Rectifier Tables: Monophasic Uncontrolled

Diego Trapero

Table of contents

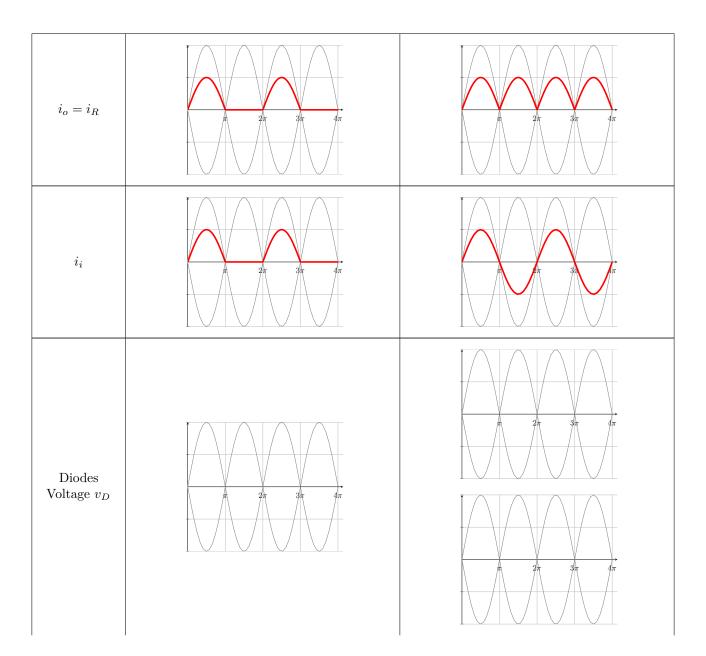
1	Rectifier Tables	2
	1.1 Monophasic Uncontrolled Rectifiers with R load	3
	1.2 Monophasic Uncontrolled Full Wave Rectifier loads	5

1 Rectifier Tables

- 1. Monophasic Uncontrolled Rectifiers with R load
- 2. Monophasic Uncontrolled Full Wave Rectifier loads
- 3. Monophasic Controlled Full Wave Rectifier, R vs RL load
- 4. Triphasic Uncontrolled Rectifiers with R load
- 5. Triphasic Controlled Half Wave Rectifier, R vs RL load
- 6. Triphasic Controlled Full Wave Rectifier, R vs RL load

1.1 Monophasic Uncontrolled Rectifiers with R load

What	Half Wave Rectifier	Full Wave Rectifier
Circuit Diagram	$v_i \bigotimes^D \qquad \qquad \downarrow \qquad \qquad$	$D1 \bigtriangleup D2 \bigtriangleup$ $v_i \odot$ $D3 \bigtriangleup D4 \bigtriangleup$
$v_i > 0$ equivalent	i_{i} v_{i} v_{o} v_{o} R	
$v_i < 0$ equivalent	$v_i \bigotimes v_c \bigotimes R$	
Diode table		
v_o	2π 3π 4π	2π 3π 4π
$ar{v_o}$	$\bar{v_o} = \frac{V_{ip}}{\pi}$	$ar{v_o} = rac{2V_{ip}}{\pi}$



1.2 Monophasic Uncontrolled Full Wave Rectifier loads

What	R load	RC load	RLC load
Circuit Diagram			
v_o		$\frac{1}{2\pi}$ $\frac{3\pi}{4\pi}$	2\pi 3\pi 4\pi
v_R	2π 3π 4π	27 37 4n	27 37 4n
_	_ 2	1.	_ 2,,
v_R^-	$\bar{v_R} = \frac{2}{\pi} V_{ip}$	$\bar{v_R} = V_{ip} - \frac{1}{2}\Delta v_R$	$ar{v_R} = rac{2}{\pi} V_{ip}$
v_R v_R ripple	$v_R = \frac{1}{\pi}V_{ip}$ Not considered	$v_R = V_{ip} - \frac{1}{2}\Delta v_R$ Triangular approximation $\Delta v_R = \frac{V_{ip}T}{2RC}$	$v_R = \frac{1}{\pi} V_{ip}$ Considering only 1st harmonic $\Delta v_R = HV$
		Triangular approximation	Considering only 1st harmonic

i_i		24 34	2/1 3/1 4/1
i_{D1}	27 37 47	27 37 47	2 3 3 4 7
i_{D3}	2π 3π 4π	$\frac{1}{2\pi}$ $\frac{3\pi}{4\pi}$	2π 3π 4π
i_C	No capacitor	27 37 47	2\pi 3\pi 4\pi