

FAIRCHILD LINEAR INTEGRATED CIRCUITS • μ A105 • μ A305 • μ A305A • μ A376

μ A305A

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified) Note 2

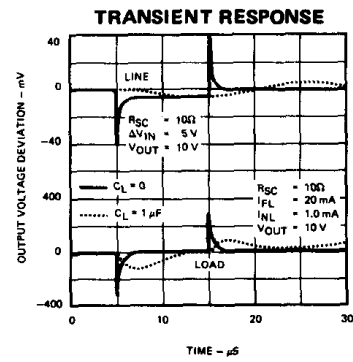
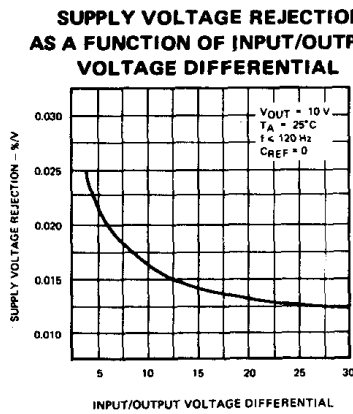
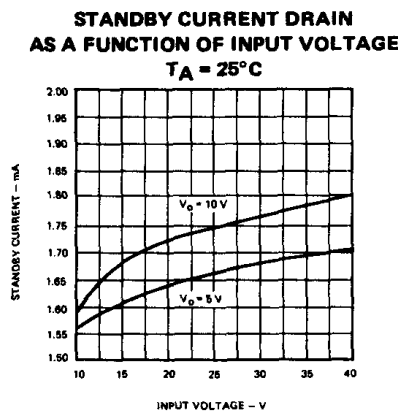
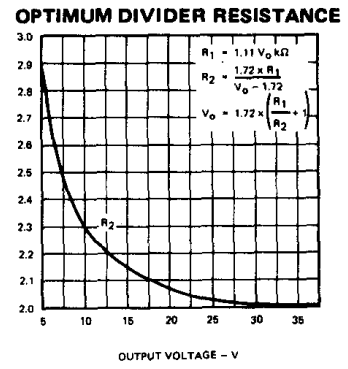
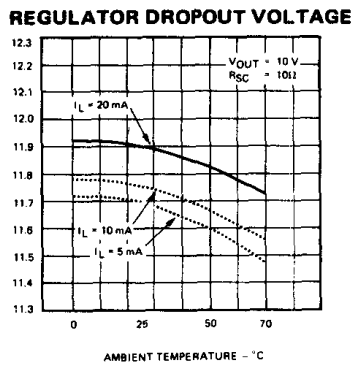
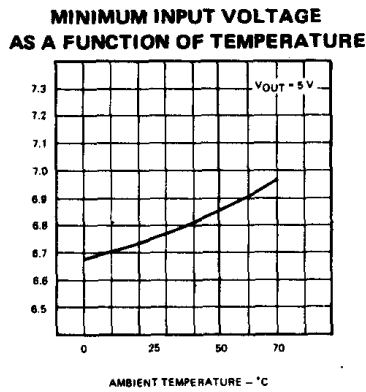
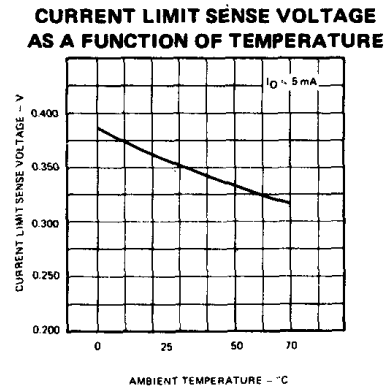
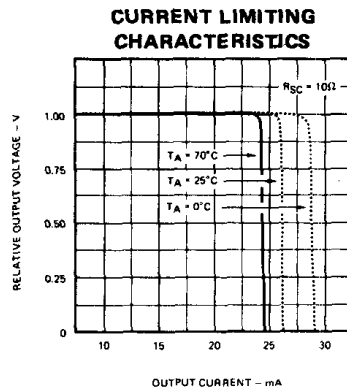
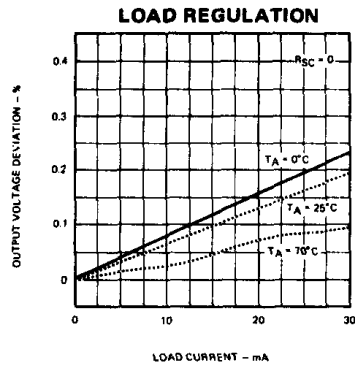
PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
Input Voltage Range			8.5		50	V
Output Voltage Range			4.5		40	V
Output/Input Voltage Differential			3.0		30	V
Load Regulation (Note 3)	$0 < I_L < 45 \text{ mA}$	$R_{SC} = 0\Omega, T_A = 25^\circ\text{C}$		0.02	0.2	%
		$R_{SC} = 0\Omega, T_A = 70^\circ\text{C}$		0.03	0.4	%
		$R_{SC} = 0\Omega, T_A = 0^\circ\text{C}$		0.03	0.4	%
Line Regulation	$V_{IN} - V_O < 5 \text{ V}$			0.025	0.06	%/V
	$V_{IN} - V_O > 5 \text{ V}$			0.015	0.03	%/V
Ripple Rejection	$C_{REF} = 10 \mu\text{F}, f = 120 \text{ Hz}$			0.003		%/V
Temperature Stability (Note 5)	$0^\circ\text{C} < T_A < 70^\circ\text{C}$			0.3	1.0	%
Feedback Sense Voltage			1.55	1.7	1.85	V
Output Noise Voltage	$10 \text{ Hz} < f < 10 \text{ kHz}$	$C_{REF} = 0$		0.005		%
		$C_{REF} > 0.1 \mu\text{F}$		0.002		%
Current Limit Sense Voltage (Note 4)	$R_{SC} = 10\Omega, T_A = 25^\circ\text{C}, V_O = 0 \text{ V}$		225	300	375	mV
Standby Current Drain	$V_{IN} = 50 \text{ V}$			0.8	2.0	mA
Long Term Stability				0.1	1.0	%

μ A376

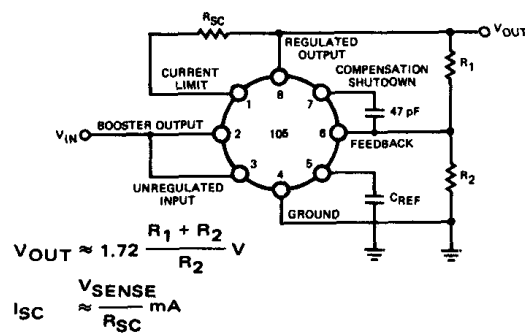
ELECTRICAL CHARACTERISTICS $0^\circ\text{C} < T_A < 70^\circ\text{C}$

PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
Input Voltage Range			9.0		40	V
Output Voltage Range			5.0		37	V
Output/Input Voltage Differential			3.0		30	V
Load Regulation	$0 < I_L < 25 \text{ mA}$	$R_{SC} = 0\Omega, T_A = 25^\circ\text{C}$			0.2	%
		$R_{SC} = 0\Omega, T_A = 70^\circ\text{C}$			0.5	%
		$R_{SC} = 0\Omega, T_A = 0^\circ\text{C}$			0.5	%
Line Regulation					0.03	%/V
					0.1	%/V
Ripple Rejection	$f = 120 \text{ Hz}, T_A = 25^\circ\text{C}$				0.1	%/V
Standby Current Drain	$V_{IN} = 30 \text{ V}, T_A = 25^\circ\text{C}$				2.5	mA
Reference Voltage			1.60	1.72	1.80	V
Current Limit Sense Voltage				360		mV

TYPICAL PERFORMANCE CURVES FOR $\mu A376$

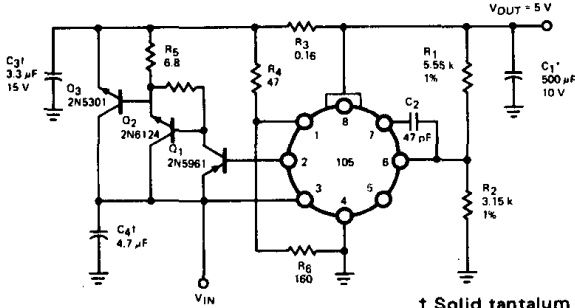


BASIC POSITIVE REGULATOR WITH CURRENT LIMITING



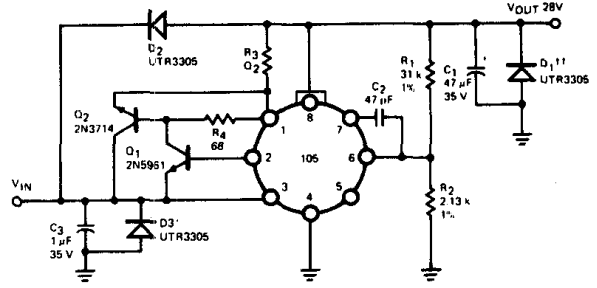
TYPICAL APPLICATIONS

10A REGULATOR WITH FOLDBACK CURRENT LIMITING



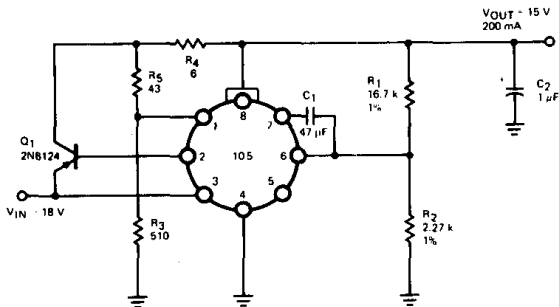
† Solid tantalum
• Electrolytic

1.0A REGULATOR WITH PROTECTIVE DIODES

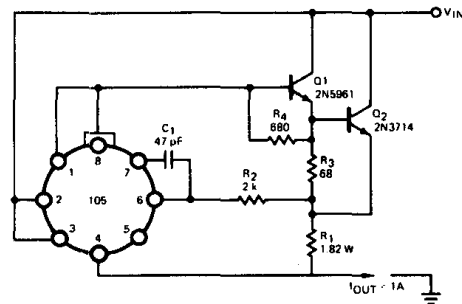


* Protects against input voltage reversal
† Protects against shorted input or inductive loads on unregulated supply
†† Protects against output voltage reversal

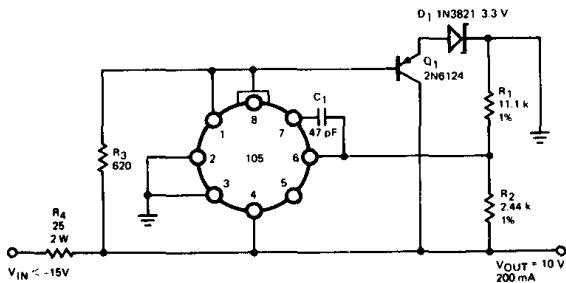
LINEAR REGULATOR WITH FOLDBACK CURRENT LIMITING



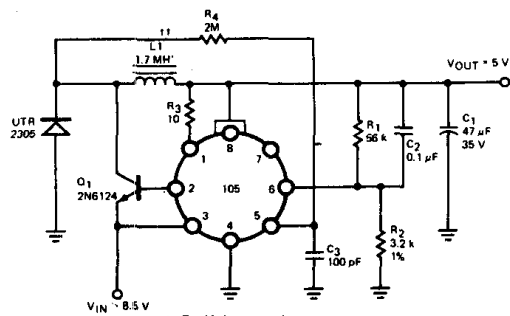
CURRENT REGULATOR



SHUNT REGULATOR



SWITCHING REGULATOR



† Solid tantalum
†† 125 turns #22 on Arnold Engineering A262123-2 molybdenum permalloy core.

μ A105 • μ A305 • μ A305A • μ A376

VOLTAGE REGULATORS

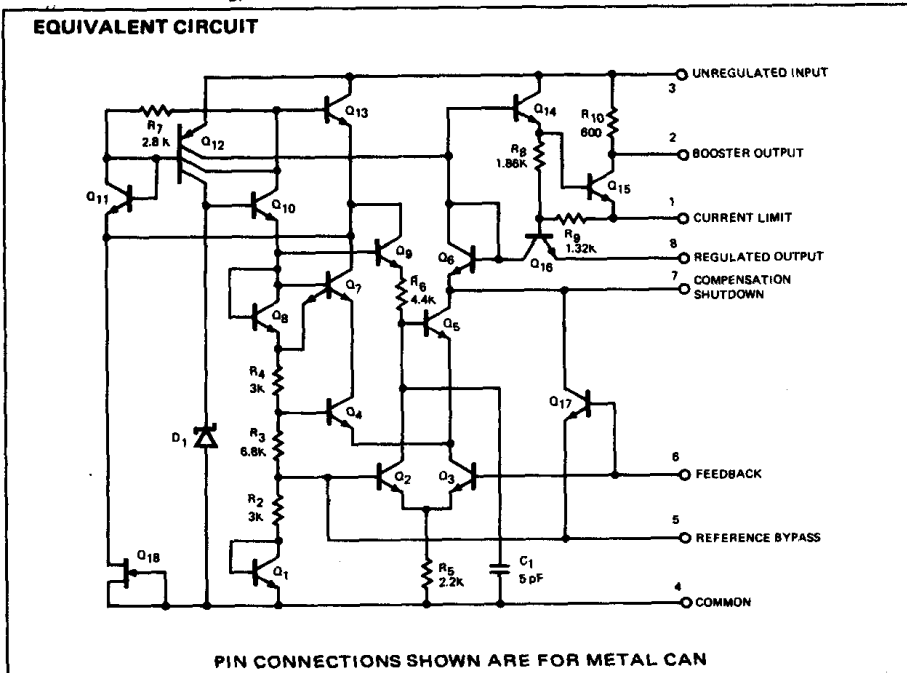
FAIRCHILD LINEAR INTEGRATED CIRCUITS

GENERAL DESCRIPTION — The 105/305/305A/376 are monolithic Positive Voltage Regulators constructed using the Fairchild Planar* epitaxial process. Applications for these devices include both linear and switching regulator circuits with output voltages greater than 4.5 V. These devices will not oscillate when confronted with varying resistive and reactive loads and will start reliably regardless of the load within the ratings of the circuit. They also feature fast response to both load and line transients. Used independently, the 105/305 will supply 12 mA, the 305A, 45 mA and 376, 25 mA. The 105 is specified for the military temperature range (-55°C to $+125^{\circ}\text{C}$) and the 305/376/305A are specified for 0°C to $+70^{\circ}\text{C}$ operation. The 105/305/305A are in an 8-lead TO-5 package and the 376 is available in the space and cost saving mini DIP.

- LOW STANDBY CURRENT DRAIN
- ADJUSTABLE OUTPUT VOLTAGE FROM 4.5 V TO 40 V
- HIGH OUTPUT CURRENTS EXCEEDING 10A WITH EXTERNAL COMPONENTS
- LOAD REGULATION BETTER THAN 0.1%, FULL LOAD WITH CURRENT LIMITING
- DC LINE REGULATION GUARANTEED AT 0.03%/V
- RIPPLE REJECTION OF 0.01%/V

ABSOLUTE MAXIMUM RATINGS

Input Voltage	
μ A105, μ A305A	50 V
μ A305, μ A376	40 V
Input/Output Voltage Differential	40 V
Internal Power Dissipation (Note 1)	
μ A105, μ A305, μ A305A	500 mW
μ A376	450 mW
Operating Temperature Range	
Military (μ A105)	-55°C to $+125^{\circ}\text{C}$
Commercial (μ A305, μ A305A, μ A376)	0°C to $+70^{\circ}\text{C}$
Storage Temperature Range	
Metal Can	-65°C to $+150^{\circ}\text{C}$
Mini DIP	-55°C to $+125^{\circ}\text{C}$
Lead Temperature	
Metal Can (Soldering, 60 s)	300°C
Mini DIP (Soldering, 10 s)	260°C

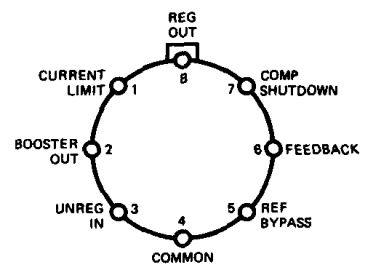


Notes on following pages.

CONNECTION DIAGRAMS

8-LEAD METAL CAN (TOP VIEW)

PACKAGE OUTLINE 5B
PACKAGE CODE H

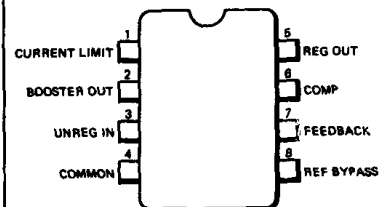


ORDER INFORMATION

TYPE	PART NO.
μ A105	μ A105HM
μ A305	μ A305HC
μ A305A	μ A305AHC

8-LEAD MINI DIP (TOP VIEW)

PACKAGE OUTLINE 9T
PACKAGE CODE TC



ORDER INFORMATION

TYPE	PART NO.
μ A376	μ A376TC

*Planar is a patented Fairchild process.