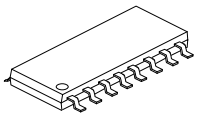
DRIVER CIRCUIT SPECIAL PURPOSE FOR MICROWAVE OVEN



SOP-16

■ DESCRIPTION

UTC **ULN2008** include 1ch condenser buzzer driver, 4ch relay driver, safety circuit and gate signal detection circuit. The 4ch relay driver include: 1ch independent Darlington Transistor driver, 1ch main relay driver, 2ch relay driver controlled by safety circuit. Current capability of each channel driver is 100mA. Output clamp diode is inserted in each channel to drive inductive load.

■ FEATURES

* Output current (single output): 100mA (MAX.)
* High sustaining voltage output: 50V (MIN.)
* Output clamp diodes
* TTL/CMOS logic level is compatible.

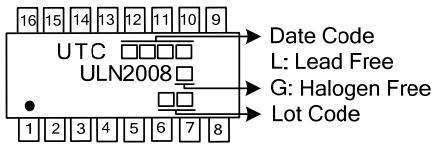
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULN2008L-S16-R	ULN2008G-S16-R	SOP-16	Tape Reel

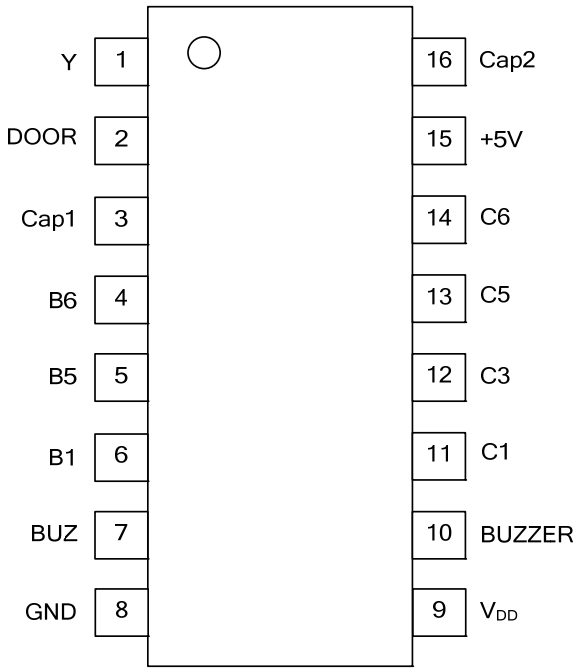
ULN2008G-S16-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) S16: SOP-16
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



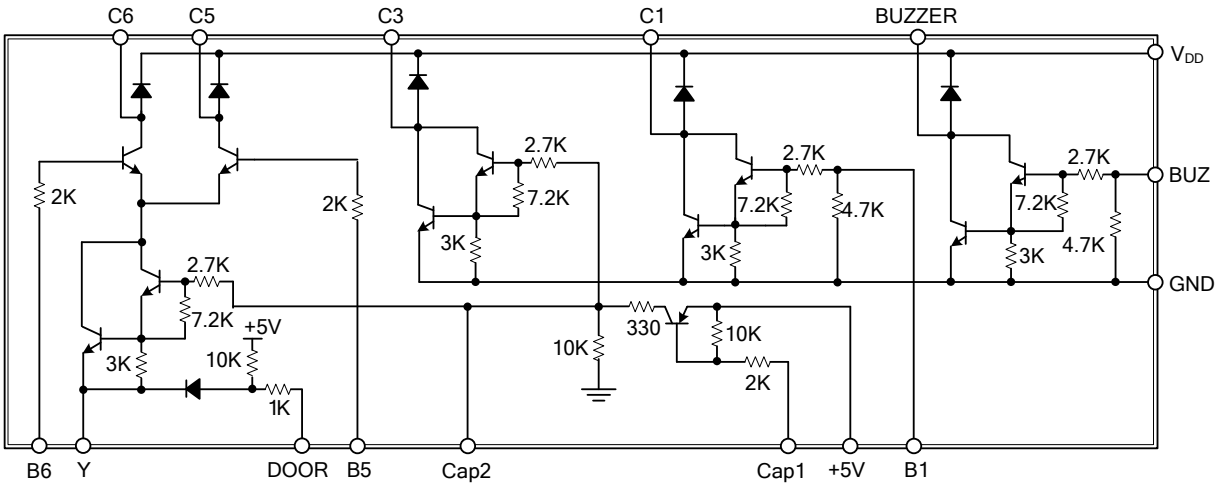
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	Y	Switch of C4/C5/C6
2	DOOR	Signal of door
3	Cap1	Signal input terminal
4	B6	Relay drive Input 6
5	B5	Relay drive Input 5
6	B1	Relay drive Input 1
7	BUZ	Buzzer drive input
8	GND	Ground
9	V_{DD}	Supply power
10	BUZZER	Buzzer drive output
11	C1	Relay drive output 1
12	C3	Relay drive output 3
13	C5	Relay drive output 5
14	C6	Relay drive output 6
15	+5V	5V power supply
16	Cap2	Connect capacitor for signal rectification

■ BLOCK DIAGRAM



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

PARAMETER		SYMBOL	RATINGS	UNIT
V_{DD} Supply		V_{DD}	50	V
Input Terminal Voltage		V_I	30	V
Driver Output Sustaining Voltage		V_{CE}	50	V
Peak Current Of Each Collector Output		I_{CP}	100	mA
Clamp Diode Forward Peak Current		I_{OK}	100	mA
Power Dissipation	T_A=25°C	P_D	1.5	W
	T_A=85°C		0.8	W
Operating Junction Temperature		T_J	+150	°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.

■ RECOMMENDED OPERATING CONDITIONS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Sustaining Voltage	$V_{CE\ (SUS)}$		0		50	V
Output Current	I_{OUT}	T_A=+85°C			100	mA/ch
Clamp Diode Reverse Voltage	V_R				50	V
Clamp Diode Forward Current	I_F				70	mA
Input Voltage	V_{IN}		0		12	V
Input Voltage (Output On)	$V_{IN\ (ON)}$	I_{OUT}=100mA	5		12	V
Input Voltage (Output Off)	$V_{IN\ (OFF)}$		0		0.7	V
Operating Thermal Range	T_A		-40		+85	°C
Junction Temperature	T_J		-40		+125	°C

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Input Current	I_I	V_I=5V, I_C=60mA	BUZ/B1		2.5		mA
			B5/B6		1.9		
Collector−Emitter Saturation Voltage	$V_{CE(SAT)}$	V_I=5V, I_C=100mA	BUZZER/C1		0.9		V
		V_I=5V, I_C=100mA	C3		1.03		
		V_I=5V, I_C=80mA	C5/C6		1.2		
		V_I=5V, I_C=100mA			1.7		
Clamp Diode Forward Voltage	V_F	I_F=70mA			1.1	1.4	V
Leak Current Of Collector (Off)	$I_{C\ OFF}$	V_{CE}=50V, I_I=0				50	μA
Output Sustaining Voltage	V_{CE}	V_{CE}=50V, I_I=0		50			V
Clamp Diode Reverse Voltage	I_R	V_R=50V		50			V
Clamp Diode Reverse Current	I_R	V_R=50V				50	μA
Gate Signal Output High Level	VH_{DOOR}			4.5			V
Gate Signal Output Low Level	VL_{DOOR}					1.0	V
Cap2 Terminal Output Level	VCap2	Cap2: 10uF cap to GND, Cap1: 2kHz, 50% duty square wave input Via 1uF cap			2.5		V

■ TYPICAL APPLICATION CIRCUIT

To realize 1ch condenser buzzer driver, 1ch main relay driver, 1ch independent Darlington Transistor driver, 2ch relay driver controlled by safety circuit.