Rectifier Tables: Monophasic Uncontrolled

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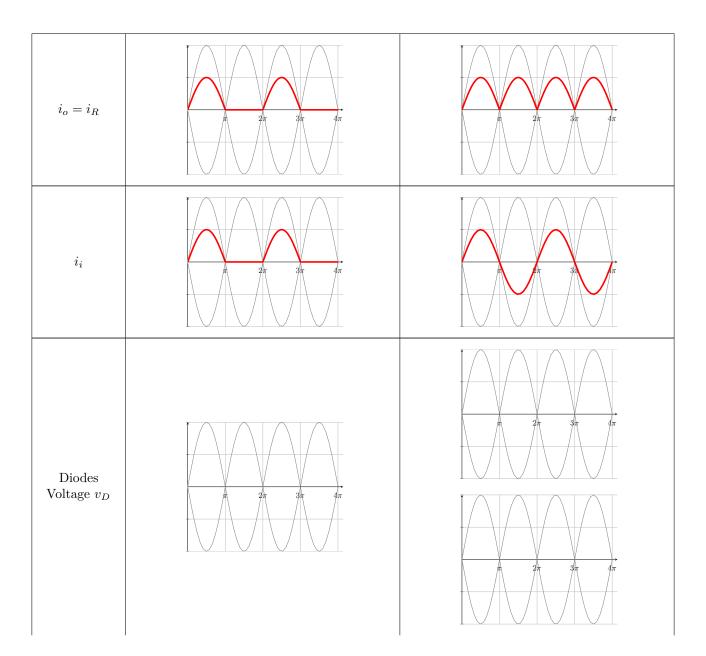
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1 Rectifier Tables

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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		27 37 4n	2π 3π 4π
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	$egin{aligned} ar{v_R} &= V_{ip} - rac{1}{2} \Delta v_R \end{aligned}$ Triangular approximation $\Delta v_R = rac{V_{ip} T}{2RC}$	$egin{aligned} v_R &= rac{-}{\pi} V_{ip} \ & & & & & & & & \\ & & & & & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & & \\ & \\ & & \\ & \\ & & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ $
		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