

Precision Monolithics Inc.

FEATURES

- Dual PM-741 Internally-Compensated Operational Amplifier
- Internal Frequency Compensation
- Low Power Consumption
- Continuous Short-Circuit Protection
- Silicon-Nitride Passivation

GENERAL DESCRIPTION

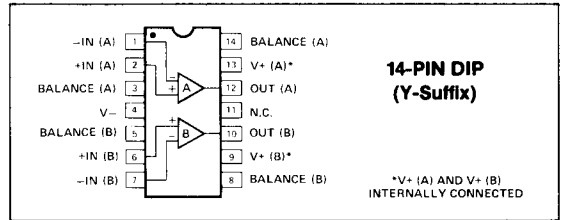
The PMI series of internally-compensated operational amplifiers provides industry-standard 747 specifications. In addition, Precision Monolithics' exclusive Silicon-Nitride "Triple Passivation" process provides maximum reliability and long-term stability of parameters for lowest overall system operating cost.

ORDERING INFORMATION†

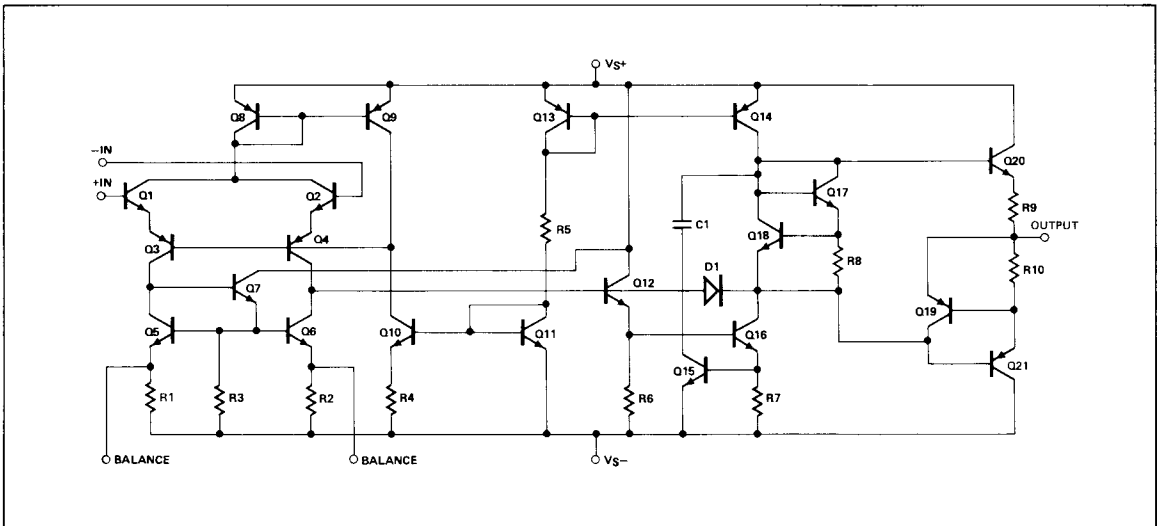
$T_A = 25^\circ\text{C}$ $V_{OS} \text{ MAX}$ (mV)	PACKAGE	OPERATING TEMPERATURE RANGE
	HERMETIC DIP 14-PIN	
5.0	PM747Y	MIL
6.0	PM747CY	COM

† Burn-in is available on commercial and industrial temperature range parts in CerDIP, plastic DIP, and TO-can packages. For ordering information, see PMI's Data Book, Section 2.

PIN CONNECTIONS



SIMPLIFIED SCHEMATIC (1/2 of Circuit Shown)



ABSOLUTE MAXIMUM RATINGS (Note 1)

Supply Voltage	
PM-747	±22V
PM-747C	±18V
Differential Input Voltage	±30V
Input Voltage	Supply Voltage
Output Short-Circuit Voltage	Indefinite
Storage Temperature Range	-65°C to +150°C

Lead Temperature Range(Soldering, 60 sec) +300°C

Operating Temperature Range

PM-747	-55°C to +125°C
PM-747C	0°C to +70°C

PACKAGE TYPE	θ_{JA} (Note 1)	θ_{JC}	UNITS
14-Pin Hermetic DIP (Y)	108	16	°C/W

NOTES:

- θ_{JA} is specified for worst case mounting conditions, i.e., θ_{JA} is specified for device in socket for CerDIP package.

ELECTRICAL CHARACTERISTICS at $T_A = 25^\circ\text{C}$, $V_S = \pm 15\text{V}$, unless otherwise noted.

PARAMETER	SYMBOL	CONDITIONS	PM-747			PM-747C			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Input Offset Voltage	V_{OS}	$R_S \leq 20\text{k}\Omega$	—	1.0	5.0	—	1.0	6.0	mV
Input Offset Current	I_{OS}		—	20	200	—	20	200	nA
Input Bias Current	I_B		—	80	500	—	80	500	nA
Input Resistance	R_{IN}	(Note 1)	0.22	2.0	—	0.3	2.0	—	M Ω
Input Capacitance	C_{IN}		—	1.4	—	—	1.4	—	pF
Offset Voltage Adjustment Range			—	±15	—	—	±15	—	mV
Large-Signal Voltage Gain	A_{VO}	$R_L \geq 2\text{k}\Omega$, $V_O = \pm 10\text{V}$	50	200	—	25	200	—	V/mV
Output Voltage Swing	V_O	$R_L \geq 10\text{k}\Omega$ $R_L \geq 2\text{k}\Omega$	±12 ±10	±14 ±13	—	±12 ±10	±14 ±13	—	V
Output Resistance	R_O		—	75	—	—	75	—	Ω
Output Short-Circuit Current	I_{SC}		—	25	—	—	25	—	mA
Supply Current	I_{SY}	Per Amplifier, No Load	—	1.7	2.8	—	1.7	2.8	mA
Input Voltage Range	IVR		±12	±13	—	±12	±13	—	V
Common-Mode Rejection Ratio	CMRR	$R_S \leq 20\text{k}\Omega$, $V_{CM} = \pm 10\text{V}$	70	90	—	70	90	—	dB
Power Supply Rejection Ratio	PSRR	$V_S = \pm 5\text{V}$ to $\pm 20\text{V}$ $V_S = \pm 5\text{V}$ to $\pm 18\text{V}$	—	30	150	—	—	—	$\mu\text{V/V}$
Power Consumption	P_d	Per Amplifier, No Load	—	50	85	—	50	85	mW
Transient Response, Unity Gain	Risetime Overshoot	$V_{IN} = 20\text{mV}$, $R_L = 2\text{k}\Omega$ $C_L \leq 100\text{pF}$	—	0.3	—	—	0.3	—	μs %
Slew Rate	SR	$R_L \geq 2\text{k}\Omega$	—	0.7	—	—	0.7	—	V/ μs
Channel Separation	CS		—	120	—	—	120	—	dB

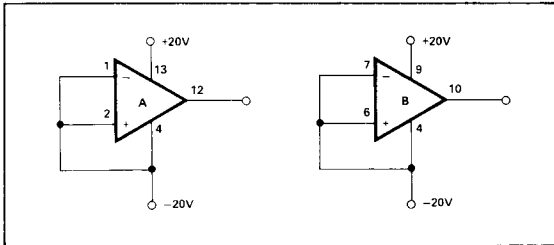
NOTE:

- Guaranteed by input bias current.

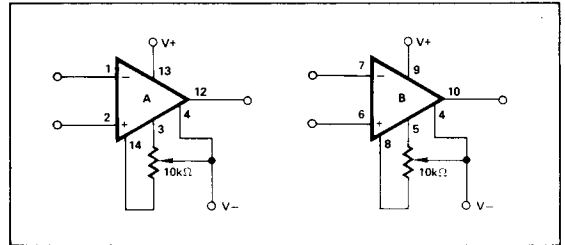
ELECTRICAL CHARACTERISTICS at $V_S = \pm 15V$, $-55^\circ C \leq T_A \leq +125^\circ C$ for PM-747, $0^\circ C \leq T_A \leq +70^\circ C$ for PM-747C, unless otherwise noted.

PARAMETER	SYMBOL	CONDITIONS	PM-747			PM-747C			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Input Offset Voltage	V_{OS}	$R_S \leq 20k\Omega$	—	1.0	6.0	—	1.0	7.5	mV
Input Offset Current	I_{OS}	$T_A = \text{MAX}$	—	7	200	—	7	200	nA
		$T_A = \text{MIN}$	—	85	500	—	30	300	
Input Bias Current	I_B	$T_A = \text{MAX}$	—	0.03	0.5	—	0.03	0.5	μA
		$T_A = \text{MIN}$	—	0.3	1.5	—	0.10	0.8	
Output Voltage Swing	V_O	$R_L \geq 10k\Omega$	± 12	± 14	—	± 12	± 14	—	V
		$R_L \geq 2k\Omega$	± 10	± 13	—	± 10	± 13	—	
Large-Signal Voltage Gain	A_{VO}	$R_L \geq 2k\Omega$, $V_O = \pm 10V$	25	50	—	15	25	—	V/mV
Input Voltage Range	IVR		± 12	± 13	—	± 12	± 13	—	V
Common-Mode Rejection Ratio	CMRR	$R_S \leq 20k\Omega$, $V_{CM} = \pm 10V$	70	90	—	70	90	—	dB
Power Supply Rejection Ratio	PSRR	$R_S \leq 20k\Omega$, $V_S = \pm 5V$ to $\pm 20V$	—	30	150	—	—	—	$\mu V/V$
		$V_S = \pm 5V$ to $\pm 18V$	—	—	—	—	30	150	
Supply Current	I_{SY}	$T_A = \text{MAX}$ Per Amplifier,	—	1.5	2.5	—	1.5	2.5	mA
		$T_A = \text{MIN}$ No Load	—	2.0	3.3	—	2.0	3.3	
Power Consumption	P_d	$T_A = \text{MAX}$ Per Amplifier,	—	45	75	—	45	75	mW
		$T_A = \text{MIN}$ No Load	—	60	100	—	60	100	
Channel Separation	CS		—	120	—	—	120	—	dB

BURN-IN CIRCUIT



TYPICAL OFFSET NULLING CIRCUIT



TYPICAL APPLICATION

HIGH IMPEDANCE DIFFERENTIAL AMPLIFIER

