

ZODIAC

Voltage Regulator-unit PS-7239

The voltage regulator-unit is supplied with a voltage of 13,5V, and produces a stabilized voltage of 10V.

The maximum current is determined by the value of R1 (respectively R7). The voltage drop over R1 and Q1 is regulated by the stabilized voltage delivering a current through R4 and the zenerdiode D2 after Q1 so that the zener voltage of 6,2V is sustained. Hereby the base voltage of Q3 is about 6,9V which is sustained by the voltage divider R5 and R6.

If the voltage at the output rises, the bases voltage on Q3 rises. This results in the fact that the collector current increases, and hereby the base-emitter-voltage on Q2 is also increased, and this causes a higher current through this transistor. The base current to Q1 is falling, and the output voltage is falling to the stabilized voltage again.

The current limiting works as follows:

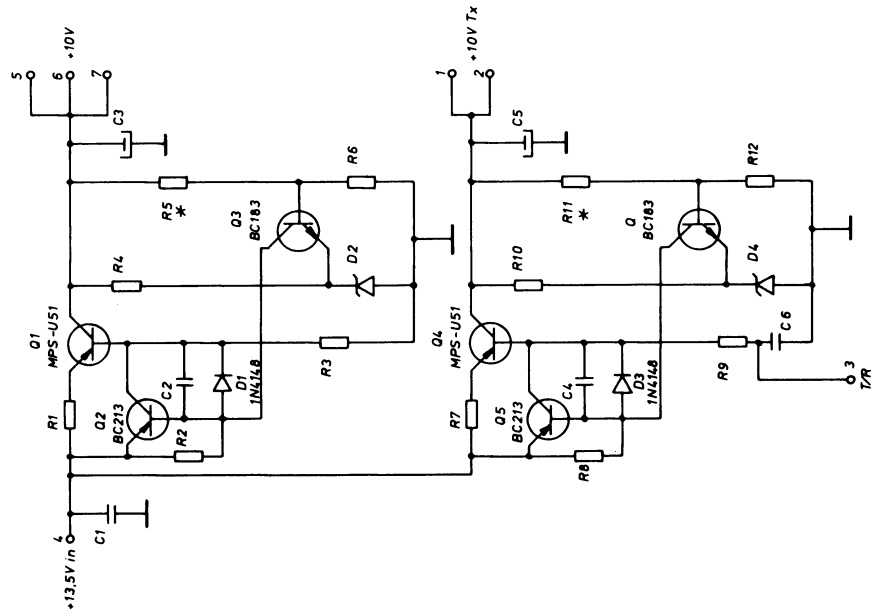
If the maximum current is exceeded, the function of the circuit changes to a current generator. This happens by the fact that the diode D1 which is normally reverse-biased, starts conducting when the voltage over R1 and the base-emitter-voltage for Q1 exceeds 1,2V. As the base-emitter-voltage for Q1 is constant $x = 0,6V$, it can be seen that the limiting current: $I_{max} = 0,6/R1$.

The voltage regulator-unit consisting of Q4, Q5, and Q6 works as mentioned above, and supplies the transmitter-multiplier and the driver-unit.

The output voltage (+10X) is controlled by T/R.

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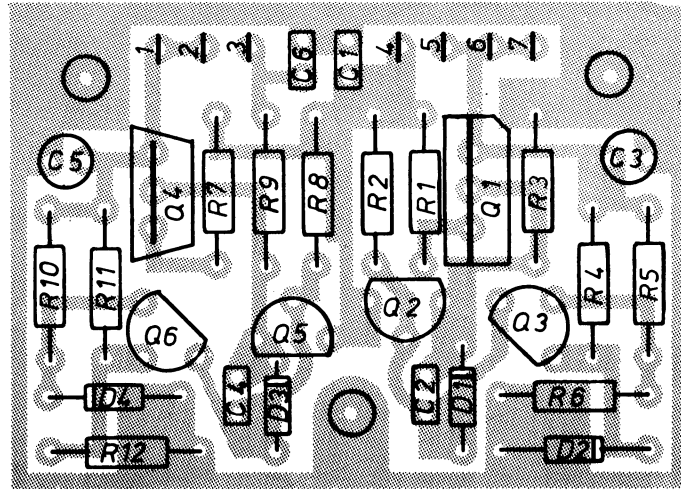
*: Selected value.

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Voltage Regulator
 PS-7239
 Dwg. no. 7239-2

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Voltage Regulator
PS-7239
Dwg. no. 7239-2

Component List

Voltage Regulator - PS-7239

| <u>Ckt. Symbol</u> | <u>Description</u> | <u>Value or type</u> |
|--------------------|--------------------|-----------------------|
| Q1 | Transistor | MPS-U51 (U 55) |
| Q2 | - | BC 213 <i>357/512</i> |
| Q3 | - | BC 183 <i>DE 517</i> |
| Q4 | - | MPS-U51 (U 55) |
| Q5 | - | BC 213 |
| Q6 | - | BC 183 |
| D1 | Si-diode | 1N 4148 |
| D2 | Zener-diode 6,2V | BZX79 C6V2 |
| D3 | Si-diode | 1N 4148 |
| D4 | Zener-diode,6,2V | BZX79 C6V2 |
| R1 | Resistor | 5,6 ohm/1/8 W |
| R2 | - | 2,2K |
| R3 | - | 3,3K |
| R4 | - | 2,2K |
| R5 | - | 1,8K-selected value |
| R6 | - | 3,9K |
| R7 | - | 5,6K |
| R8 | - | 2,2K |
| R9 | - | 3,3K |
| R10 | - | 2,2K |
| R11 | - | 1,8K-selected value |
| R12 | - | 3,9K |
| C1 | Capacitor | 2,2 nf-ceramic |
| C2 | - | 2,2 nf-ceramic |
| C3 | - | 4,7 uF/16V-tantal |
| C4 | - | 2,2 nf-ceramic |
| C5 | - | 4,7 uF/16V-tantal |
| C6 | - | 2,2 nf-ceramic |