

Timer0/Counter0

Modos:

Generador de Frecuencia y PWM

Registros

TCCR0A

Bit	7	6	5	4	3	2	1	0
0x24 (0x44)	COM0A1	COM0A0	COM0B1	COM0B0	–	–	WGM01	WGM00
Read/Write	R/W	R/W	R/W	R/W	R	R	R/W	R/W
Initial Value	0	0	0	0	0	0	0	0

- Bits 7:6 – COM0A1:0: Compare Match Output A Mode
- Bits 5:4 – COM0B1:0: Compare Match Output B Mode
- Bits 1:0 – WGM01:0: Waveform Generation Mode

Table 14-8. Waveform Generation Mode Bit Description

Mode	WGM2	WGM1	WGM0	Timer/Counter Mode of Operation	TOP	Update of OCRx at	TOV Flag Set on ⁽¹⁾⁽²⁾
0	0	0	0	Normal	0xFF	Immediate	MAX
1	0	0	1	PWM, Phase Correct	0xFF	TOP	BOTTOM
2	0	1	0	CTC	OCRA	Immediate	MAX
3	0	1	1	Fast PWM	0xFF	BOTTOM	MAX
4	1	0	0	Reserved	–	–	–
5	1	0	1	PWM, Phase Correct	OCRA	TOP	BOTTOM
6	1	1	0	Reserved	–	–	–
7	1	1	1	Fast PWM	OCRA	BOTTOM	TOP

PWM

Generador de Frecuencia

Registros

TCCR0A

Bit	7	6	5	4	3	2	1	0
0x24 (0x44)	COM0A1	COM0A0	COM0B1	COM0B0	–	–	WGM01	WGM00
Read/Write	R/W	R/W	R/W	R/W	R	R	R/W	R/W
Initial Value	0	0	0	0	0	0	0	0

- Bits 7:6 – COM0A1:0: Compare Match Output A Mode
- Bits 5:4 – COM0B1:0: Compare Match Output B Mode
- Bits 1:0 – WGM01:0: Waveform Generation Mode

Modo CTC para Generador de Frecuencia

Table 16-2. Compare Output Mode, non-PWM Mode

COM0A1	COM0A0	Description
0	0	Normal port operation, OC0A disconnected
0	1	Toggle OC0A on Compare Match
1	0	Clear OC0A on Compare Match
1	1	Set OC0A on Compare Match



Diagrama de la unidad de comparación:

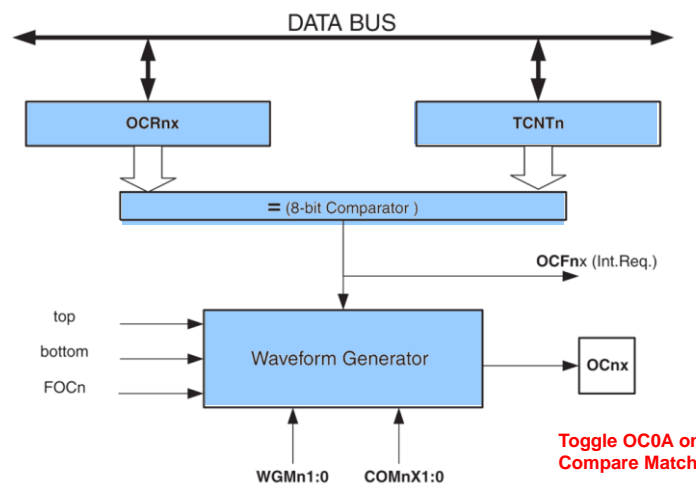


Diagrama de tiempo:

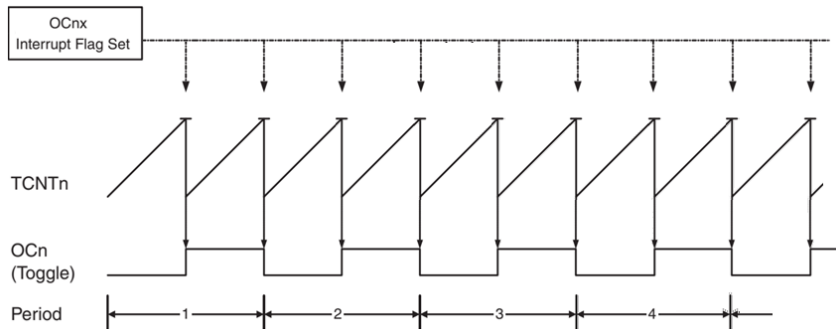
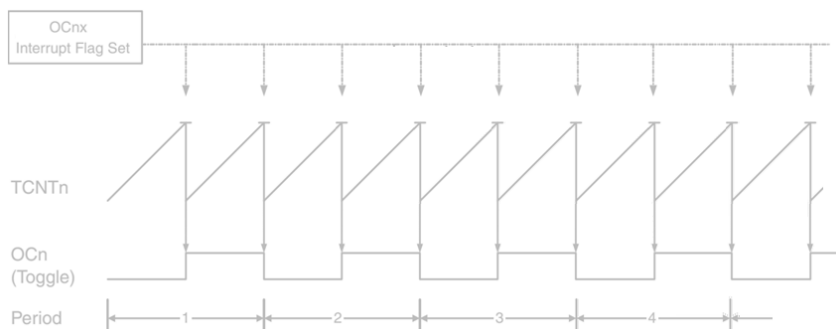
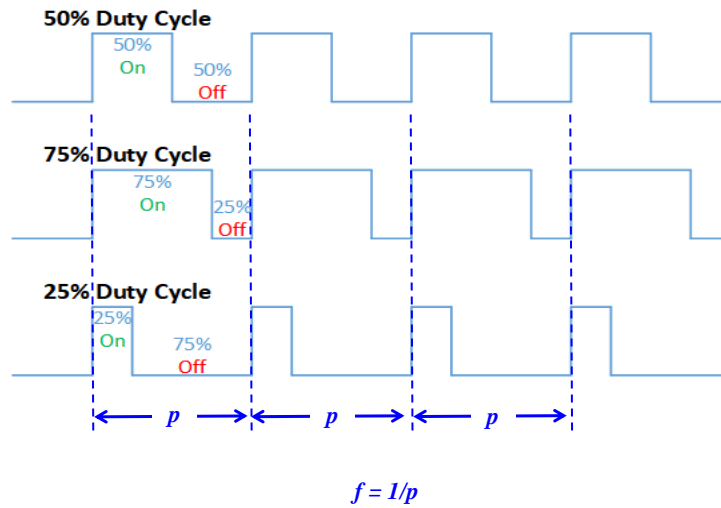


Diagrama de tiempo:

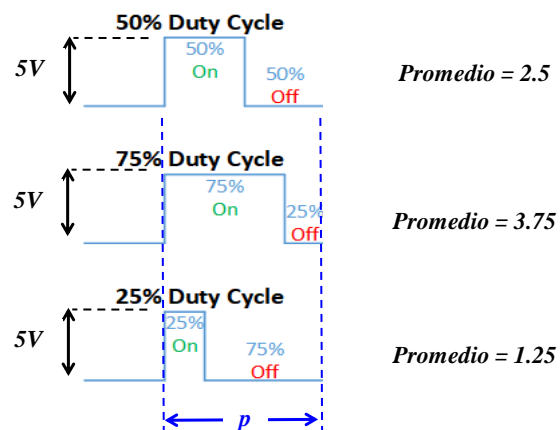


Modo: PWM



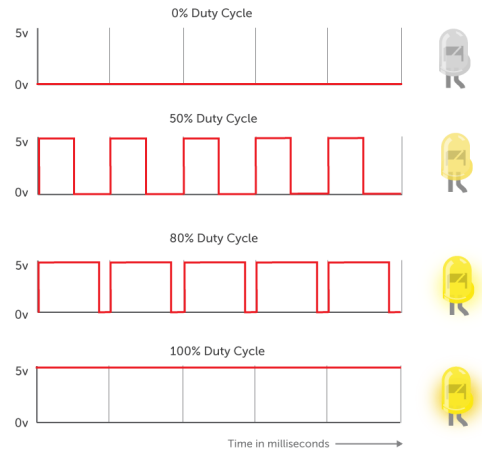
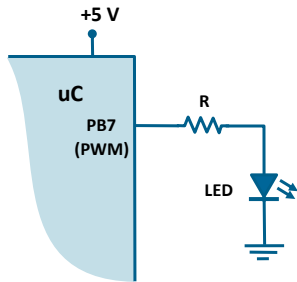
7

Modo: PWM



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Salida PWM sobre LED



Salida PWM con Op-AMP seguidor

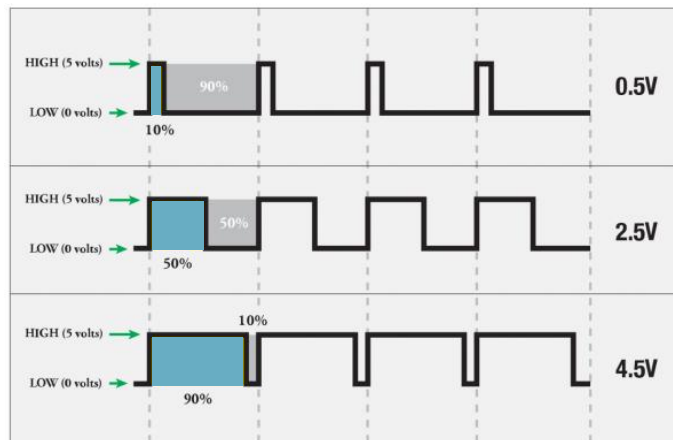
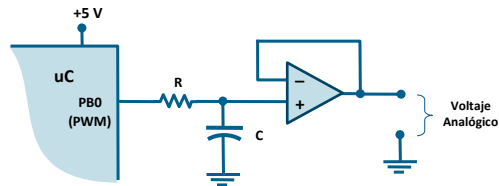
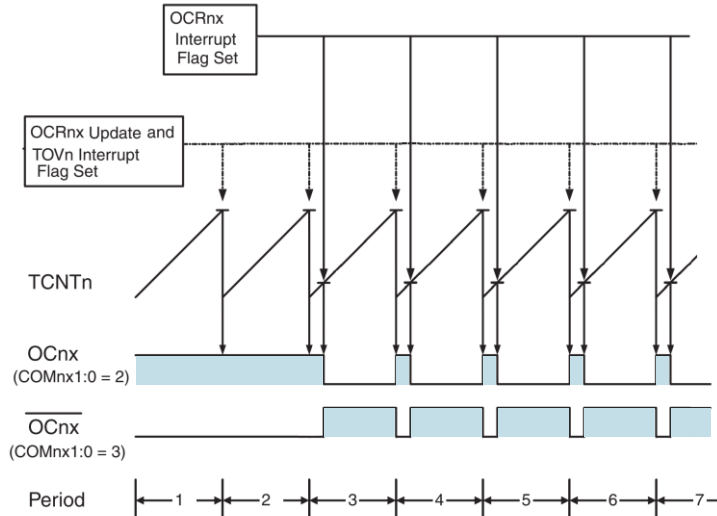


Diagrama de tiempo (PWM):

- frecuencia fija según TOV y frecuencia de la fuente de oscilación



Registros

TCCR0A

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Read/Write	R/W	R/W	R/W	R/W	R	R	R/W	R/W
Initial Value	0	0	0	0	0	0	0	0

- Bits 7:6 – COM0A1:0: Compare Match Output A Mode
- Bits 5:4 – COM0B1:0: Compare Match Output B Mode
- Bits 1:0 – WGM01:0: Waveform Generation Mode

Table 14-8. Waveform Generation Mode Bit Description

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3	0	1	1	Fast PWM	0xFF	BOTTOM	MAX
4	1	0	0	Reserved	–	–	–
5	1	0	1	PWM, Phase Correct	OCRA	TOP	BOTTOM
6	1	1	0	Reserved	–	–	–
7	1	1	1	Fast PWM	OCRA	BOTTOM	TOP

PWM →

PWM →

Diagrama de bloques de Timer0/Counter0:

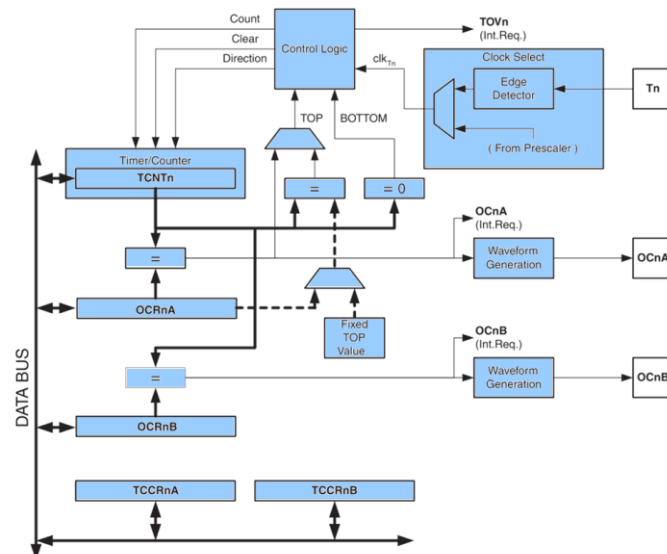


Diagrama de tiempo (PWM):

- con ajuste de frecuencia

