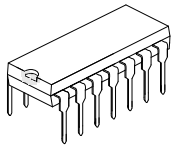
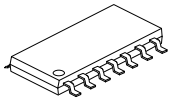
LM556

LINEAR INTEGRATED CIRCUIT

DUAL TIMER



DIP-14



SOP-14

■ DESCRIPTION

The UTC **LM556** dual monolithic circuit is a highly stable controller capable of producing accurate delays or oscillation. The UTC **LM556** is the dual of UTC NE555; timing is provided an external resistor and capacitor for each function. The two timers operate independently of each other, sharing only V_{CC} and GND. The circuits may be triggered and reset on falling wave forms. The output structures may sink or source 200mA.

■ FEATURES

*High Current Driver Capability(=200mA)
*Adjustable Duty Cycle
*Timing From μSec to Hours
*Temperature Stability of 0.005%/°C
*TTL Compatible
*Operates in Both Astable and Monostable Modes

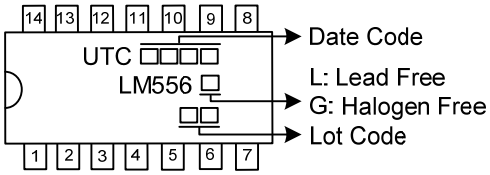
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
LM556L-D14-T	LM556G-D14-T	DIP-14	Tube
LM556L-S14-R	LM556G-S14-R	SOP-14	Tape Reel

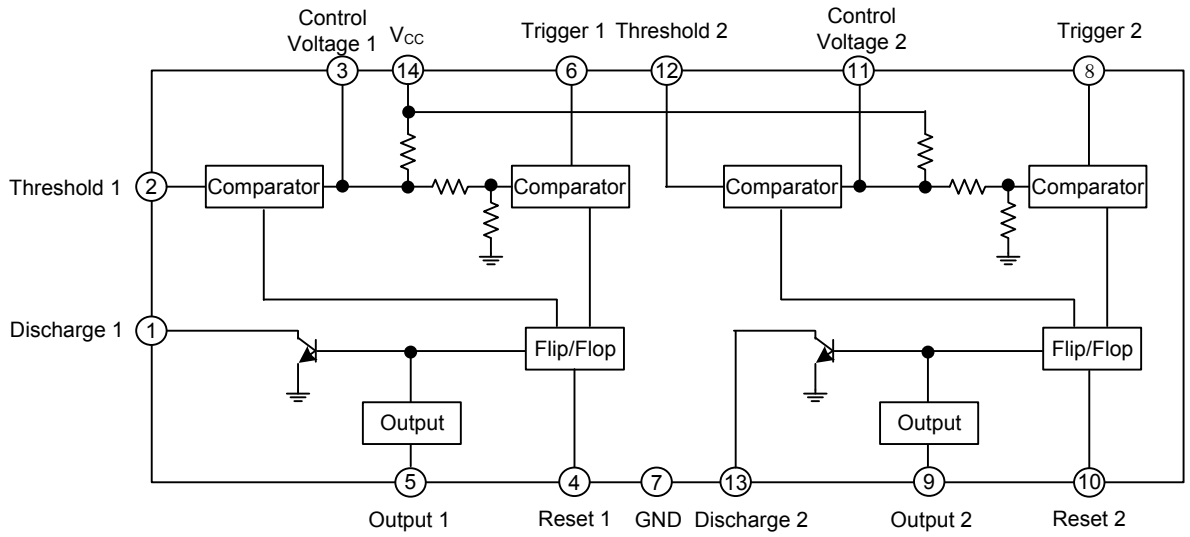
LM556G-D14-T
(1)Packing Type
(2)Package Type
(3)Green Package

(1) T: Tube, R: Tape Reel
(2) D14: DIP-14, S14: SOP-14
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	16	V
Power Dissipation	P_D	600	mW
Lead Temperature(soldering 10 sec.)	T_{LEAD}	300	°C
Operating Temperature	T_{OPR}	-20 ~ +85	°C
Storage Temperature	T_{STG}	-65 ~ +150	°C

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.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, V_{CC}=5 to 15V, unless otherwise specified)

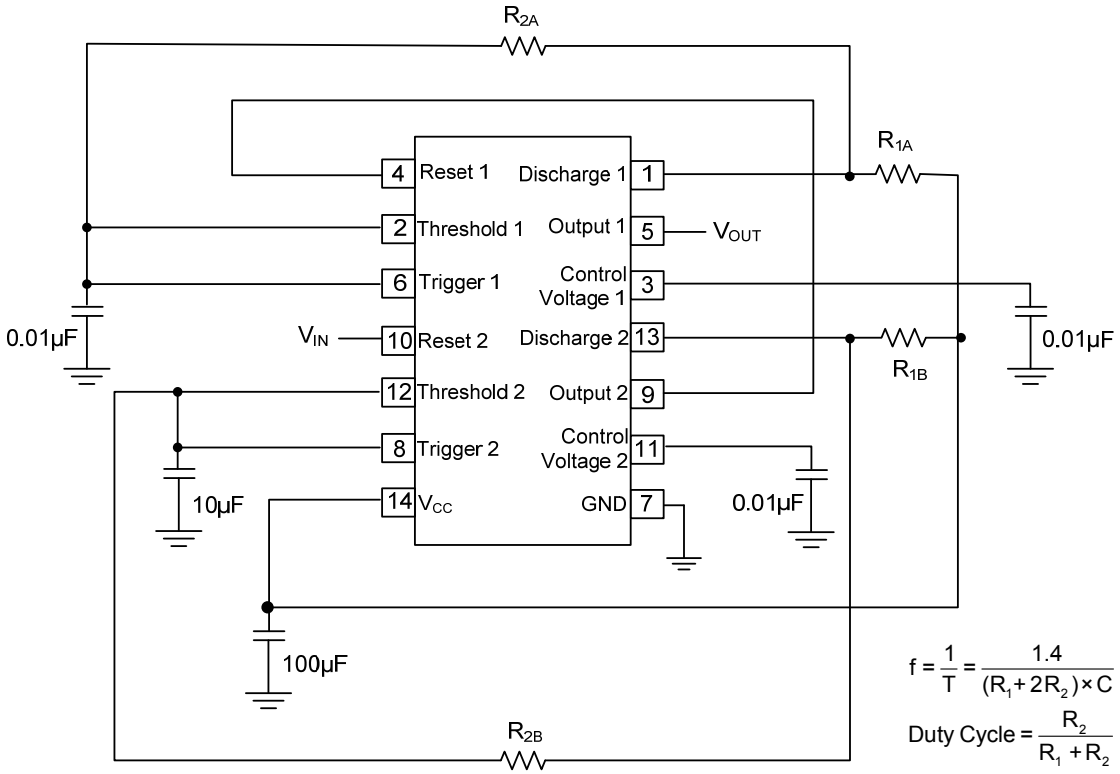
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply voltage	V_{CC}		4.5		16	V
Supply Current(two timers) (low state), (Note 1)	I_{CC}	V_{CC}=5V, R_L=∝		5	12	mA
		V_{CC}=15V, R_L=∝		16	30	mA
TIMING ERROR (MONOSTABLE)						
Initial Accuracy (Note 2)	A_{CCUR}	R_A=2KΩ to 100KΩ C=0.1μF, T=1.1RC		0.75		%
Drift with Temperature	$\Delta t/\Delta T$			50		ppm/°C
Drift with Supply Voltage	$\Delta t/\Delta V_{CC}$			0.1		%/V
TIMING ERROR (ASTABLE)						
Initial Accuracy (Note 2)	A_{CCUR}	R_A=1KΩ to 100KΩ C=0.1μF, V_{CC}=15V		2.25		%
Drift with Temperature	$\Delta t/\Delta T$			150		ppm/°C
Drift with Supply Voltage	$\Delta t/\Delta V_{CC}$			0.3		%/V
Control Voltage	V_C	V_{CC}=15V	9.0	10.0	11.0	V
		V_{CC}=5V	2.6	3.33	4.0	V
Threshold Voltage	V_{TH}	V_{CC}=15V	8.8	10.0	11.2	V
		V_{CC}=5V	2.4	3.33	4.2	V
Threshold Current (Note 3)	I_{TH}			30	250	nA
Trigger Voltage	Vt_R	V_{CC}=5V	1.1	1.6	2.2	V
		V_{CC}=15V	4.5	5	5.6	V
Trigger Current	It_R	V_{tR}=0		0.01	2.0	μA
Reset Voltage (Note 4)	V_{RST}		0.28	0.4	1.12	V
Reset Current	I_{RST}			0.03	0.6	mA
Low Output Voltage	V_{OL}	V_{CC}=15V, I_{SINK}=10mA		0.1	0.25	V
		V_{CC}=15V, I_{SINK}=50mA		0.4	0.75	V
		V_{CC}=15V, I_{SINK}=100mA		2	3.2	V
		V_{CC}=15V, I_{SINK}=200mA		2.5		V
		V_{CC}=5V, I_{SINK}=5mA		0.15	0.25	V
		V_{CC}=5V, I_{SINK}=8mA		0.25	0.35	V
High Output Voltage	V_{OH}	V_{CC}=15V, I_{SOURCE}=200mA		12.5		V
		V_{CC}=15V, I_{SOURCE}=100mA	12.75	13.3		V
		V_{CC}=5V, I_{SOURCE}=100mA	2.75	3.3		V
Rise Time of Output	t_R			100	300	nSec
Fall Time of Output	t_F			100	300	nSec
Discharge Leakage Current	I_{LKG}			20	100	nA

■ ELECTRICAL CHARACTERISTICS (Cont.)

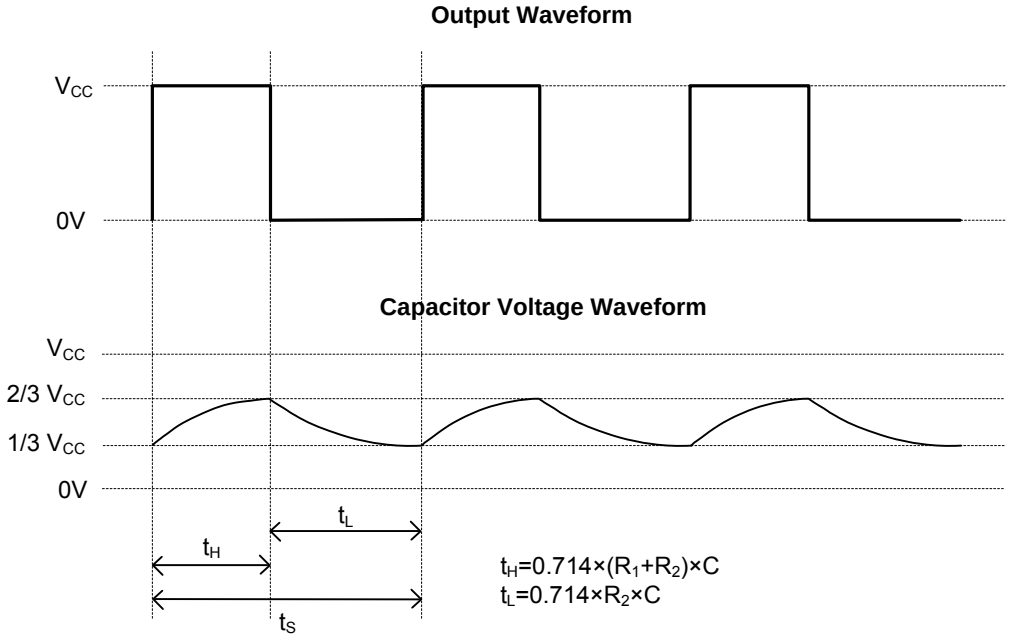
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
MATCHING PARAMETER						
Initial Accuracy (Note 5)	A_{CCUR}	R_A, RB=1KΩ to 100KΩ C=0.1μF, V_{CC}=15V		1	2	%
Drift with Temperature	$\Delta t/\Delta T$			10		ppm/°C
Drift with Supply Voltage	$\Delta t/\Delta V_{CC}$			0.2	0.5	%/V

Notes: 1.Supply current when output is high is typically 1mA less at V_{CC} 5V.
2. Tested at V_{CC}=5V and V_{CC}=15V.
3: This will determine the maximum value of RA+RB for 15V operation, The maximum total is R=20MΩ, and for 5V operation the maximum total is R=6.6MΩ.
4: As reset voltage lower, timing is inhibited and then the output goes low.
5: Matching parameters refer to the difference between performance parameters of each timer section in the monostable mode.

■ TYPICAL APPLICATION CIRCUIT



■ TEST CIRCUIT AND WAVEFORMS



Capacitor Voltage and Output Waveform in Astable Mode