Power Operational Amplifiers

FEATURES

- Low Cost Integrated Solution
- Output Current >10A Within SOA
- Internal Power Dissipation 35 W Per Channel
- 167V/µS Slew Rate

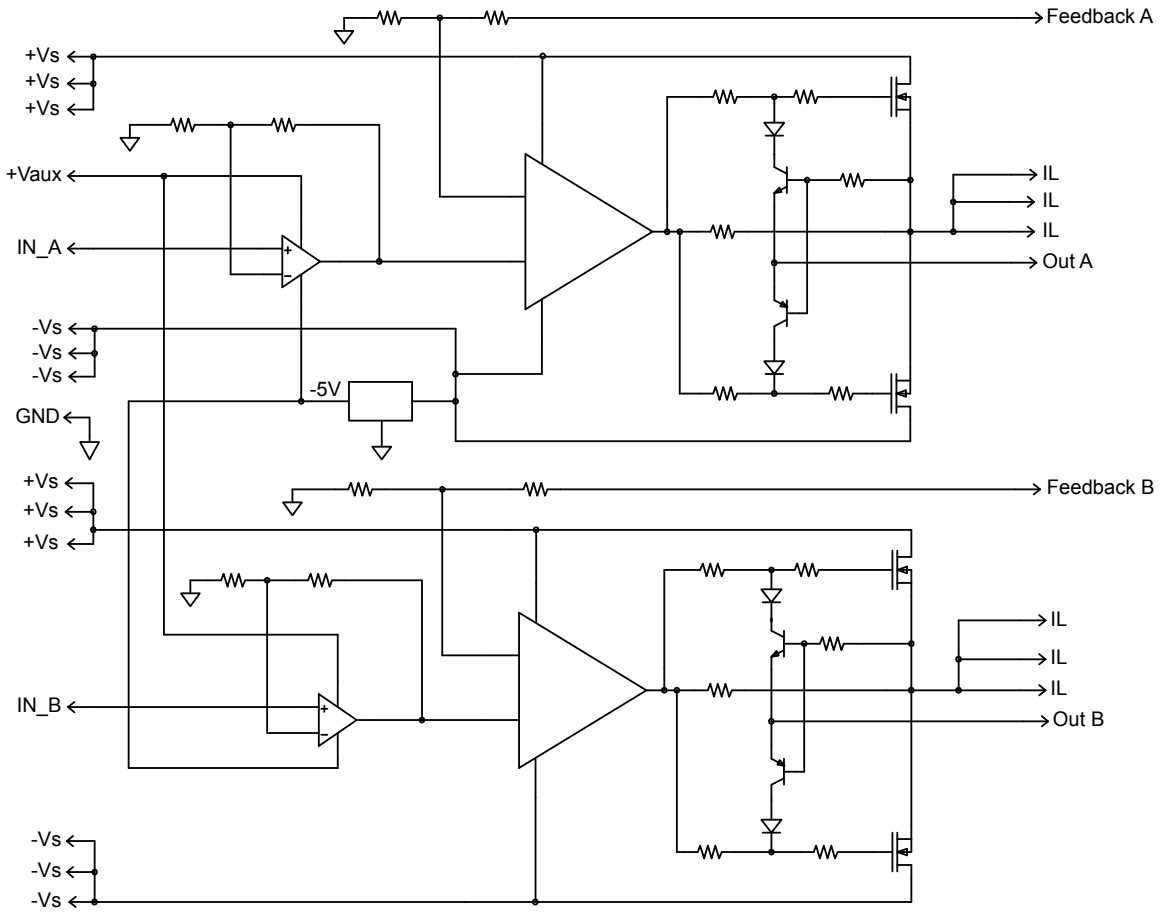
APPLICATIONS

- Piezoelectric Actuation For Ink Jet Printer Nozzles

GENERAL DESCRIPTION

The MP103 is a high voltage, high output current dual channel operational amplifier for driving capacitive loads such as piezo devices use in ink jet printing applications. The MP103 utilizes proprietary IC's combined with discrete semiconductor and passive elements on a thermally conductive insulated metal substrate, delivering very high power from a compact module. The amplifier gain is fixed at 65 V/V when the feedback pin is connected to the V_{OUT} pin. Internal compensation provides optimum slew rate and insures stability. The only external components required are the current limit resistors R_{LIM}, a series isolation resistor R_S and the power supply bypass capacitors.

EQUIVALENT CIRCUIT DIAGRAM



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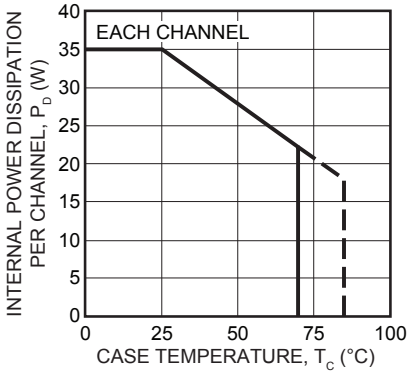
Parameter	Test Conditions	Min	Typ	Max	Units
THERMAL					
RESISTANCE, AC, junction to case (Note 5)	Full temperature range, f ≥ 60Hz		1.5	1.75	°C/W
RESISTANCE, DC, junction to case	Full temperature range, f < 60Hz		3.1	3.6	°C/W
RESISTANCE, junction to air	Full temperature range		12.5	14	°C/W
TEMPERATURE RANGE, case		0		70	°C

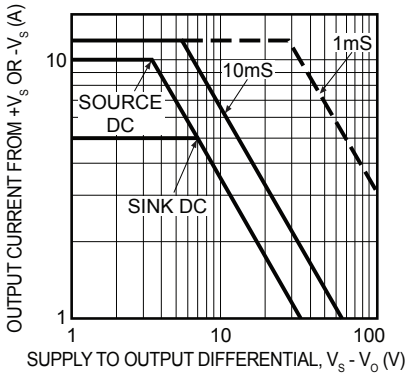
NOTES:

1. (All Min/Max characteristics and specifications are guaranteed over the Specified Operating Conditions. Typical performance characteristics and specifications are derived from measurements taken at typical supply voltages and T_C = 25°C).
2. Long term operation at the maximum junction temperature will result in reduced product life. Derate power dissipation to achieve high MTTF.
3. Doubles for every 10°C of case temperature increase.
4. $+V_S$ and $-V_S$ denote the positive and negative supply voltages to the output stages. $+V_{AUX}$ denotes the positive supply voltage to the input stages.
5. Rating applies if the output current alternates between both output transistors at a rate faster than 60Hz.

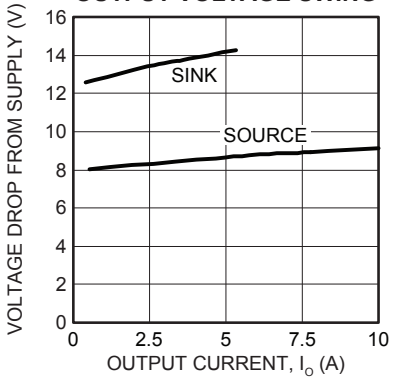
POWER DERATING



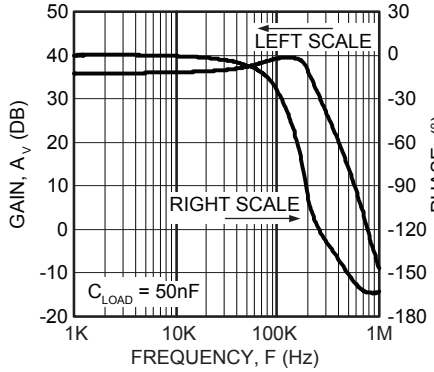
SOA



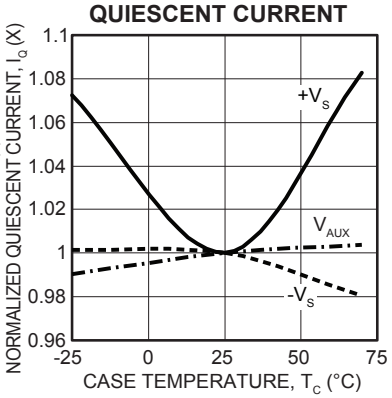
OUTPUT VOLTAGE SWING



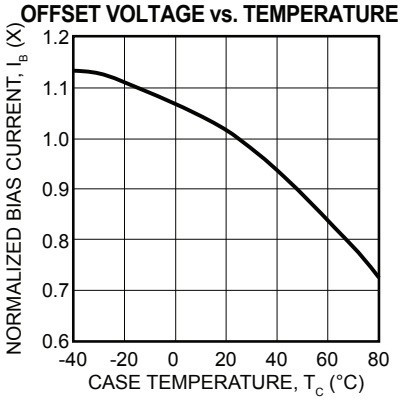
FREQUENCY RESPONSE



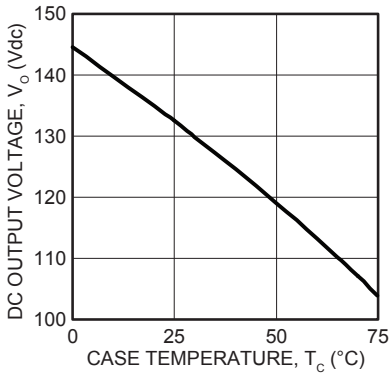
QUIESCENT CURRENT



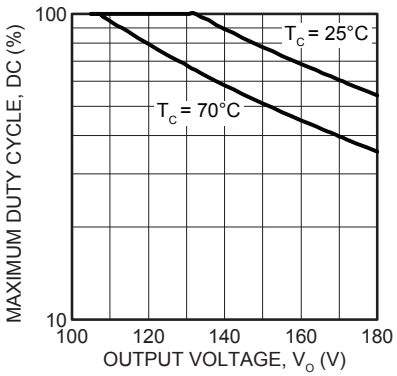
OFFSET VOLTAGE vs. TEMPERATURE



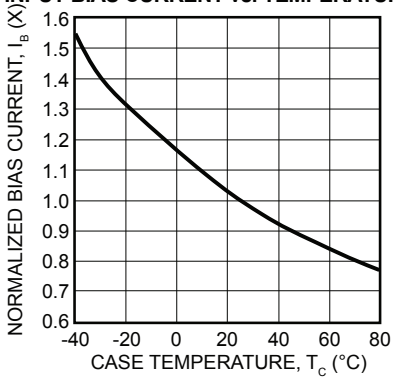
MAX. DC OUTPUT VOLTAGE



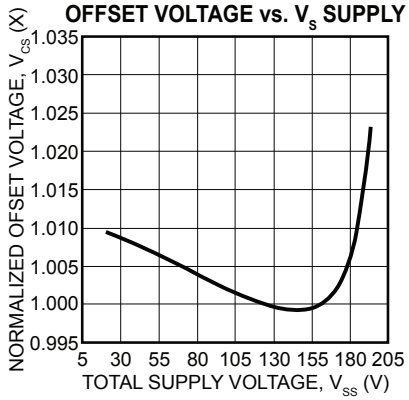
MAX. OUTPUT PULSE DUTY CYCLE



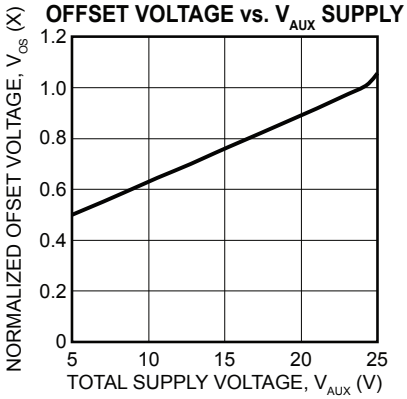
INPUT BIAS CURRENT vs. TEMPERATURE



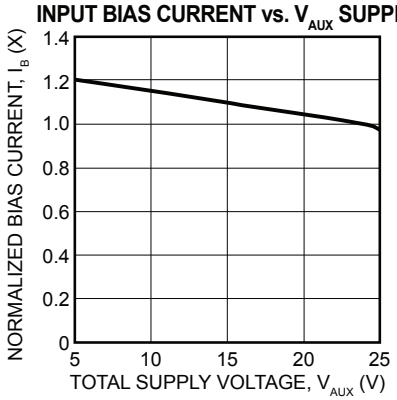
OFFSET VOLTAGE vs. V_S SUPPLY



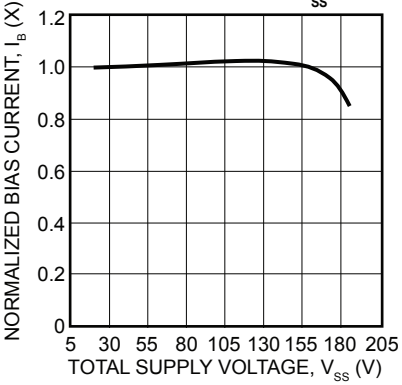
OFFSET VOLTAGE vs. V_{AUX} SUPPLY



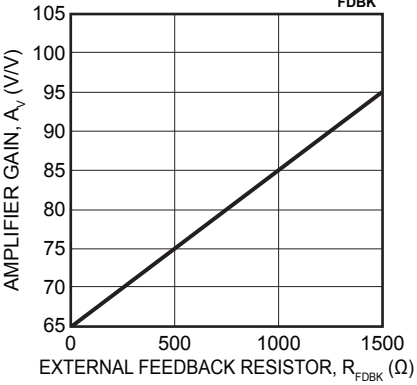
INPUT BIAS CURRENT vs. V_{AUX} SUPPLY



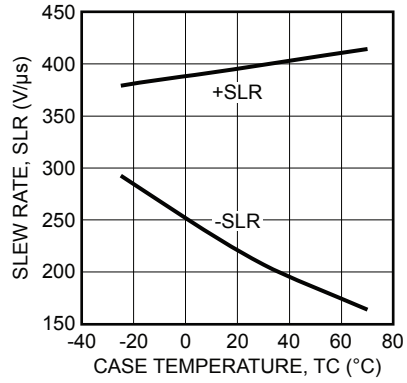
INPUT BIAS CURRENT vs. V_{SS} SUPPLY



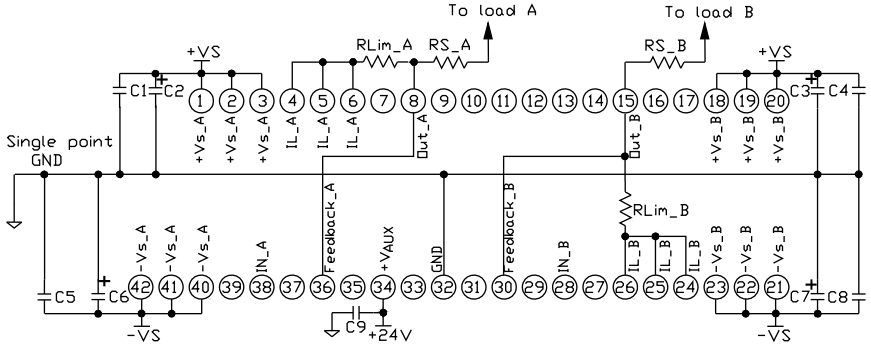
AMPLIFIER GAIN vs. R_{FDBK}

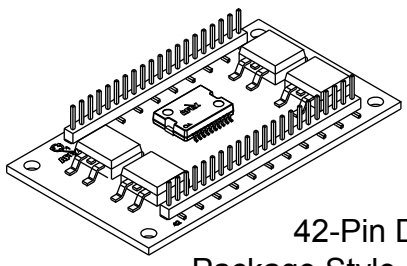


SLEW RATE vs. TEMPERATURE



EXTERNAL CONNECTIONS





42-Pin DIP
Package Style FC