1.Description

The UMW SG3524 is a pulse width modulation circuit for switching power supply. Its interior includes a reference voltage source, error amplifier, oscillator, pulse width modulation, pulse width control trigger, dual alternative output, current limiting circuit and turn off circuit.

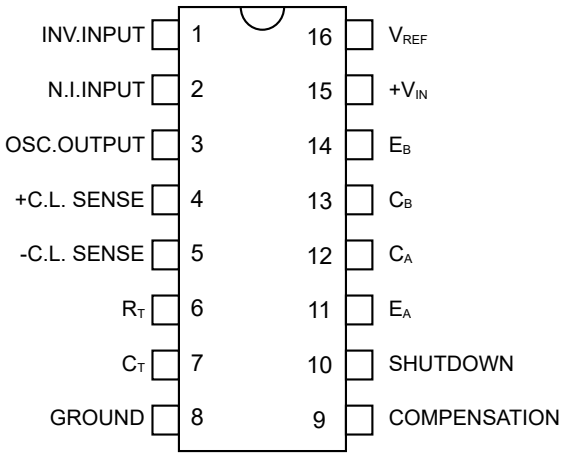
The circuit can be used for switching power supply control of any polarity, transformer coupled DC-DC switching power supply, transformer boosting and polarity conversion, and other power supply applications.

The operating temperature of UMW SG3524 is from 0°C to+70°C

2.Features

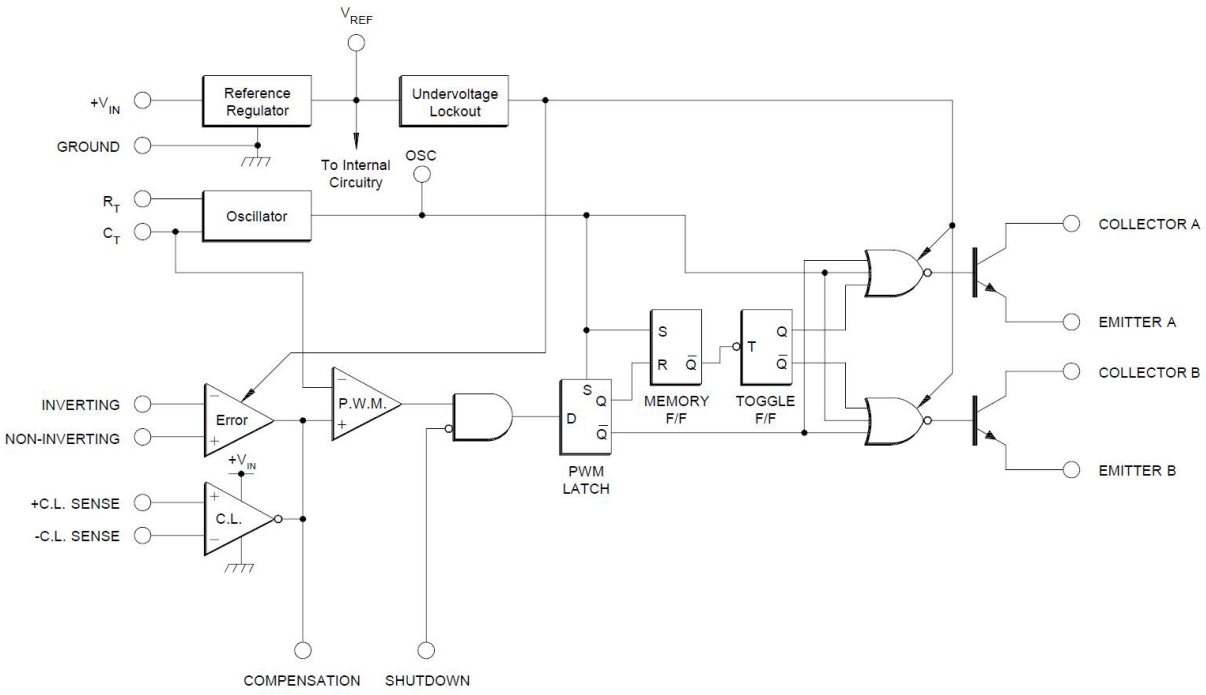
- With 5V reference voltage source
- The oscillation frequency range is 100Hz~300KHz
- Good external synchronization function
- It contains two 50mA outputs
- With current limiting circuit
- Complete PWM control circuit
- Single ended or push-pull output
- The total power current consumption is less than 10mA

3.Pinning Information



SOP-16

4.Functional Block Diagram



5.Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Supply Voltage	V_{IN}	40	V
Collector Output Current	I_C	100	mA
Reference Output Current	I_R	50	mA
Current Through C_T Terminal	I_T	-5	mA
Total Power Dissipation at T_{amb}=70°C	P_{tot}	1000	mW
Storage Temperature Range	T_{stg}	-65 to 150	°C
Operating Ambient Temperature Range	T_{op}	0 to 70	°C

6.Recommended Operating Conditions

Parameter	Value
Supply voltage V_{IN}	8 to 40V
Reference Output Current	0 to 20mA
Current trough C_T Terminal	-0.03 to -2mA
Timing Resistor, R_T	1.8 to 100KΩ
Timing Capacitor, C_T	0.001 to 0.1μF

7.Electrical Characteristics

Conditions: (Tamb=25°C, V_{IN}=20V unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reference voltage part V_{REF} (if not specified, I_L=0mA)						
Output voltage	V_{REF}		4.8	5	5.2	V
Voltage linearity	LineReg	V_{IN}=8V ~ 40V			30	mV
Load linearity	LoadReg	I_L=0 to 20mA			50	mV
Reference short circuit current	Short current	V_{REF}=0V	25		150	mA
Oscillator						
Oscillation frequency	F_{OSC}	R_T=2K, C_T=1nF		450		KHz
Frequency and voltage drift	ΔF_{OSC}	V_{IN}=8V ~ 40V			1	%
Peak value of oscillation waveform			3	3.5	3.9	V
Oscillating pulse width	PulseWidth		0.3		1.5	μs
Error amplifier part EA						
Input offset voltage	V_{IO}			2	10	mV
Input bias current	I_B			2	10	μA
Input offset current	I_{IO}				2	μA
DC open loop gain	A_V		60	80		dB
Common-mode rejection ratio	CMMR		70			dB
Unity-gain bandwidth	B_1			2		MHz
Output swing		T_A=25°C	0.5		3.8	V
Shutdown of circuit shutdown						
Turn off threshold voltage	V_{TH}		0.5	0.8	1.2	V

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output part (each output)						
Collector-emitter breakdown voltage	$V_{(BR)CE}$		40			V
Collector off-state current		V_{CE}=40V		0.01	50	μA
Collector-emitter saturation voltage	V_{sat}	I_C=50mA		1	2	V
Emitter output voltage	V_O	V_C=20V, I_E=-250μA	17	18		V
Turn-off voltage rise time	t_r	R_C=2kΩ		0.2		μs
Turn-on voltage fall time	t_f	R_C=2kΩ		0.1		μs
Static working current	I_{CC}	V_{IN}=40V			10	mA

8.Typical Characteristic

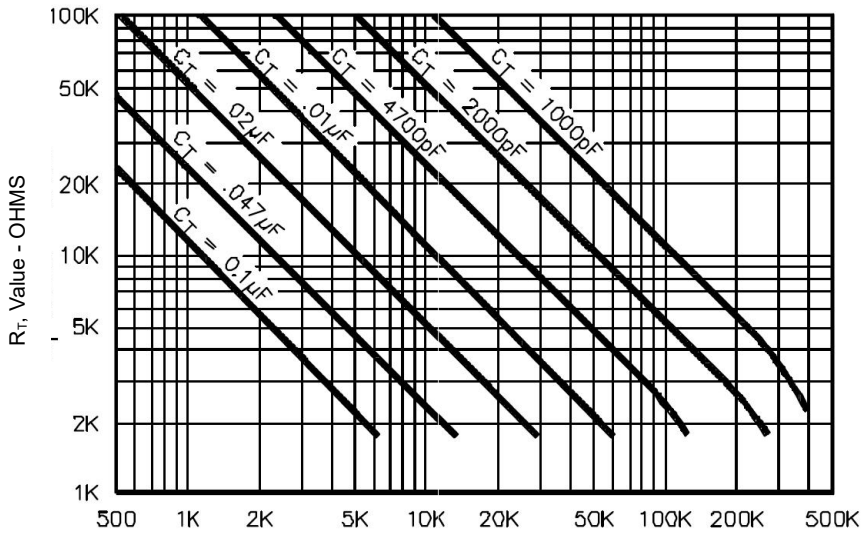


Fig 1. Relation between oscillation frequency and R_T, C_T

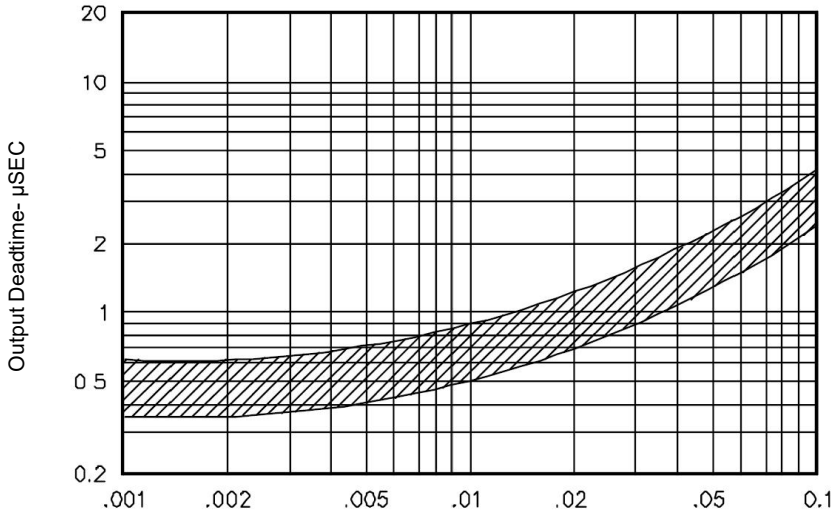
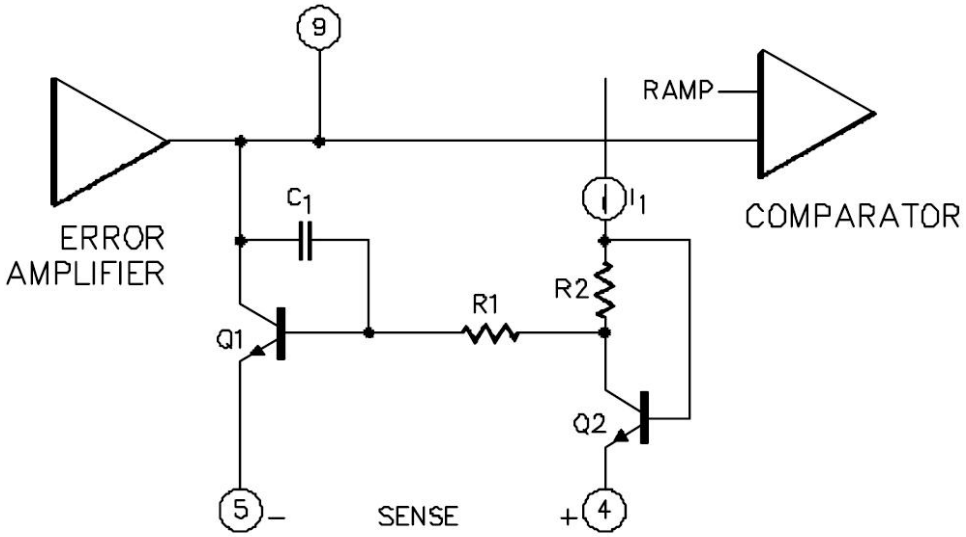


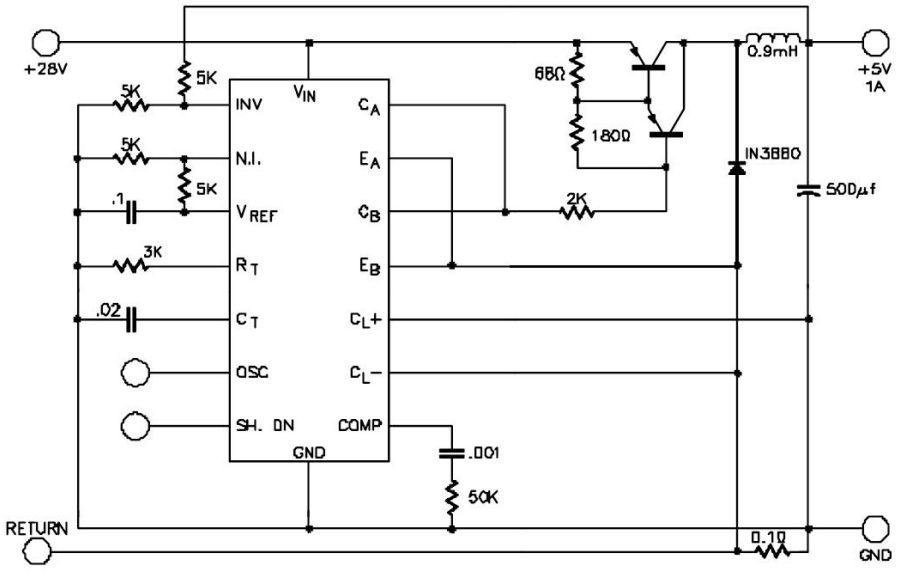
Fig 2. Relation between dead time and C_T

9.1 Typical Applications

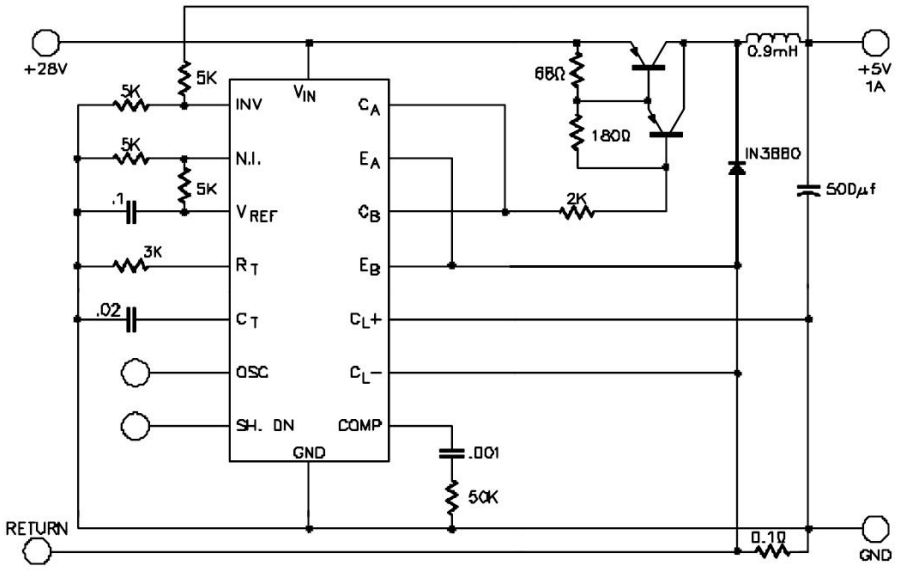


1. Internal current limiting circuit diagram

9.2 Typical Applications

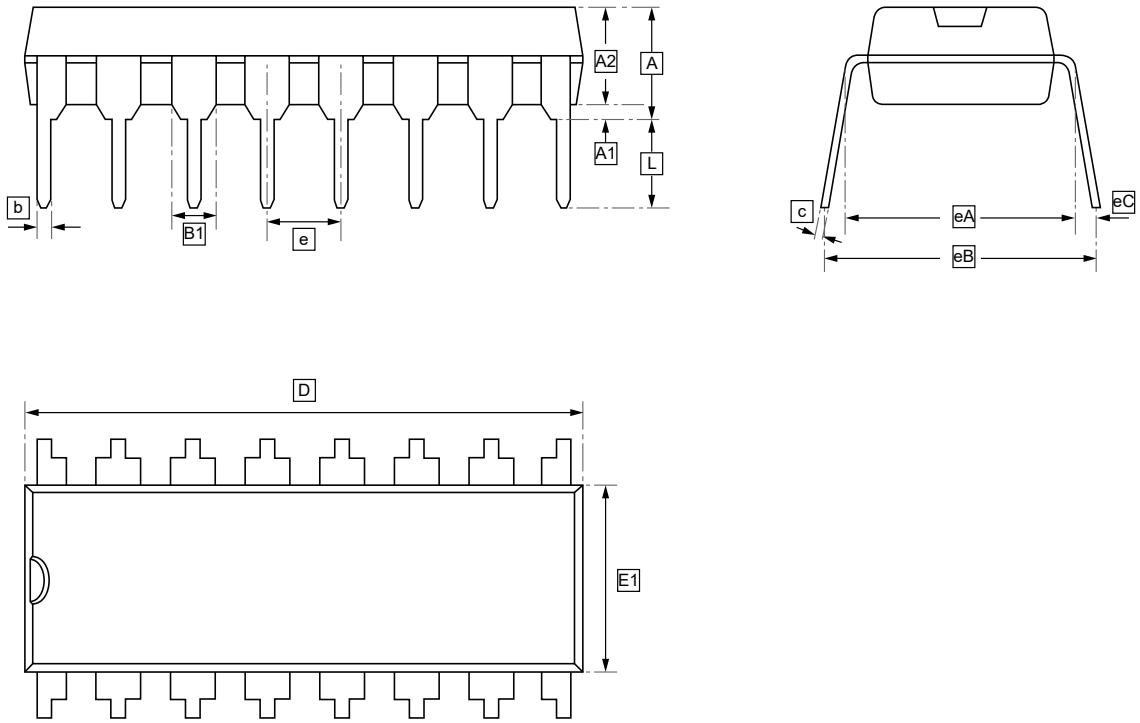


2.Single end output application (terminal output control can reach 0~90% duty cycle)



3.Push pull output application

10.1 DIP-16 Package Outline Dimensions

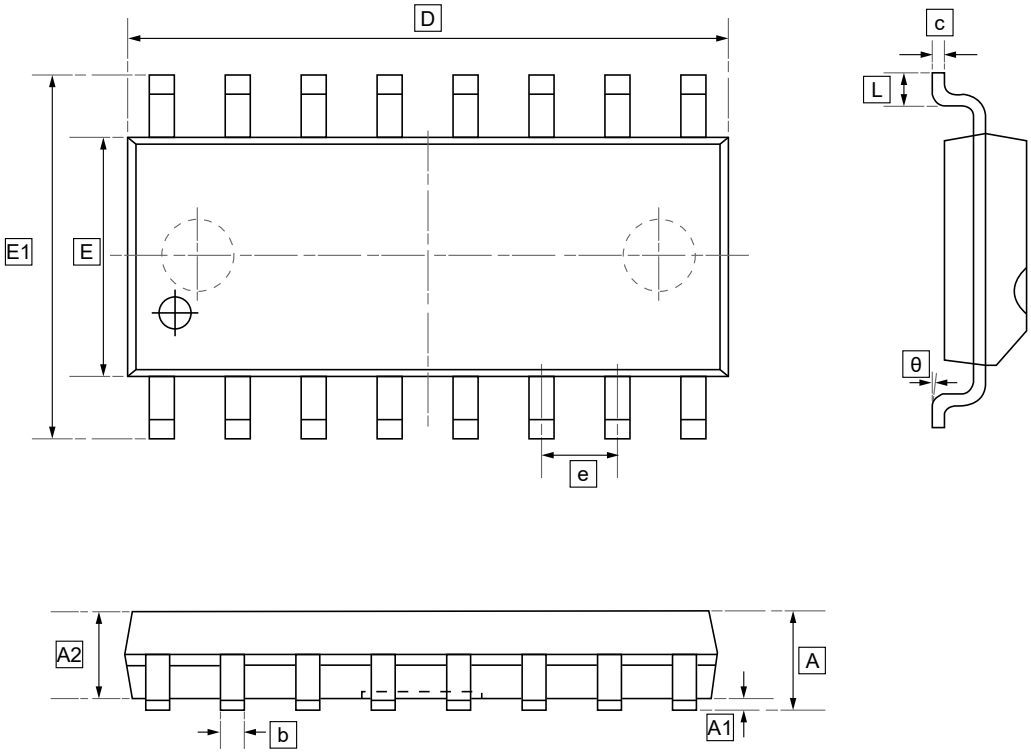


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	B1	c	D	E1	e	eA	eB	eC
Min	-	0.50	3.20	0.38	1.52	0.20	18.90	6.15	2.54	7.62	7.62	0
Max	4.45	-	3.70	0.54	BSC	0.35	19.45	6.60	BSC	BSC	9.30	1.52

Symbol	L
Min	3.00
Max	-

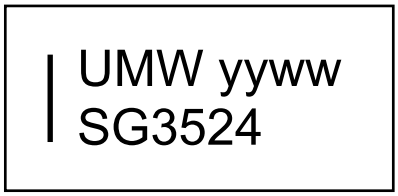
10.2 SOP-16 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E	E1	e	L	θ
Min	1.350	0	1.350	0.330	0.170	9.800	3.800	5.800	1.270	0.400	0°
Max	1.750	0.100	1.550	0.510	0.250	10.200	4.000	6.200	BSC	1.270	8°

11.Ordering Information



yy: Year Code
ww: Week Code

Order Code	Marking	Package	Base QTY	Delivery Mode
UMW SG3524DR	SG3524	SOP-16	2500	Tape and reel
UMW SG3524N	SG3524	DIP-16	2500	Tape and reel

12.Disclaimer

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