

MG39U301 – Setting the Switching Frequency with ROSC

General Description

The MG39U301 provides two operating modes, constant frequency mode and constant off-time mode. The frequency or off-time value is controlled by a single resistor connected to RT pin.

In constant frequency mode, the resistor is connected between RT and GND pin. The switching frequency is maintained at a constant over different input voltages or load conditions. Its duty is the value “ V_o/V_{in} ”.

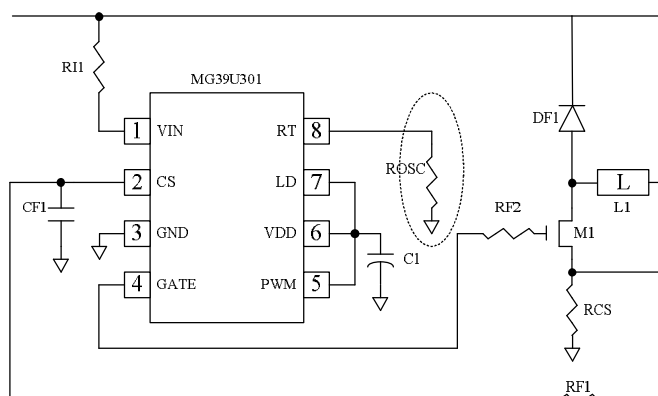
In constant off-time mode, the resistor is connected between RT and GATE pin. The switching off time is maintained at a constant. The on-time is adjusted according to the input voltage and load condition. The switching frequency is variable and depends greatly on the variation of input voltage and output load.

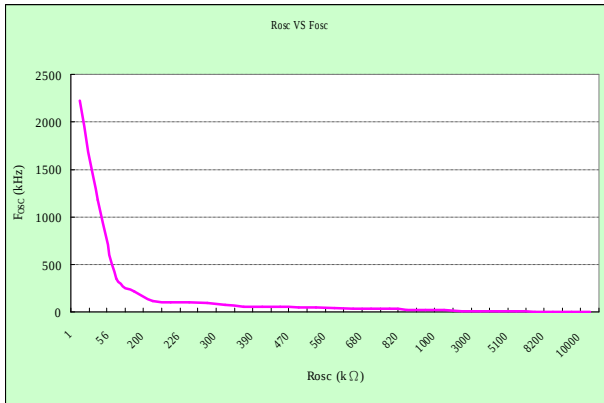
Rule of thumb, if the expected duty of the switching frequency is larger than 45%. Constant off-time control is a must to avoid sub-harmonic oscillation.

Setting the Frequency

ROSC (KOhms)	Frequency (KHz)
1	2230
10	1176
56	357.9
100	218.1
200	115.3
220	101.9
226	102.1
240	96.55
300	77.29
360	63.38
390	60.61
430	55.83
470	50.96
510	46.62
560	41.61
620	37.72
680	34.61
750	31.55
820	29.15
910	26.16
1000	24.32
2000	12.02
3000	7.723
4300	5.284
5100	4.471
6800	3.392
8200	2.895
9100	2.485
10000	2.186

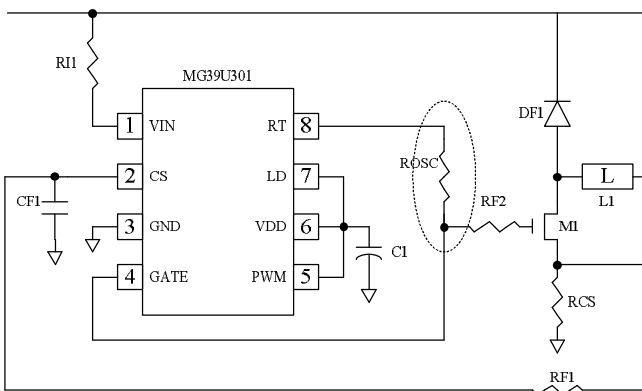
Constant Frequency Mode





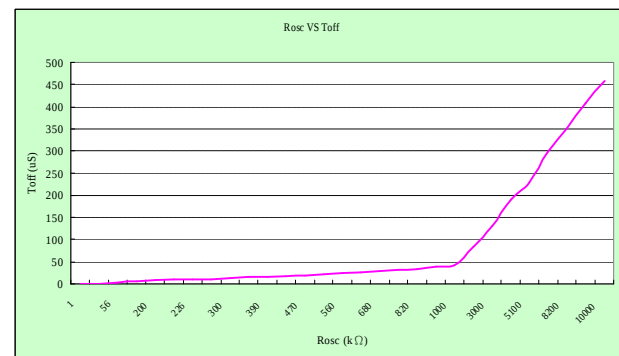
560	23.88
620	26.35
680	28.75
750	31.56
820	34.13
910	38.09
1000	40.93
2000	82.83
3000	128.6
4300	190.4
5100	227.7
6800	296.6
8200	350.7
9100	406.9
10000	457.7

Constant Off-Time Mode



Setting the Off-time

ROSC (KOhms)	TOFF (uS)
1	0.235
10	0.654
56	2.599
100	4.396
200	8.496
220	9.625
226	9.598
240	10.18
300	12.75
360	15.59
390	16.31
430	17.72
470	19.45
510	21.24



Notes:

Revision History

Rev	Descriptions	Date
V1.01	1. Initial release	2010/12/22
V1.02		