UNISONIC TECHNOLOGIES CO., LTD

C555　　　　Preliminary　　　　*CMOS IC*

SINGLE TIMER

SOP-8

DIP-8

■ **DESCRIPTION**

The **C555** astable and monostable timing circuit is a highly stable controller capable of producing accurate time delays, or oscillation.

■ **FEATURES**

* Timing from microseconds through hours
* High speed operation – 500kHz
* Wide operation supply voltage range – 2 to 18 voltages
* Low Supply Current －0.2mA
* Operates in both astable and monostable modes
* High output source/sink driver can drive TTL / CMOS
* Adjustable duty cycle
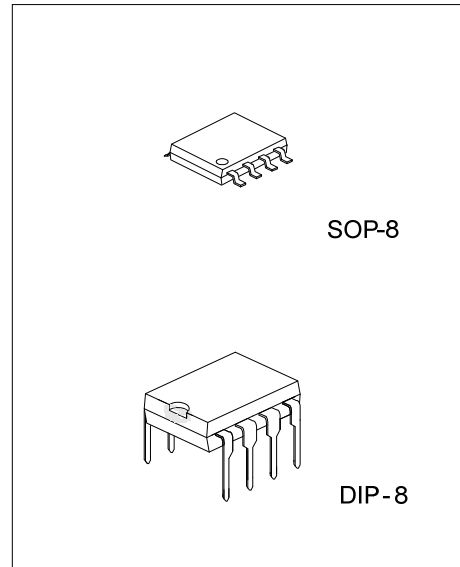
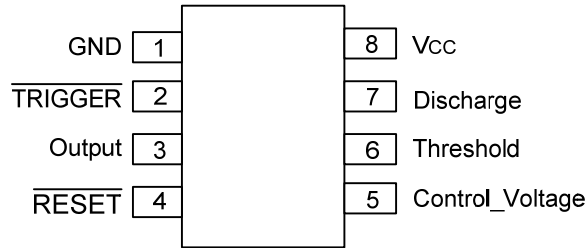■ **ORDERING INFORMATION**

Ordering Number		Package	Packing
Lead Free	Halogen Free		
C555L-D08-T	C555G-D08-T	DIP-8	Tube
C555L-S08-T	C555G-S08-T	SOP-8	Tube
C555L-S08-R	C555G-S08-R	SOP-8	Tape Reel

C555L-D08-T

(1)Packing Type
(2)Package Type
(3)Lead Free

(1) T: Tube, R: Tape Reel

(2) D08: DIP-8, S08: SOP-8

(3) L: Lead Free, G: Halogen Free

■ **PIN CONFIGURATION**

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           ┌──────────┐
GND   [ 1 ]│          │[ 8 ]  Vcc
TRIGGER[ 2]│          │[ 7 ]  Discharge
Output[ 3 ]│          │[ 6 ]  Threshold
RESET [ 4 ]│          │[ 5 ]  Control_Voltage
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■ **PIN DESCRIPTION**

PIN No.	PIN NAME	DESCRIPTION
1	GND	Ground
2	$\overline{\text{TRIGGER}}$	Trigger voltage input
3	Output	Output
4	$\overline{\text{RESET}}$	Direct reset low input
5	Control_Voltage	Control voltage
6	Threshold	Threshold voltage input
7	Discharge	Discharging when output is low
8	V_{CC}	Supply voltage

■ **TRUTH TABLE**

THRESHOLD	$\overline{\text{TRIGGER}}$	$\overline{\text{RESET}}$	OUTPUT	DISCHARGE
X	X	L	L	ON
$>2/3\times V_{CC}$	$>1/3\times V_{CC}$	H	L	ON
$<2/3\times V_{CC}$	$>1/3\times V_{CC}$	H	STABLE	STABLE
X	$<1/3\times V_{CC}$	H	H	OFF

■ **BLOCK DIAGRAM**
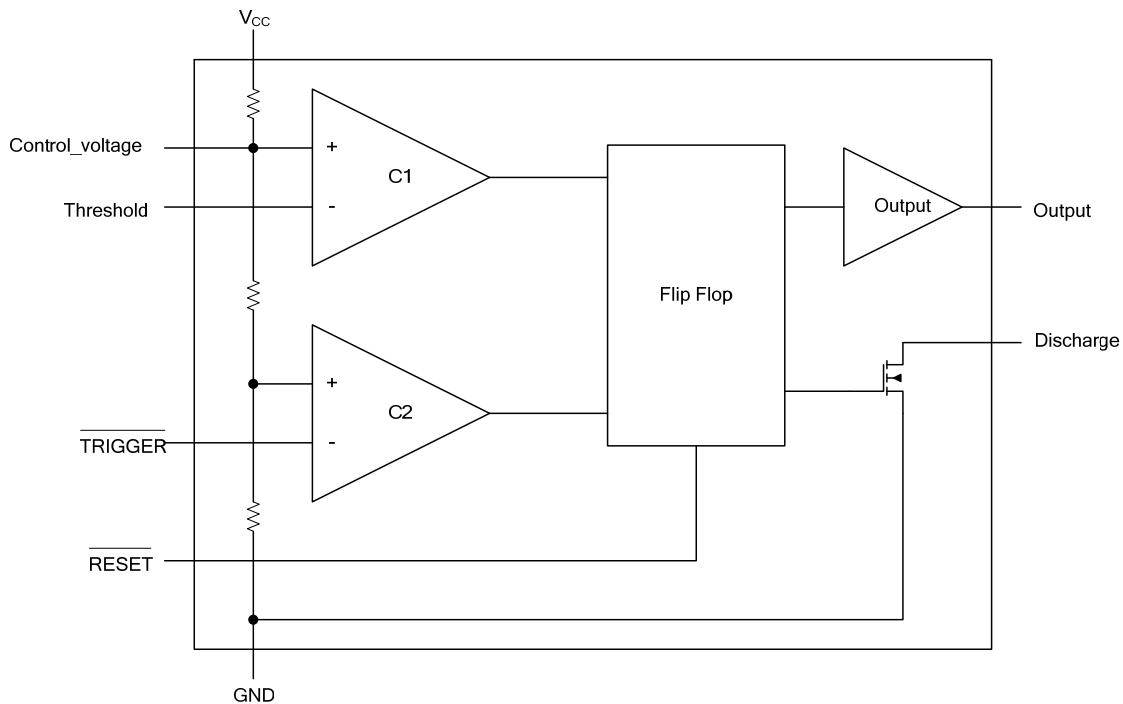
■ **ABSOLUTE MAXIMUM RATINGS**

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	18	V
Input Voltage	V_{TH}, V_{TRIG}, V_{RST}	-0.3 ~ V_{CC}+0.3	V
Output Current	I_O	100	mA
Power Dissipation	P_D	200	mW
Junction Temperature	T_J	125	°C
Operating Temperature	T_{OPR}	-20~85	°C
Storage Temperature	T_{STG}	-65~150	°C

Note: Absolute maximum ratings and operation rating recommended 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.
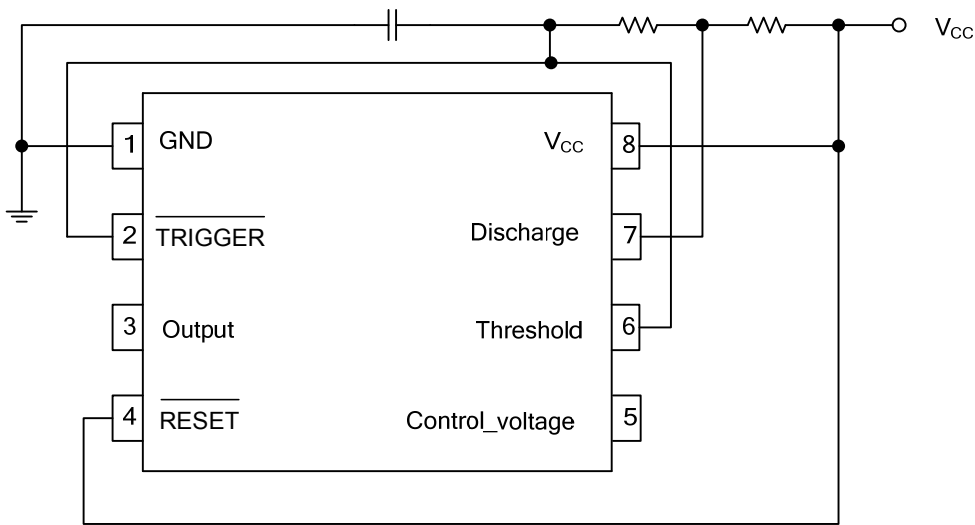
■ **RECOMMENDED OPERATING CONDITIONS**

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	2.0 ~ 18	V
Output Current	I_O	20	mA
Operating Temperature	T_{OPR}	-20~75	°C

■ **ELECTRICAL CHARACTERISTICS** (unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
T_A=25°C							
Supply Current	I_{CC}	V_{CC}=2V				200	µA
		V_{CC}=18V				300	µA
Initial Accuracy	A_{CCUR}	V_{CC}=5V, R_L=1~100kΩ, C_L=0.1µF		5			%
Drift with Supply Voltage	$\Delta t/\Delta V_{CC}$					3	%/C
Control Voltage	V_C			0.65×V_{CC}		0.69×V_{CC}	V
Threshold Voltage	V_{TH}	V_{CC}=5V		0.65×V_{CC}		0.70×V_{CC}	V
Trigger Voltage	V_{TR}	V_{CC}=5V		0.31×V_{CC}		0.36×V_{CC}	V
Reset Voltage	V_{RST}	V_{CC}=2~18V		0.4		1.0	V
Low Output Voltage	V_{OL}	V_{CC}=5V, I_{OL}=3.2 mA				0.4	V
		V_{CC}=15V, I_{OL}=20mA				1.0	V
High Output Voltage	V_{OH}	V_{CC}=5V, I_{OL}=0.8mA		4.0			V
		V_{CC}=15V, I_{OL}=0.8mA		14.3			V
Rise/Fall Time of Output	t_{THL}, t_{TLH},	V_{CC}=15V, R_L=10MΩ, C_L=10pF		35		75	ns
Guaranteed Max Osc Freq	f_{MAX}	V_{CC}=2~18V, Astable Operation		500			kHz
T_A=-20~70°C							
Supply Current	I_{CC}	V_{CC}=2V				400	µA
		V_{CC}=18V				600	µA
Initial Accuracy	A_{CCUR}	V_{CC}=5V, R_L=1~100kΩ, C_L=0.1µF		5			%
Drift with Temperature	$\Delta t/\Delta T$	V_{CC}=5V, R_L=1~100kΩ, C_L=0.1µF	V_{CC}=5V			0.02	%/°C
			V_{CC}=15V			0.06	%/°C
Drift with Supply Voltage	$\Delta t/\Delta V_{CC}$		V_{CC}=5V			6	%/C
Control Voltage	V_C			0.60×V_{CC}		0.80×V_{CC}	V
Threshold Voltage	V_{TH}	V_{CC}=5V		0.60×V_{CC}		0.80×V_{CC}	V
Trigger Voltage	V_{TR}	V_{CC}=5V		0.28×V_{CC}		0.40×V_{CC}	V
Reset Voltage	V_{RST}	V_{CC}=2~18V		0.2		1.5	V
Low Output Voltage	V_{OL}	V_{CC}=5V, I_{OL}=3.2mA				0.6	V
		V_{CC}=15V, I_{OL}=20mA				1.5	V
High Output Voltage	V_{OH}	V_{CC}=5V, I_{OL}=0.8mA		3.5			V
		V_{CC}=15V, I_{OL}=0.8mA		14			V
Rise/Fall Time of Output	t_{THL}, t_{TLH},	V_{CC}=5V, R_L=10MΩ, C_L=10pF		70		150	ns
Guaranteed Max Osc Freq	f_{MAX}	V_{CC}=2~18V, Astable Operation		200			kHz

■ **TYPICAL APPLICATION CIRCUIT**

■ **SWITCHING WAVEFORMS**