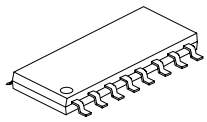
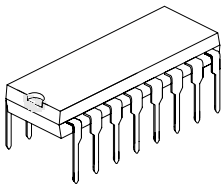
U9751B

LINEAR INTEGRATED CIRCUIT

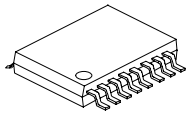
DOUBLE CHANNELS PWM CONTROLLER



SOP-16



DIP-16



SSOP-16(150mil)

*Pb-free plating product number: U9751BL

■ DESCRIPTION

The UTC **U9751B** consists of two PWM control circuits. Two PWM controllers is independent each other. It is low cost in many applications.

■ FEATURES

* Switch frequency: 400KHz
* I_{SINK} =400mA
* Wide work voltage
* Programmable dead-time control
* UVLO protection
* SCP protection
* Lower static supply current

■ APPLICATION

* DC/DC converters for video cameras、backlight inverter and notebook computers etc.

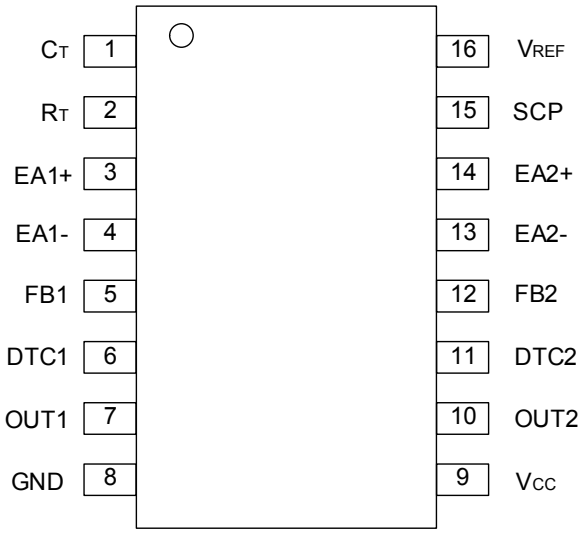
■ ORDER INFORMATION

Order Number		Package	Packing
Normal	Lead Free Plating		
U9751B-D16-T	U9751BL-D16-T	DIP-16	Tube
U9751B-S16-R	U9751BL-S16-R	SOP-16	Tape Reel
U9751B-S16-T	U9751BL-S16-T	SOP-16	Tube
U9751B-R16-R	U9751BL-R16-R	SSOP-16	Tape Reel
U9751B-R16-T	U9751BL-R16-T	SSOP-16	Tube

U9751BL-D16-R
(1)Packing Type
(2)Package Type
(3)Lead Plating

(1) R: Tape Reel, T: Tube
(2) D16: DIP-16, S16: SOP-16, R16: SSOP-16
(3) L: Lead Free Plating, Blank: Pb/Sn

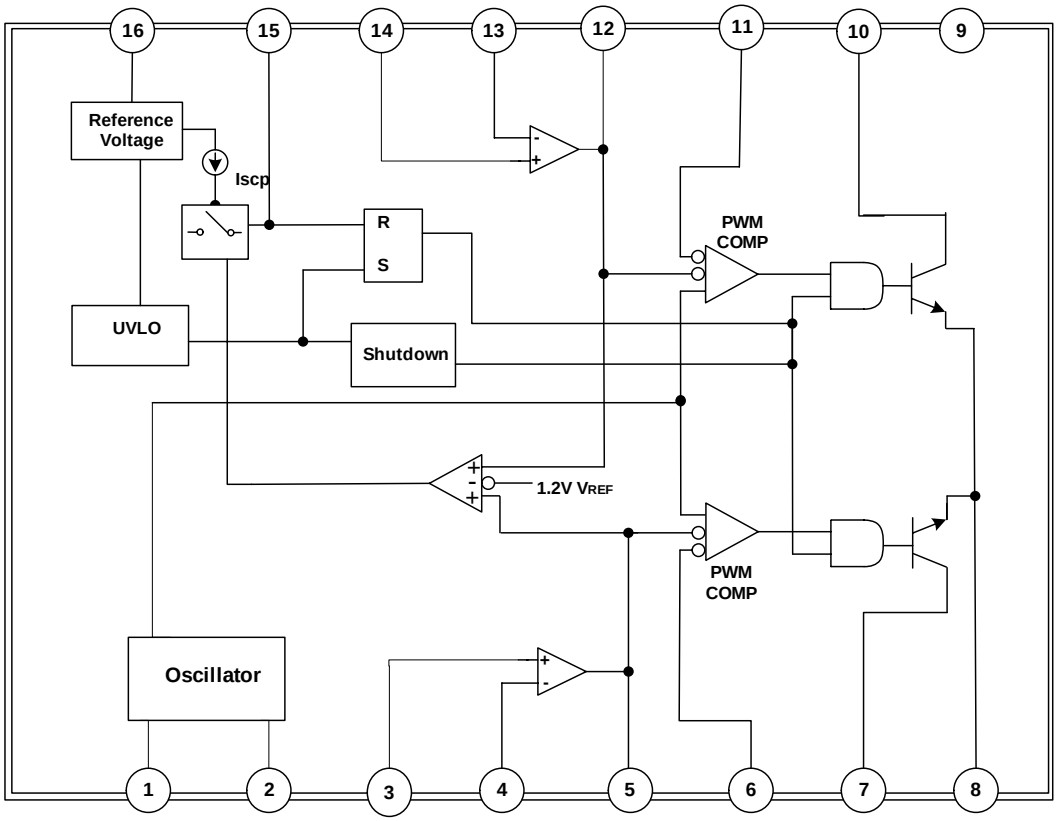
■ PIN CONFIGURATION



■ PIN DESCRIPTION

NO.	NAME	DESCRIPTION
1	C_T	Capacitor connected to the pin controlling Oscillator frequency
2	R_T	Resistor connected to the pin controlling Oscillator frequency
3	EA1+	Error Amplifier 1 positive Input
4	EA1-	Error Amplifier 1 Inverting Input
5	FB1	Error Amplifier 1 Output, used for feedback output 1
6	DTC1	Dead-Time Comparator Output 1
7	OUT1	Output 1
8	GND	Ground
9	V_{CC}	Power Supply
10	OUT2	Output 2
11	DTC2	Dead-Time Comparator Output 2
12	FB2	Error Amplifier 2 Output, used for feedback output 2
13	EA2-	Error Amplifier 2 Inverting Input
14	EA2+	Error Amplifier 2 positive Input
15	SCP	Short Circuit Protection Input
16	V_{REF}	Internal 2.5V Reference Voltage

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	+38	V
Differential Input Voltage	$V_{I(DIFF)}$	+20	V
Output Voltage	V_{OUT}	+38	V
Output Current	I_{OUT}	+450	mA
Maximum Junction Temperature	T_J	+150	℃
Operating Temperature	T_{OPR}	-20 ~ +85	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ DC ELECTRONIC CHARACTERISTICS

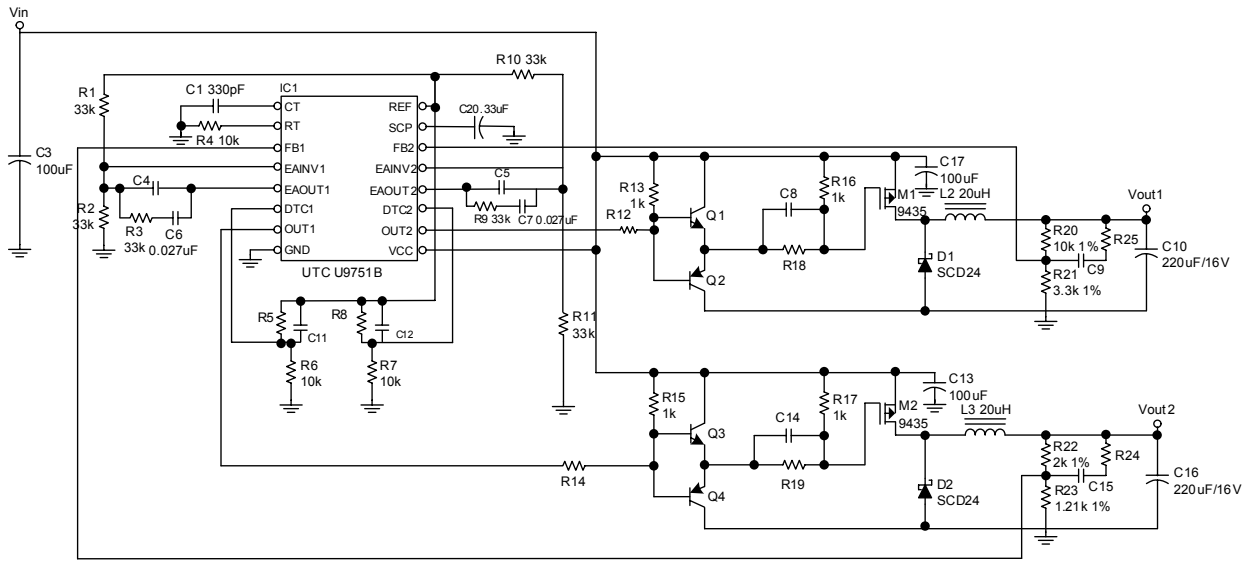
V_{CC}=6V, f=200kHz (unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reference section						
Internal Reference Voltage	V_{REF}	I_{OUT} =1mA	2.40	2.46	2.53	V
V_{REF} Regulation with V_{CC}	△V_{REF}	V_{CC} =3.6V ~ 40V		3.5		mV
V_{REF} Regulation with $I_{O(REF)}$	△V_{REF}	I_{OUT} = 0.1mA to 1mA		2		mV
V_{REF} Regulation with Temperature		T_A=-20℃~ 25℃		-0.1%	±1%	
		T_A=25℃ ~ 85℃		-0.2%	±1%	
Short-Circuit Output Current	$I_{O(SC)}$	V_{OUT} =0	18	22	30	mA
Undervoltage Lockout Section						
threshold Voltage(V_{CC})	V_{THR}	$I_{O(REF)}$ = 0.1mA,T_A=25℃	2.5	2.8	3.2	V
Short-Circuit Protection Control Section						
SCP Input Threshold Voltage	$V_{I(THR)}$	T_A= 25℃	1.2	1.3	1.5	V
SCP Comparator Threshold Voltage	$V_{COM(THR)}$			1.26		V
SCP Standby Voltage	V_{STN-BY}	No pull-up		110	220	mV
SCP Latched Input voltage	$V_{I(LTH)}$	No pull-up		77	200	mV
Input (Source) Current	$I_{I(SOURCE)}$	V_{IN}=0.7V, T_A=25℃	-1.5	-2.0	-2.5	μA
Oscillator Section						
Frequency	f	C_T=220pF, R_T=10K		400		KH_Z
Deviation of Frequency	△f	C_T=220pF, R_T=10K		10%		
Frequency Regulation with Voltage	△f/△V	V_{CC}=3.6V to 40V		1%		
Frequency Regulation with Temperature	△f/△T	T_A=-20℃ ~ 25℃		-0.4%	±2%	
		T_A=25℃ ~ 85℃		-0.2%	±2%	
Dead-time control section						
Latched Input Voltage	$V_{I(LTH)}$	$I_{OUR\ (DTC)}$ =40μA	1.9			V
Input Threshold Voltage at f=10kH_Z	$V_{I(THR)}$	Zero duty cycle	1.75	1.95	2.15	V
		Maximum duty cycle	1.3	1.45	1.7	
Input Bias Current	$I_{I(BIAS)}$			0.2	1	μA
Latch Mode (Source) Current	I_{SOURCE}	T_A=25℃		-620		μA
Error-Amplifier Section						
Input Offset Voltage	$V_{I(OFF)}$	$V_{O(FB)}$=1.25V			±6	mV
Common-Mode Input Voltage Range	$V_{I(CM)}$	V_{CC}=3.6V to 40 V	0.3		1.6	V
Positive Output Voltage Swing	$V_{O(POS)}$		V_{REF}-0.2			V
Negative Output Voltage Swing	$V_{O(NEG)}$				1	V
Input Offset Current	$I_{I(OFF)}$	$V_{O(FB)}$=1.25V			±100	nA

■ DC ELECTRONIC CHARACTERISTICS(Cont.)

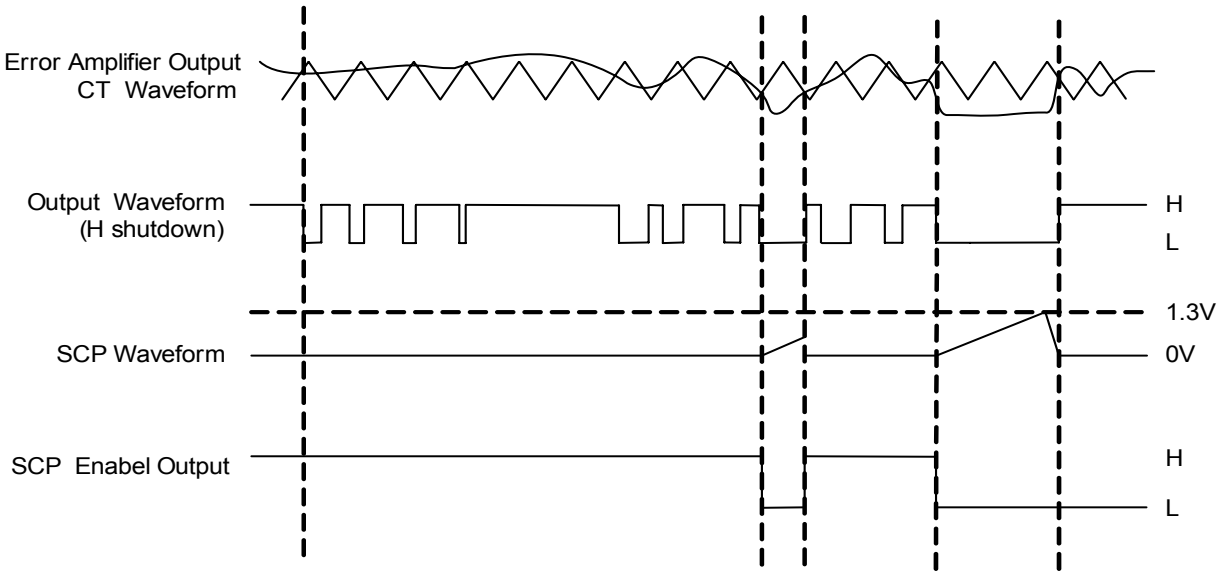
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Bias Current	$I_{I(BIAS)}$	$V_{O(FB)}$=1.25V		160	500	nA
Output Sink Current	$I_{O(SINK)}$	$V_{I(DIFF)}$=-0.1V,V_{OUT}=1.25V	1	4.0		mA
Output Source Current	$I_{O(SOURCE)}$	$V_{I(DIFF)}$=0.1V,V_{OUT} =1.25V	-45	-90		μA
Common-Mode Rejection Ratio	CMRR		60	80		dB
Open-Loop Voltage Gain	G_{VO}	R_F=200KΩ	70	80		dB
Unity-Gain Bandwidth	GB_W			1.5		MH_Z
Output Section						
Output Saturation Voltage	$V_{O(SAT)}$	I_{OUT}=10mA		0.7	1	V
Short-Circuit Output Current	$I_{O(SC)}$	V_{OUT} =6V		450		mA
Off-State Current	$I_{O(OFF)}$	V_{OUT} =50V			10	μA
PWM Comparator Section						
Input Threshold Voltage at f=10kHz	$V_{I(THR)}$	Zero duty cycle	1.75	1.95	2.15	V
		Maximum duty cycle	1.3	1.45	1.8	
Total Device						
Standby Supply Current	I_{STN-BY}	Off-state		1.7		mA
Average Supply Current	I_{AVE}	R_T =10K		2.0	2.6	mA

■ TYPICAL APPLICATION



Typical Application

■ TIMING WAVEFORM



Timing Diagram