diode that meets the following specifications:

	DUS	DUG
U_R, max	25V	20V
I_F, max	100mA	35mA
I_R, max	1 μA	100 μA
Ptot, max	250mW	250mW
C_D, max	5pF	10pF

Some 'DUS's are: BA127, BA217, BA218, BA221, BA222, BA317, BA318, BAX13, BAY61, 1N914, 1N4148.
Some 'DUG's are: OA85, OA91, OA95, AA116.

- 'BC107B', 'BC237B', 'BC547B' all refer to the same 'family' of almost identical better-quality silicon transistors. In general, any other member of the same family can be used instead.

BC107 (-8, -9) families:
BC107 (-8, -9); BC147 (-8, -9);
BC207 (-8, -9); BC237 (-8, -9);
BC317 (-8, -9); BC347 (-8, -9);
BC547 (-8, -9); BC171 (-2, -3);
BC182 (-3, -4); BC382 (-3, -4);
BC437 (-8, -9); BC414

BC177 (-8, -9) families:
BC177 (-8, -9); BC157 (-8, -9);
BC204 (-5, -6); BC307 (-8, -9);
BC320 (-1, -2); BC350 (-1, -2);
BC557 (-8, -9); BC251 (-2, -3);
BC212 (-3, -4); BC512 (-3, -4);
BC261 (-2, -3); BC416.

Resistor and capacitor values

When giving component values, decimal points and large numbers of zeros are avoided wherever possible. The decimal point is usually replaced by one of the following abbreviations:

p	(pico-)	=	10^{-12}
n	(nano-)	=	10^{-9}
μ	(micro-)	=	10^{-6}
m	(milli-)	=	10^{-3}
k	(kilo-)	=	10^{3}
M	(mega-)	=	10^{6}
G	(giga-)	=	10^{9}

A few examples:
Resistance value 2k7: 2700 Ω.
Resistance value 470: 470 Ω.
Capacitance value 4p7: 4.7 pF.
0.000 000 000 004 7 F . . .
Capacitance value 10n: this is the international way of writing 10,000 pF or .01 μF, since 1 n 10^{-9} farads or 1000 pF.
Resistors are ¼ Watt 5% carbon types, unless otherwise specified. The DC working voltage of capacitors (other than electrolytics) is normally assumed to be at least 60 V. As a rule of thumb a safe value is usually approximately twice the DC supply voltage.

Test voltages

The DC test voltages shown are measured with a 20 kΩ/V instrument, unless otherwise specified.

U, not V

The international letter symbol 'U' for voltage is often used instead of the ambiguous 'V'. 'V' is normally reserved for 'Volt'. For instance: $U_b = 10$ V, not $V_b = 10$ V.

Mains voltages

No mains (power line) voltages are listed in Elektor circuits. It is assumed that our readers know what voltage is standard in their part of the world!
Readers in countries that use 60 Hz should note that Elektor circuits are designed for 50 Hz operation. This will not normally be a problem; however, in cases where the mains frequency is used for synchronisation some modification may be required.

Technical services to readers

- **EPS service.** Many Elektor articles include a lay-out for a printed circuit board. Some — but not all — of these boards are available ready-etched and predrilled. The 'EPS print service list' in the current issue always gives a complete list of available boards.
- **Technical queries.** Letters with technical queries should be addressed to: Dept. TQ. Please enclose a stamped, self addressed envelope; readers outside U.K. please enclose an IRC instead of stamps.
- **Missing link.** Any important modifications to, additions to, improvements on or corrections in Elektor circuits are generally listed under the heading 'Missing Link' at the earliest opportunity.