

Note that R1 and R2 are resistor dividers in case the primary bias voltage is more than 5.5V. C3 is the filtering capacitor. If the primary-side bias voltage is less than 5.5V, these components can be omitted. Advantages of such implementation for negative reference voltage are as follows: (1) Space saving. As -Ref sources only a few milli-ampere currents, the capacitors, C3, C4, and C5 can be 0603 in size and the resistors R1 and R2 can be 0804 in size. The MAX828/829 come in a tiny SOT23-5 package. (2) High reliability. This is because power dissipation in the negative reference circuit is very small. (3) -Ref is not temperature-dependent anymore. In previous implementations, the diode voltage drop was a function of both the temperature and the load current.

An Example: For a -5V/2mA negative reference voltage from +12V primary bias, R1 = 1k, R2 = 910 Ω , C3 = C4 = C5 = 0.022 μ F/16V (0603). At 2mA output current, the efficiency is about 90% (from the data sheet).

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