



EL CONTROLLER

A5433-xx

General Description

The A5433 is an EL controller designed to drive EL lamps up to 5 square inch, the supply voltage range is from 1.2 to 4.5V. The device use 2 transistors, 1 diode, 1 inductor and 1 resistor to generate high voltage half wave output to drive the EL lamp. The A5433-02 of the EL will be on while the TRI button is pushed and will be off after a delay of 3 seconds since the releasing of TRI. An end signal(CAS) is provided to trigger certain device when EL is off. If pin FLASH of the A5433-T5 is connected to V_{DD} , the lamp will flash a 3Hz rate, if FLASH is connect to GND or open the lamp will be on but not flash.

Feature

EL size up to 5 square inch
 1.2V~4.5V operation voltage
 low stand-by current
 Built-in RC oscillator for A5433-02
 Delay function available
 Ending pulse signal(CAS) available

Applications

- Watch, Clock
- Pager, Toys
- LCD backlight

Electrical Characteristics ($V_{DD}=3V$, $V_{SS}=0V$, $T_{OPR}=25^{\circ}C$, unless otherwise specified.)

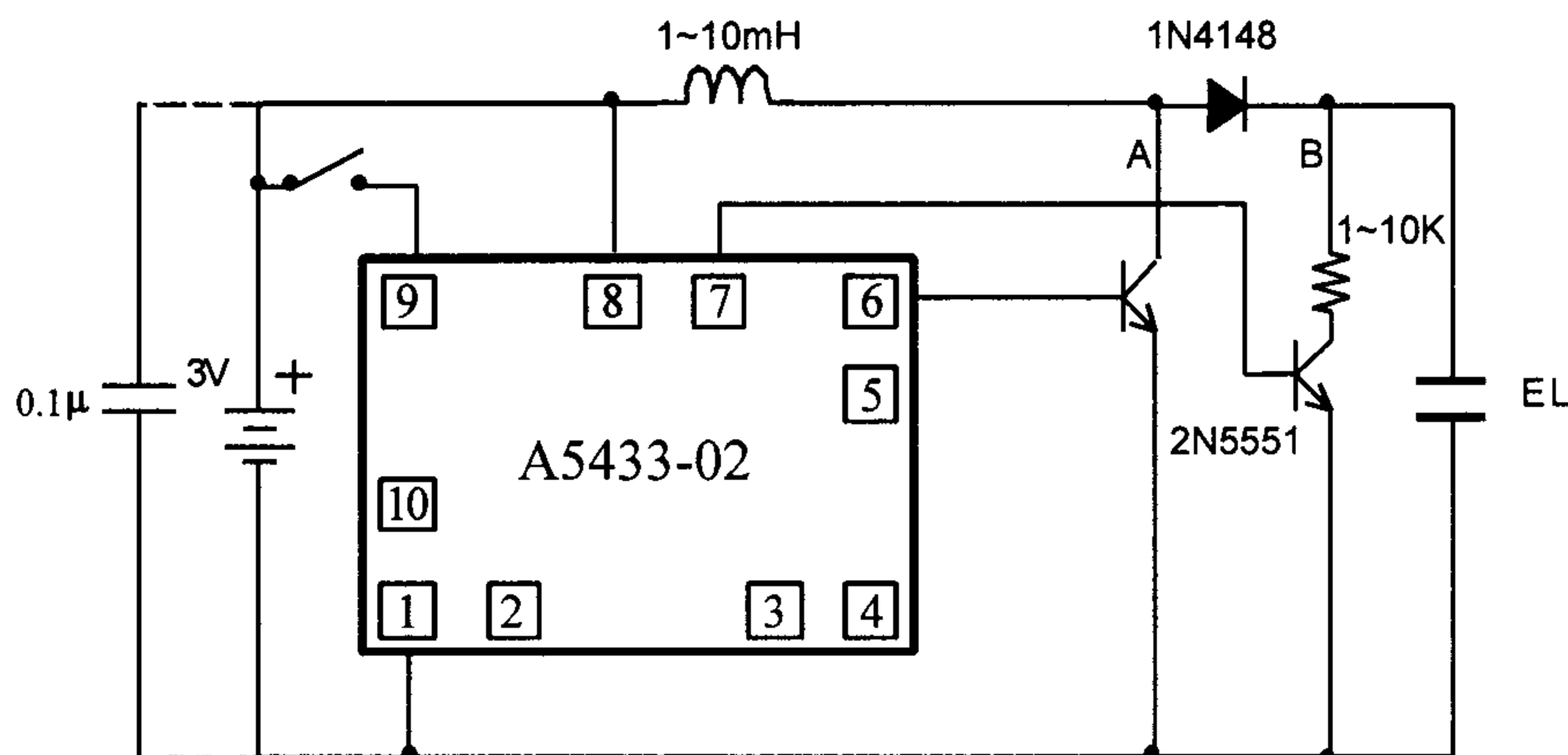
Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Operating Voltage	V_{DD}	1.2	3.0	4.5	V	
Standby Current	I_{DD1}	-	0.1	1	μA	No operation (TRI open)
Current Consumption	I_{DD2}	-	0.06	0.5	mA	During operating : (TRI & output Open for A5433-02) (FLASH & output Open for A5433-T5)
	I_{DD3}		28		mA	As shown in page 2 EL size=5 in ² , inductor=2.2mH 18 Ω
Input Current(TRI)	I_{IH}	-	1	2.5	μA	$V_{IH}=3.0V$
OUTPUT CURRENT(CAS)	I_{OH}	10	-	-	μA	$V_{OH}=2.5V$
	I_{OL}	10	-	-	μA	$V_{OL}=0.5V$
OUTPUT CURRENT (DIS)	I_{OL}	0.3	0.5	-	mA	$V_{OL}=0.5V$
	I_{OH}	0.12	0.2	-	mA	$V_{OH}=2.5V$
OUTPUT CURRENT (IND)	I_{OL}	6	10	-	mA	$V_{OL}=0.5V$
	I_{OH}	0.3	0.5	-	mA	$V_{OH}=2.5V$
Oscillating Frequency	F_{OSC}	127~160	182~200	236~240	kHz	$R=100K\Omega$ for A5433-T5
Oscillating Start Voltage	V_{STP}	1.2	-	-	V	
EL frequency	F_{EL}	280~350	400~440	520~530	Hz	
EL voltage	V_{EL}		130			EL size=3 in ² , inductor=2.2mH 18 Ω

Absolute Maximum Rating

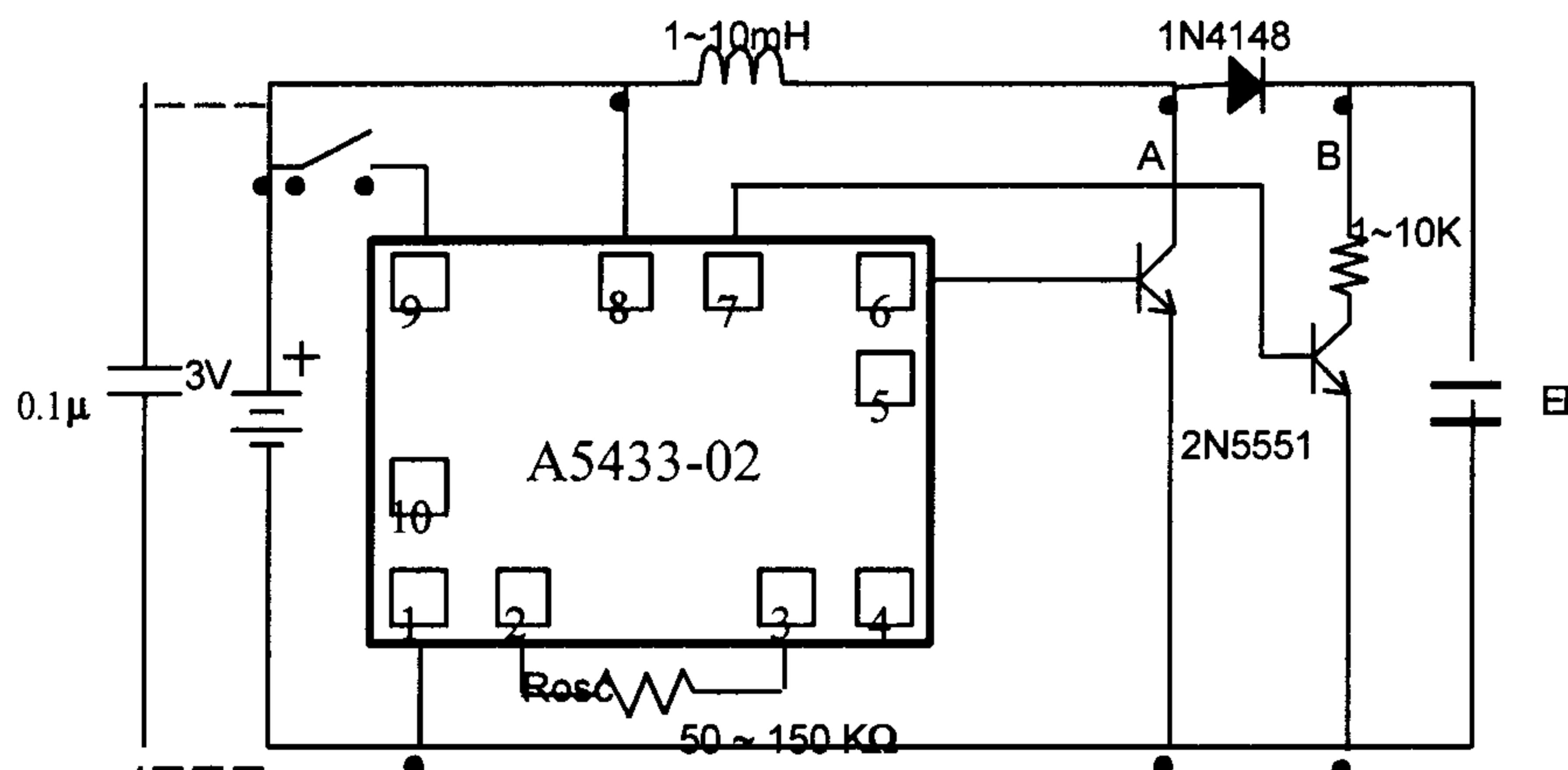
Parameter	Symbol	Limits	Units
Supply Voltage	$V_{DD} - V_{SS}$	-0.3 ~ +5.0	V
Input Voltage	V_{IN}	$V_{SS} - 0.2 \sim V_{DD} + 0.2$	V
Operation Temp.	T_{OPR}	-10 ~ +60	$^{\circ}C$
Storage Temp.	T_{STG}	-55 ~ +125	$^{\circ}C$

Typical Application Circuit

1. A5433-02



2. A5433-T5



Note:

- A 0.1µ capacitor between VDD and GND is recommended to avoid interference.
- The value of the inductor should be adjusted to fit different EL size.
- The output voltage may be limited by the breakdown of the diode, two diodes in series are recommended for higher voltage application.
- On PCB layout, the high voltage nodes A&B should be far away from TRI and other input pins. It should be also far away from the wires connected to other ICs(if any).
- If possible, nodes A&B should be isolated by VDD and/or GND.
- By connecting a resistor(100K~40K) between OSC1 (2)and OSC0(3), the output frequency can be adjusted up to 1.2KHz to get a higher brightness in small size EL application for A5433-02.

Application Reference

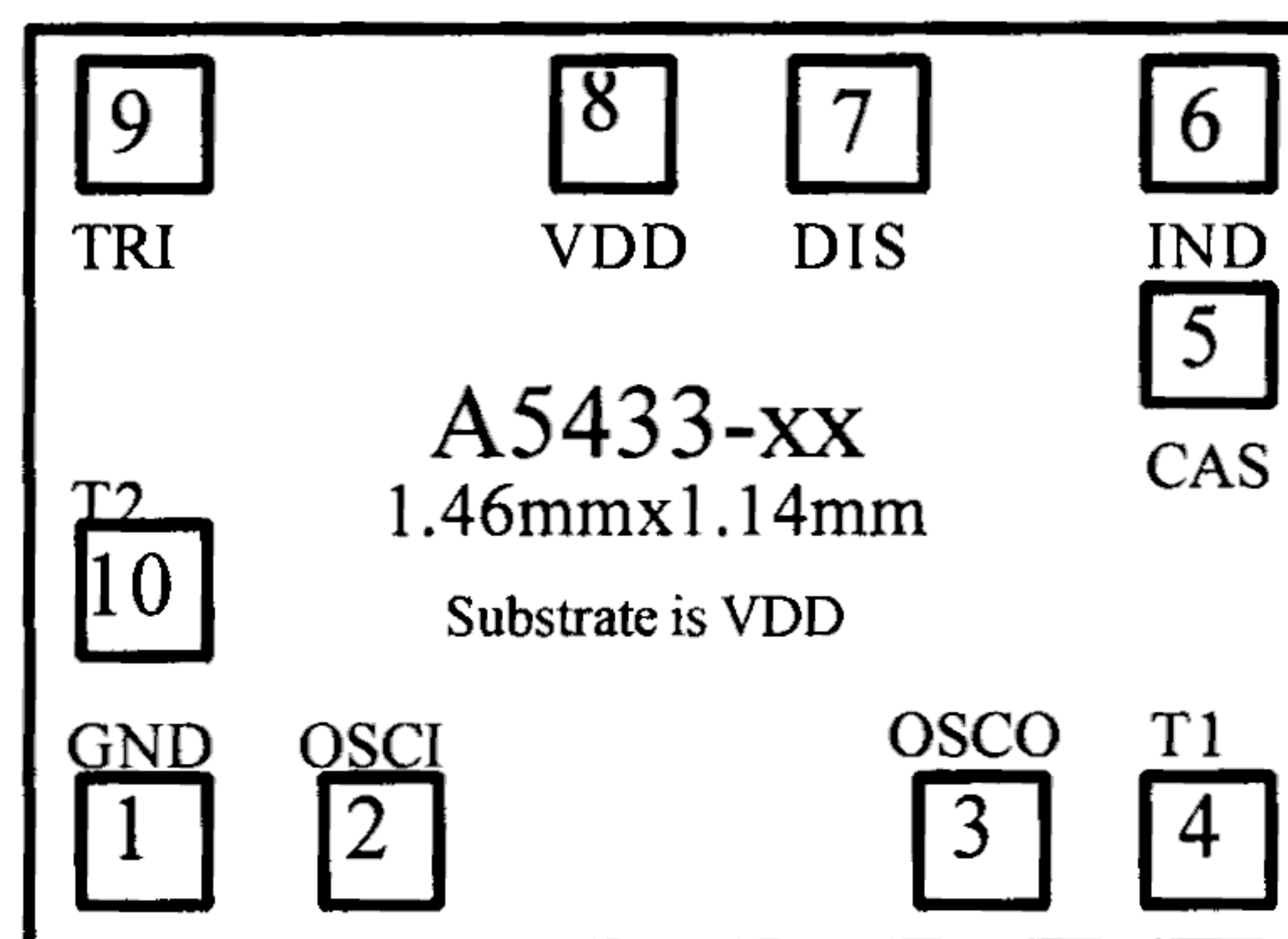
(Ta=25°C, VDD=1.5V, use 2N5551x2 and 1N4148x1)

EL Size	INDUCTOR		Output Voltage (V)	IDD (mA)
	L(mH)	R(Ω)		
1 in ²	2.2	18	130	10
3 in ²	2.2	18	92	10

(Ta=25°C, VDD=3.0V, use 2N5551x2 and 1N4148x2)

EL Size	INDUCTOR		Output Voltage (V)	IDD (mA)
	L(mH)	R(Ω)		
2 in ²	2.2	18	180	27
3 in ²	2.2	18	130	27
5 in ²	2.2	18	100	28

Bonding Diagram



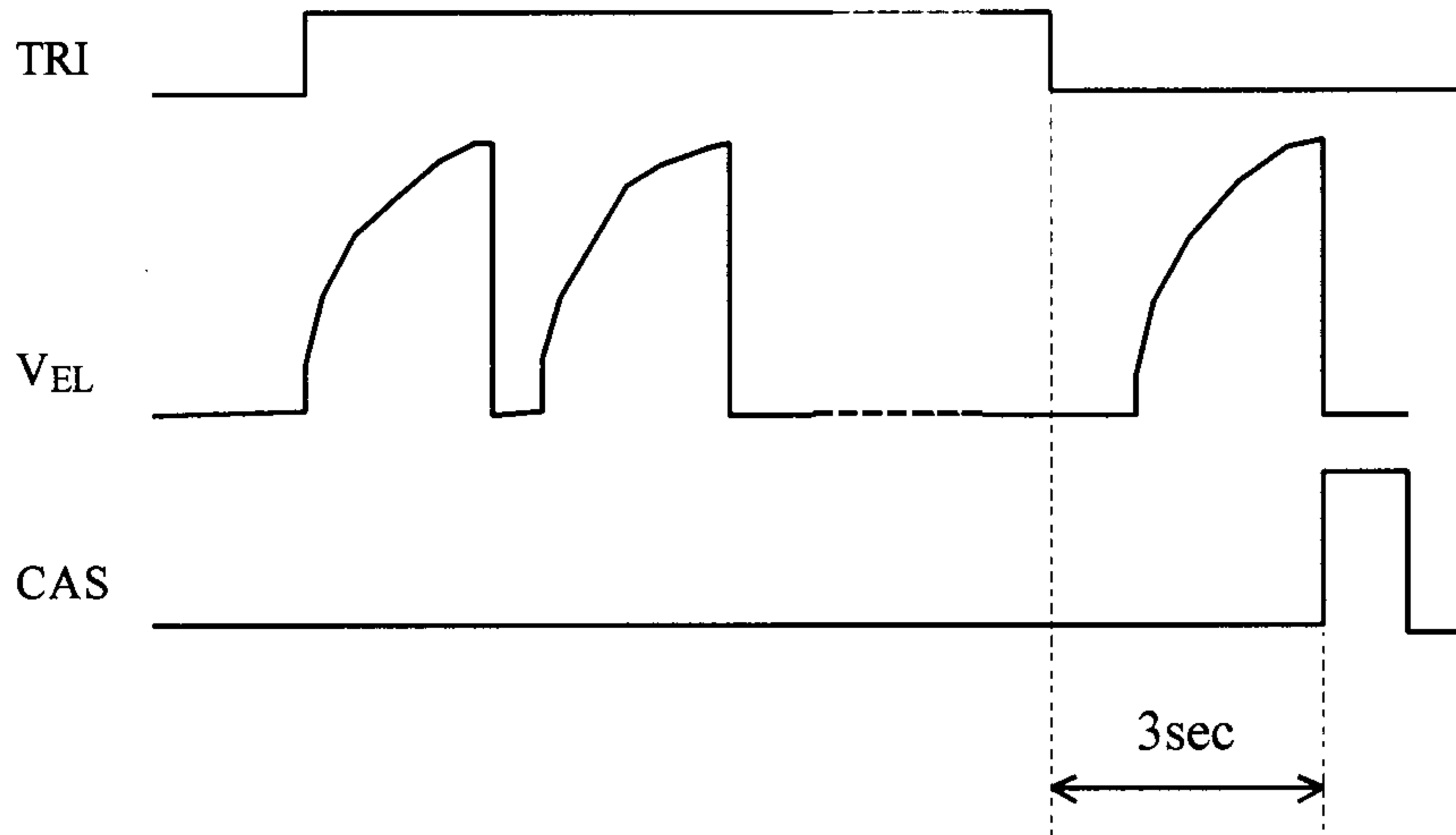
Pad Location

Pad No.	Pad Name	X (μm)	Y (μm)
1	GND	0	0
2	OSCI	192	0
3	OSCO	946	0
4	T1	1197	0
5	CAS	1198	695

Pad No.	Pad Name	X (μm)	Y (μm)
6	IND	1198	880
7	DIS	726	880
8	VDD	562	880
9	TRI	0	880
10	T2	0	165

Typical Waveforms

- A5433-02



- A5433-T5

