

Specifications

Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{21 \text{ max}}$		14	V
Maximum supply current	$I_{14 \text{ max}}$		75	mA
Maximum rush current	$I_{18\text{si} \text{ max}}$		10	mA
	$I_{24\text{si} \text{ max}}$		10	mA
	$I_{25\text{si} \text{ max}}$		2	mA
FBP minimum input voltage	$V_{IN18 \text{ min}}$		-5	V
Allowable power dissipation	$P_d \text{ max}$	[LA7860]	0.95	$\text{W}^{\circ 1}$
		$T_a \leq 70^\circ\text{C}$ [LA7860M]	1.1	$\text{W}^{\circ 2}$
Operating temperature	T_{opr}		-10 to +70	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Note: 1. $T_C \leq 100^\circ\text{C}$, $P_d \text{ max} = 0.95 \text{ W}$ (The case temperature is the temperature of pin 23.)
 2. Measured when mounted on a $100 \times 70 \times 1.15 \text{ mm}$ glass epoxy printed circuit board.

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	unit
Recommended supply voltage	V_{21}		12	V
Recommended supply current	I_{14}		60	mA
Operating supply voltage	V_{21op}		10.5 to 13.5	V
Operating supply current	I_{14op}		55 to 65	mA
Recommended input voltage	V_1		2	Vp-p
	V_{30}		2	Vp-p
Operating input voltage	V_{1op}		1.0 to 3.0	Vp-p
	V_{30op}		1.0 to 3.0	Vp-p
Maximum horizontal input width	$V_{IN1 \text{ max}}$		3/20	Th
Maximum vertical input width	$V_{IN30 \text{ max}}$		3	ms
Maximum FBP input width	$V_{IN18 \text{ max}}$		$1/5 + T_{delf}$	Th

Where Th is one horizontal cycle, and Tdelf is 20-pin operation period.

LA7860, 7860M

Operating Characteristics at $T_a = 25\text{ }^\circ\text{C}$, $V_{CC21} = 12\text{ V}$, $I_{CC14} = 60\text{ mA}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
V_{CC21} current dissipation	I_{21}		4.2	5.6	7.0	mA
V_{CC14} supply voltage	V_{14}		8.5	9.0	9.5	V
Maximum vertical pull-in frequency	$F_v \text{ max}$		180	210	240	Hz
Minimum vertical pull-in frequency	$F_v \text{ min}$		30.0	37.5	45.0	Hz
Maximum vertical blanking width	$W_b \text{ max}$		740	875	1010	μs
Minimum vertical blanking width	$W_b \text{ min}$		340	400	460	μs
Blanking pulse output high voltage	V_{bh}		4.5	5	5.5	V
Blanking pulse output low voltage	V_{bl}				0.3	V
Vertical blanking output current	I_{2550}		1.6	2		mA
Vertical output pulse width	W_{vd}		255	300	345	μs
Vertical output maximum shift	$P_v \text{ max}$		400	475	550	μs
Vertical output delay	$D_v \text{ min}$				1	μs
Vertical output voltage high	V_{dvh}		4.5	5.0	5.5	V
Vertical output voltage low	V_{dvl}				0.3	V
Vertical output current	I_{2450}		1.7	2.2		mA
Vertical oscillation start voltage	F_{vst}			5.0	6.0	V
Horizontal oscillation start voltage	F_{hst}			5.0	6.0	V
Minimum horizontal oscillation frequency	$F_H \text{ min}$		25.7	27.1	28.5	kHz
Maximum horizontal oscillation frequency	$F_H \text{ max}$		89.5	94.6	99.7	kHz
Horizontal frequency pull-in range	H_{pull}		3.5	4.1		%
AFC control current	I_{afc}		500	630	760	μA
Horizontal output high voltage	V_{hdh}		4.5	5.0	5.5	V
Horizontal output low voltage	V_{hdl}				0.3	V
Minimum horizontal phase	$Ph \text{ min}$	$T_{fbp} = 2.6\text{ }\mu\text{s}$	-2.0	-1.4	-0.8	μs
Maximum horizontal phase	$Ph \text{ max}$	$T_{fbp} = 2.6\text{ }\mu\text{s}$	3.5	4.5	5.5	μs
Frequency dependent maximum phase	$Pf \text{ max}$	$T_{fbp} = 2.6\text{ }\mu\text{s}$	23	26.5	30	%
Frequency dependent minimum phase	$Pf \text{ min}$	$T_{fbp} = 2.6\text{ }\mu\text{s}$	-3	0	3	%
Minimum horizontal output pulse width	$W_h \text{ min}$		21	24	27	%
Maximum horizontal output pulse width	$W_h \text{ max}$		64	67	70	%
Horizontal output current	I_{1650}		1.7	2.3		mA
Synchronized output voltage	V_{co}		4.5	5	5.5	V
Asynchronized output voltage	V_{nco}				0.3	V
FBP input voltage	V_{fbp}		1.2	1.5	1.8	V
EN input voltage	V_{en}		2.0	2.5	3.0	V

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