Description

This P-channel cascode micro current source is used when higher temperature stability is desired. Q1 is diode-connected with its source connected to V+ and Q4 is diode-connected with its source connected to the drain of Q1. Vgs of Q1 sets Vgs of Q2 whereas Vgs of Q4 sets Vgs of Q3. Ios current through Q1 is equal to that of Q4, which in turn is set by R1 and Rp. Rp is adjusted so that Iout is equal to 44µA. Ios of Q2 is equal to Ios of Q3, which is equal to Ios of Q1 as Q1 and Q2 are matched and have equal Vgs. The set current measured across the two resistors R1+ Rp is therefore equal to Iout. This circuit operates at near zero tempco which means that the circuit can undergo a wide range of temperature values without affecting Iout = 44µA. The operating temperature range of this circuit is between -25°C and +125°C, giving an average temperature coefficient of 121ppm (parts per million). This 44µA output current is valid for output voltage range from -5V to 3V with an average error of less than one percent.

For full schematic diagram and notes, please register and login at aldinc.com