

UNISONIC TECHNOLOGIES CO., LTD

L2044

LINEAR INTEGRATED CIRCUIT

DUAL OUTPUT FLASHER

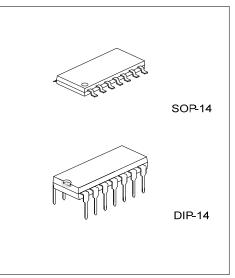
DESCRIPTION

The UTC **L2044** is a dual output stages flasher designed as a relay driver for flashing light control in automotive applications. Both sides direction indicator input with only a small control current makes switch contacts for small loads possible. Each side of the vehicle is controlled separately.

The construction of the hazard switch could be simplified due to hazard warning input is separate. The flasher will dramatically increase the flash frequency by a typical ratio of 2:1 if lamp fault is detected. The UTC **L2044** can be directly connected to the battery due to extreme low current consumption

FEATURES

- * Temperature and Supply Voltage Compensated Flashing Frequency
- * Frequency Doubling Indicates Lamp Fault.
- * Two Relay Driver Outputs with High Current-carrying Capacity and Low Saturation Voltage
- * Minimum Lamp Load for Flasher Operation: ≥ 1W
- * Very Low Sensitivity to EMI
- * Extremely Low Current Consumption<10µA (at Switches Open)
- * Reverse Polarity Protection
- * Three Control Inputs: Left, Right and Hazard Warning



*Pb-free plating product number: L2044L

PIN DESCRIPTION

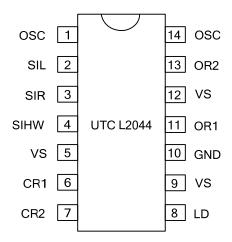
PIN	PIN	
No.	NAME	FUNCTION
1	OSC	Oscillator
2	SIL	Start input left
3	SIR	Start input right
4	SIHW	Start input hazard
4	SINV	warning
5	VS	Vcc
6	CR1	Control input relay 1
7	CR2	Control input relay 2
8	LD	Lamp failure detection
9	VS	V _{cc}
10	GND	ground
11	OR1	Output relay 1
12	VS	V _{cc}
13	OR2	Output relay 2
14	OSC	Oscillator

ORDERING INFORMATION

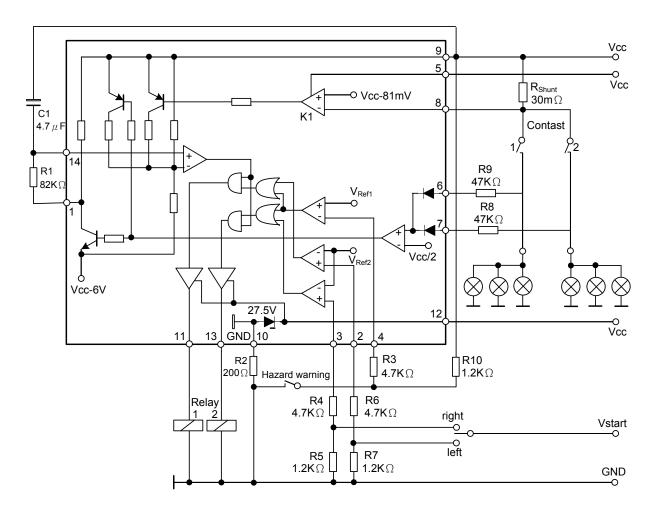
Order I	Number	Daakaga	Docking	
Normal	Lead free	Package	Packing	
L2044-D14-T	L2044L-D14-T	DIP-14	Tube	
L2044-S14-R	L2044L-S14-R	SOP-14	Tape Reel	
L2044-S14-T	L2044L-S14-T	SOP-14	Tube	

L2044

PIN CONFIGURATION



BLOCK DIAGRAM





ABSOLUATE MAXIUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT	
Supply Voltage, 1 min, pins 5, 9 and 12		Vcc	24	V	
Junction Temperature		ΤJ	+125	°C	
Operating Temperature		T _{OPR}	-20 ~ +85	°C	
Storage Temperature		T _{STG}	-40 ~ +150	°C	
Thermal Desistance Junction to Ambient	DIP-14	heta JA	90	°C/W	
Thermal Resistance Junction to Ambient	SOP-14	U JA	120	CIVV	

Note 1.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.

2. The device is guaranteed to meet performance specification within 0°C ~70°C operating temperature range and assured by design from –20°C ~85°C.

■ ELECTRICAL CHARACTERISTICS (V_{CC} = 12V, T_a =25°C, unless otherwise specified.)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage Range		Vcc	Pins 5, 9, 12	8		18	V
Saturation Voltage	V _{CC} =8V	V _{OUT}	R _L =82Ω			1.0	V
Saturation voltage	V _{CC} =12V					1.2	V
Clamping Voltage		V ₁₂	T _a = -20℃ ~ 85℃	25.0	27.5	30.0	V
Relay output overvoltage detection (relay disabled)		V ₁₂	T _a = -20℃ ~ 85℃	18	20	22	V
Control signal threshold			V _{CC} =9V		70.6		
		V _{CC}	V _{CC} =13.5V		85.5		mV
			V _{CC} =16V		93.0		
Output current for relay driver		I _{OUT}	Pins 11, 13			300	mA
Relay output reverse current		I _{OUT}	Pins 11, 13			0.1	mA
Supply current, switches open		Icc	Pins 5, 9, 12			10	μA
Relay coil resistance		R∟					Ω
Start delay		t _{on}	First bright phase			10	ms
Tolerance of control signal threshold			V _{CC} =9V~16V, Pin 8, T _a = -20℃ ~ 85℃	-6		+6	%
Temperature coefficient of control signal Threshold		T _c V _o	V _{CC} =13.5V, Pin 8		10		μV/K

■ TOLERANCES (V_{CC} = 12V, T_a =25°C, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Frequency determining resistor	R₁		6.8		510	kΩ
Frequency determining capacitor	C ₁				47	μF
Frequency tolerance	/ \ 4	Normal flashing, basic frequency f_1 excluding the tolerance of R_1 and C_1	-5		+5	%
Pright pariod	$ riangle f_1$	Basic frequency f ₁	47		53	%
Bright period Δf_2 Control frequency f_2 37		37		45	70	
Frequency increase	f ₂	Lamp failure	2.15×f ₁		2.3×f ₁	Hz
Lamp load	ΡL		1			W

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