

Multisim Circuit Diagram:

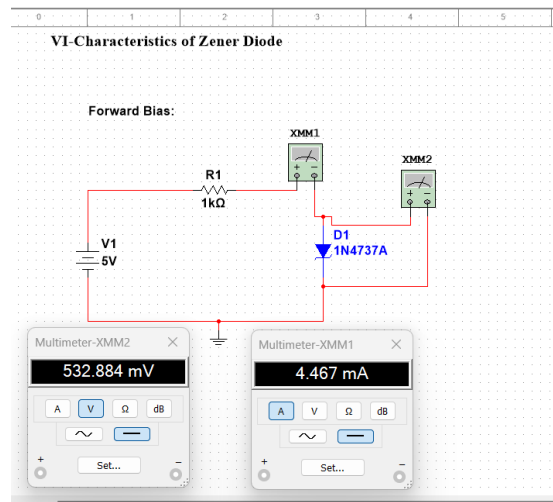


Fig 2.1 Forward bias.

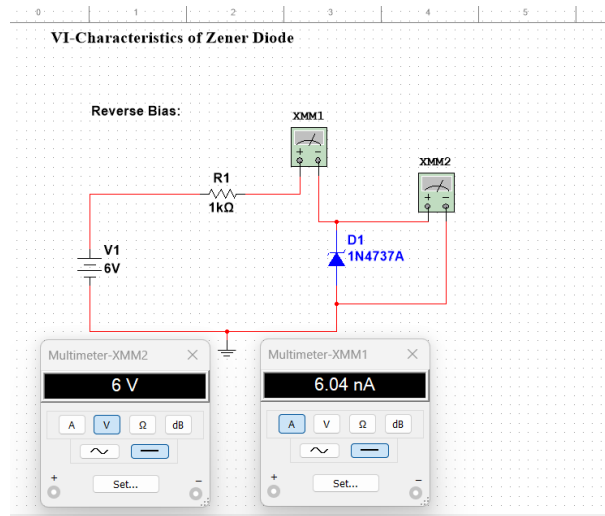


Fig 2.2 Reverse bias.

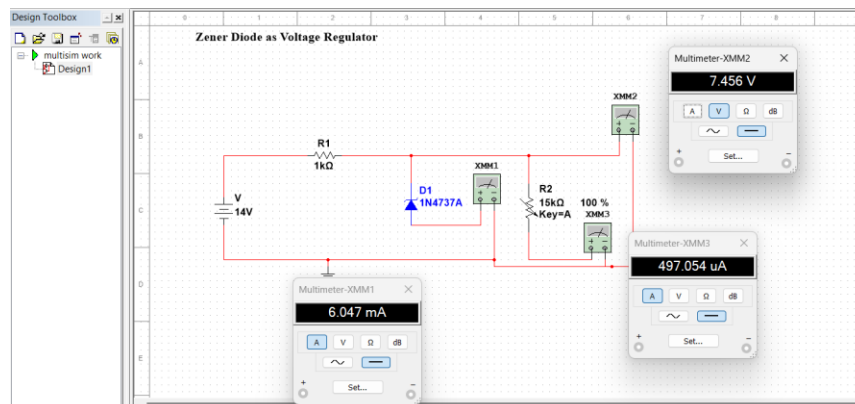


Fig 2.3 Zener diode as voltage regulator

Tabular table :

Forward Bias			Reverse Bias		
Es (volts)	Er (mV)	If (mA)	Es (volts)	Er (mV)	Ir (mA)
0.1	100	3.36E-07	-0.1	-100	-1.05E-07
0.3	299.462	0.000538	-0.3	-300	-3.05E-07
0.5	426.611	0.073389	-0.5	-499.999	-5.05E-07
0.7	457.522	0.242478	-0.7	-699.999	-7.11E-07
0.9	472.207	0.427793	-0.9	-899.999	-8.99E-07
1	477.385	0.522615	-1	-999.999	-1.02E-06
2	504.577	1.495	-2	-2000	-2.00E-06
3	517.686	2.482	-3	-3000	-3.02E-06
4	526.377	3.474	-4	-4000	-4.04E-06
5	532.884	4.467	-5	-5000	-5.06E-06
6	538.085	5.462	-6	-6000	-6.04E-06

Fig 2.4 Tabular Table

V in = 15V				RL = 15K		
RL ohm	VFL (Volts)	IL (mA)	%Regulation	Es (volts)	EFL (Volts)	IL mA)
100	1.364	13.636	100%	1	0.937499	0.0625
200	2.5	12.5	100%	2	1.875	0.125
500	5	10	100%	4	3.75	0.25
1k	7.374	7.374	100%	6	5.625	0.375
2k	7.444	3.722	100%	8	7.36	0.490671
5k	0.074627	14.925	100%	10	7.428	0.495211
10k	7.459	0.745884	100%	12	7.445	0.496366
20k	7.46	0.37301	100%	14	7.456	0.497054

Fig 2.5 Tabular Table

Graphs:

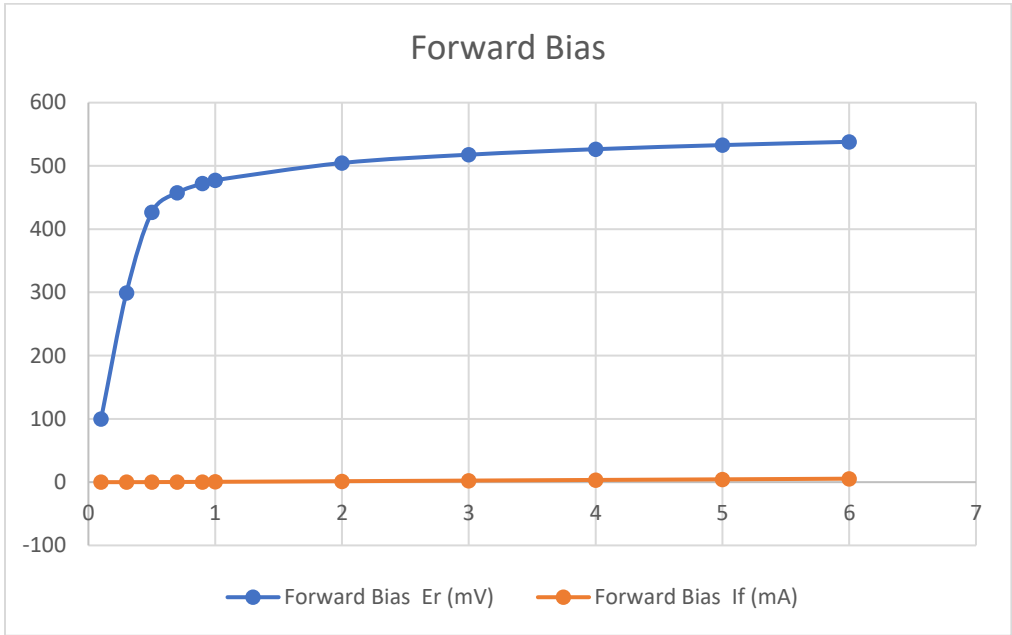


Fig 2.6 Forward bias graph

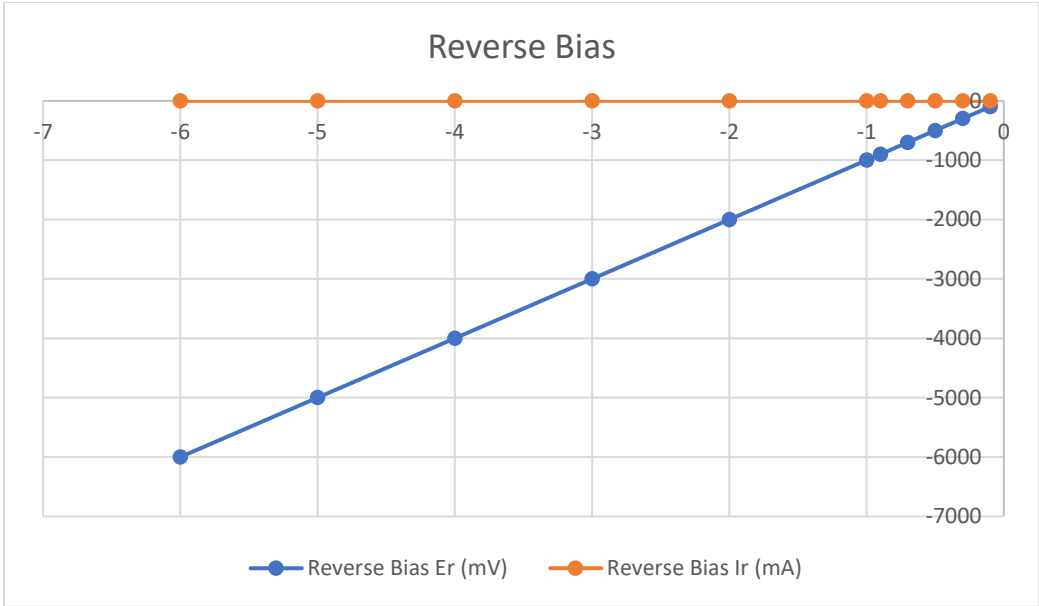


Fig 2.6 Reverse bias graph

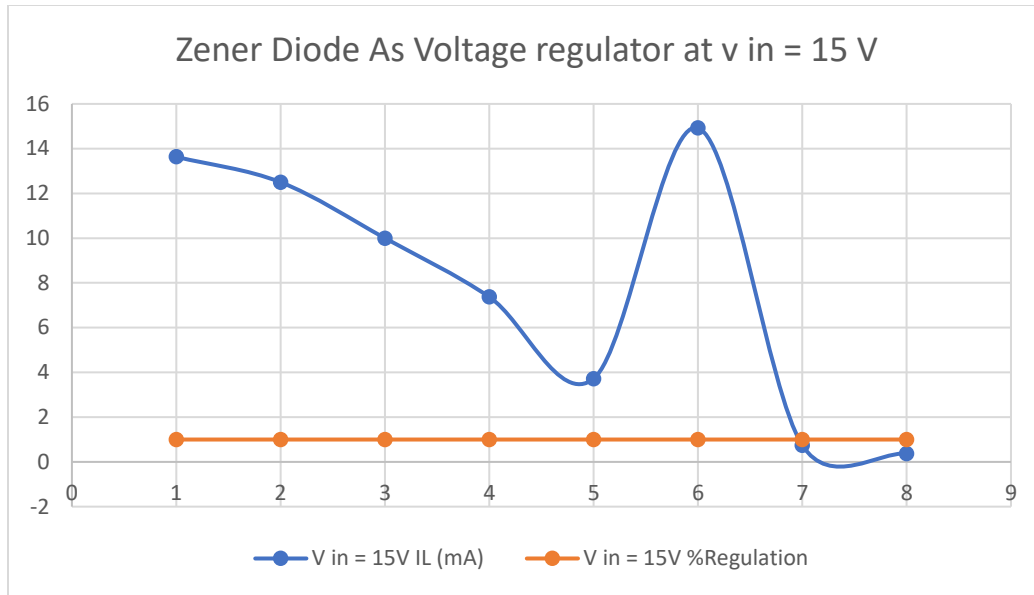


Fig 2.6 Zener Diode as Voltage regulator at $v_{in} = 15\text{ V}$ graph

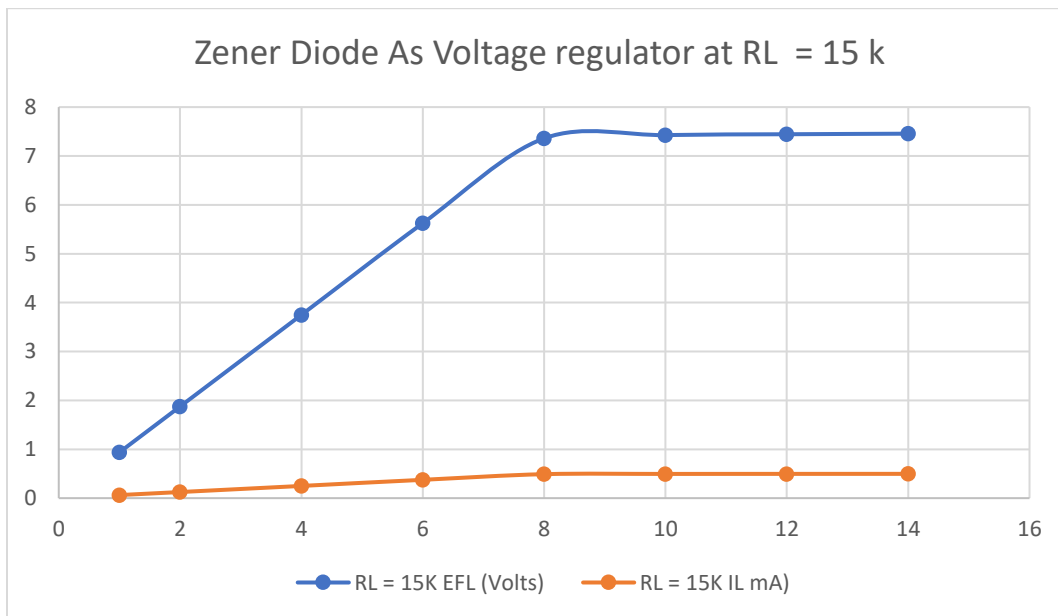


Fig 2.6 Zener Diode as Voltage regulator at $R_L = 15\text{ K}$ graph