Eletrônica Industrial

Retificadores Não Controlados

Circuito	Tensão na Fonte (V_{max})	Tensão Eficaz na Fonte (V_{rms})	Tensão na Carga (Vo_{rms})	Tensão Eficaz na Carga (Vo_{rms})	Tensão no Diodo (Vd_s)	Tensão Eficaz no Diodo (Vd_{rms})
Ret. Monofásico de Meia Onda Não Controlado	$Vf\sqrt{2}$	$\sqrt{\frac{1}{2\pi}\int_0^{\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{2\pi}\int_0^{\pi} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{2\pi}\int_0^{\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{2\pi}\int_0^{\pi} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{2\pi}\int_0^{\pi} V^2{}_{max}\sin^2(wt)dwt}$
Ret. Monofásico de Onda Completa Não Controlado	$Vf\sqrt{2}$	$\sqrt{\frac{1}{2\pi}\int_0^{2\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{\pi}\int_0^{\pi} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{\pi}\int_0^{\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{2\pi}\int_0^{\pi} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{2\pi}\int_0^{\pi} V^2{}_{max}\sin^2(wt)dwt}$
Ret. Trifásico de Meia Onda Não Controlado	$Vf\sqrt{2}$	$\sqrt{\frac{1}{2\pi}\int_0^{2\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{\frac{2\pi}{3}}\int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{\frac{2\pi}{3}}\int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{2\pi}\int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{2\pi}\int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} V^2{}_{max}\sin^2(wt)dwt}$
Ret. Trifásico de Onda Completa Não Controlado	$Vf\sqrt{2}\sqrt{3}$	$\sqrt{\frac{1}{2\pi}\int_0^{2\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{\frac{\pi}{3}}\int_{\frac{\pi}{3}}^{\frac{2\pi}{3}} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{\frac{\pi}{3}}\int_{\frac{\pi}{3}}^{\frac{2\pi}{3}} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{2\pi}\int_0^{\frac{2\pi}{3}} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{2\pi}\int_0^{\frac{2\pi}{3}} V^2{}_{max}\sin^2(wt)dwt}$

Retificadores Controlados

Circuito	Tensão na Fonte (V_i)	Tensão Eficaz na Fonte (V_{rms})	Tensão na Carga (Vo_{rms})	Tensão Eficaz na Carga (Vo_{rms})	Tensão no Diodo (Vd_{rms})	Tensão Eficaz no Diodo (Vd_{rms})
Ret. Monofásico de Meia Onda Controlado	$Vf\sqrt{2}$	$\sqrt{\frac{1}{2\pi}\int_{\propto}^{2\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{2\pi}\int_{\propto}^{\pi} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{2\pi}\int_{\propto}^{\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{2\pi}\int_{\propto}^{\pi} V^2{}_{max}\sin^2(wt)dwt$	$\sqrt{\frac{1}{2\pi}\int_{\propto}^{\pi} V^2{}_{max}\sin^2(wt)dwt}$
Ret. Monofásico de Onda Completa Controlado	$Vf\sqrt{2}$	$\sqrt{\frac{1}{2\pi}\int_{\propto}^{2\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{\pi}\int_{\propto}^{\pi} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{\pi}\int_{\propto}^{\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{2\pi}\int_{\propto}^{\pi} V^2{}_{max}\sin^2(wt)dwt$	$\sqrt{\frac{1}{2\pi}\int_{\propto}^{\pi} V^2{}_{max}\sin^2(wt)dwt}$
Ret. Trifásico de Meia Onda Controlado	$Vf\sqrt{2}$	$\sqrt{\frac{1}{2\pi}\int_{\propto}^{2\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{\frac{2\pi}{3}}\int_{\frac{\pi}{6}+\propto}^{\frac{5\pi}{6}+\propto} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{\frac{2\pi}{3}}\int_{\frac{\pi}{6}+\propto}^{\frac{5\pi}{6}+\propto} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{2\pi}\int_{\frac{\pi}{6}+\propto}^{\frac{5\pi}{6}+\propto} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{2\pi}\int_{\frac{\pi}{6}+\propto}^{\frac{5\pi}{6}+\propto} V^2{}_{max}\sin^2(wt)dwt}$
Ret. Trifásico de Onda Completa Controlado	$Vf\sqrt{2}\sqrt{3}$	$\sqrt{\frac{1}{2\pi}\int_{\propto}^{2\pi} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{\frac{\pi}{3}}\int_{\frac{\pi}{3}+\propto}^{\frac{2\pi}{3}+\propto} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{\frac{\pi}{3}}\int_{\frac{\pi}{3}+\propto}^{\frac{2\pi}{3}+\propto} V^2{}_{max}\sin^2(wt)dwt}$	$\frac{1}{2\pi}\int_{\propto}^{\frac{2\pi}{3}+\propto} V_{max}sin(wt)dwt$	$\sqrt{\frac{1}{2\pi}\int_{\propto}^{\frac{2\pi}{3}+\propto} V^2{}_{max}\sin^2(wt)dwt}$

$$\int_i^f \sin^2(wt)dwt = \left[\frac{\boldsymbol{wt}}{\boldsymbol{2}} - \frac{\boldsymbol{sin(2wt)}}{\boldsymbol{4}}\right]_i^f$$