

FOR SIMULATION ONLY

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Title: One Over V Circuit Problem Using 555 Timer (from S.E.D)			
Size A	FileName: C:\Projects\Expments\SED\OneOverV_555.sch	REV A	
April 24, 2016, 6:40 AM		Sheet 1 of 1	

HOW DOES THIS $1/x$ CIRCUIT WORK?

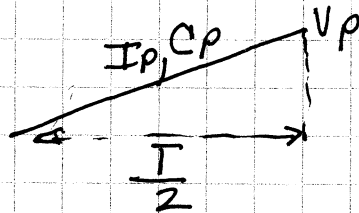
IT CAME TO ME AS I AWOKE
EARLY THIS MORNING...

IF WE TREAT A 555 AS A VCO WITH CONTROL CURRENT I_V & CAPACITOR C_V ...

$$\text{THEN: } I_V = C_V \frac{V_{CC}}{3} \cdot \frac{2}{T} \quad (T = \text{PERIOD})$$

$$\text{THUS: } T = \frac{2C_V V_{CC}}{3I_V}$$

IF WE RUN A RAMP FOR $T/2$



$$\text{THEN: } I_P = C_P \frac{V_P \cdot 2}{T}$$

$$\text{OR: } I_P = \frac{I_V C_P V_P \cdot 3 I_V}{2 C_V V_{CC}}$$

$$\text{AND: } V_P = \frac{C_V V_{CC} I_P}{3 C_P I_V}$$

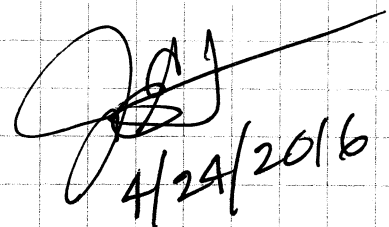
V_P IS INVERSELY PROPORTIONAL TO I_V
IF I_V IS PROPORTIONAL TO V_{IN} , $= k V_{IN}$

$$\text{THEN: } V_P = \frac{C_V V_{CC} \cdot I_P}{3 C_P \cdot k V_{IN}}$$

$$\text{IF } \frac{C_V V_{CC} I_P}{3 C_P \cdot k} = 1$$

$$\text{THEN: } V_P = \frac{1}{V_{IN}}$$

NOTICE HOW I
TIME THIS RAMP
USING DISCHARGE
PIN OF 555 😊


4/24/2016