

Dummy load for DC-DC converter0 ~ 100 Ω resistance changeable

$$10 \rightarrow \frac{1}{10} + \frac{1}{x} = \frac{10+x}{10x} \Rightarrow \frac{10x}{10+x} \quad x > 10$$

$$\frac{1W}{20} = 5\Omega \quad \text{when } x=10$$

$$\frac{2W}{30} = 6.6\Omega \quad \text{when } x=20$$

~~6.6 Ω~~

$$1 \rightarrow \frac{1}{1} + \frac{1}{60} = \frac{61}{60} = \frac{60}{61} \approx 1$$

- ① Parallel with resistor (very small) $X \rightarrow$ only can achieve $<$ smaller resistance

Digital ~~res~~ potentiometer X

Non-linear

wiper resistance $\sim 60\Omega$ & Cannot support such high power (high current $\sim 0.5A$)(voltage $1 \sim 7V$)

- ② rheostat \rightarrow can operate by a screw thread (linear)

- ③ switching a ~~bank~~ bank of fixed resistors (ladder)

1 Ω , 2 Ω , 3 Ω , 4 Ω , 5 Ω , 6 Ω , 7 Ω , 8 Ω , 9 Ω , 10 Ω
 15 Ω , 20 Ω , 25 Ω , 30 Ω , 40 Ω , 50 Ω , 60 Ω

1.6, 2, 2.2, 3.

But pure resistors - 0.25W max power go through. (problem)

Switch - MOSFET - V_{ds} - Consume some voltage along the circuit.

MPP100 TD-247 Power Film Resistor

0.05 Ω 100W continuous power at 25 $^{\circ}C$ temp0.1 Ω with heat sink0.12 Ω 0.15 Ω

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$$\frac{31}{80} = 0.3875$$

$$\frac{451}{100} = 4.51$$

$$\frac{150}{6.01} = 24.958$$