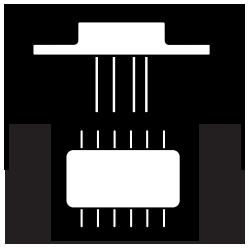
HIGH POWER, VERY HIGH CURRENT OPERATIONAL AMPLIFIER



15 Amp Peak Operational Amplifier

FEATURES

- Available In Isolated Standard TO-3, “Copper Slug” TO-3 And Power DIP Packages
- 15 Amp Peak Output Current
- Power Supplies to ±50V
- Class A/B Output Stage
- Low Distortion
- Available Screened to MIL-STD-883

DESCRIPTION

The OMA512 is a high voltage, very high current operational amplifier designed to drive a wide variety of resistive and reactive loads. The circuit is a hybrid integrated type housed in a variety of hermetically sealed packages and is isolated from the case. It is ideally suited for critical environments in applications such as motor drivers, servo amplifiers, audio amplifiers and synchro exertation.

ABSOLUTE MAXIMUM RATINGS @ 25°C

Supply Voltage, $+V_S$ to $-V_S$	100V
Output Current: Source	15A
Sink	See SOA
Power Dissipation, Internal	125W
Input Voltage: Differential	±(‰V_S‰ - 3V)
Common Mode	$\pm V_S$
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-55°C to 150°C
Lead Temperature (10 Sec. Soldering)	300°C

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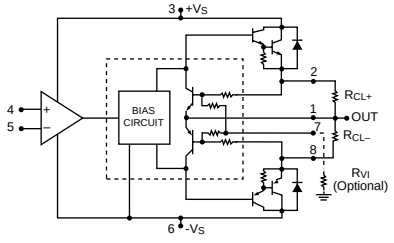
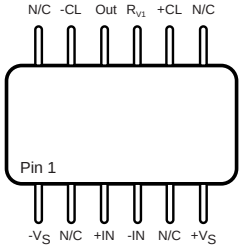
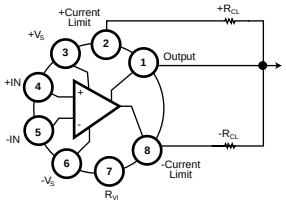
SCHEMATIC TO-3



PIN CONNECTION



D-12 Top View



TO-3 Top View

ELECTRICAL CHARACTERISTICS (T_C = 25°C; V_{CC} = ±40 V_{DC} unless otherwise noted.)

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Offset Voltage					
V_{OS}			±2	±5	mV
vs Temperature	-25°C to +125°C		±10	±40	µV/°C
vs Temperature	-55°C to -25°C		±15	±65	µV/°C
vs Supply Voltage	V_S = ±10V to ± V_{MAX}		±30	±200	µV/V
vs Power			±20		µV/W
Input Bias Current				30	nA
I_B	Specified Temperature Range		±50	400	pA/°C
Input Offset Current				30	nA
I_{OS}	Specified Temperature Range		±50	400	pA/°C
Input Characteristics					
Common-Mode Voltage Range	-55°C to +85°C	±(œV$_S$œ- 5.5)	±(œV$_S$œ- 3.2)		V
	+85°C to +125°C	±(œV$_S$œ- 5)	±(œV$_S$œ- 3)		V
Common-Mode Rejection	V_{CM} = ±(œV$_S$œ- 5V)		100		dB
	V_{CM} = ±22V	74			dB
Input Capacitance*			3		pF
Input Impedance*			200		M
Gain Characteristics					
Open Loop Gain at 10Hz	R_L = 10 k		110		dB
Gain Bandwidth Product*			4		MHz
Output					
Voltage Swing(1)	R_L = 2.2 Load	±(œV$_S$œ- 7)			V
	Specified Temperature Range				
	R_L = 10 k Load	±(œV$_S$œ- 5)			V
Current Peak		15			A
AC Performance					
Slew Rate		2.5	4.0		V/µS
Power Bandwidth*	R_L = 8 , V_O = 20V_{rms}		20		KHz
Setting Time to 0.1%*	2V Step		20		µS
Capacitive Load*	Specified Temperature Range, G =1			1.5	A
	Specified Temperature Range, G >10			SOA(2)	A
Phase Margin*	Specified Temperature Range, R_L = 8		20		Degrees
Power Supply					
Power Supply Voltage, ±V_S		±10	±40	±50	V
Current Quiescent	Specified Temperature Range		30	40	mA

Thermal Resistance Maximum	Conditions	Standard TO-3	Copper Slug TO-3	Power DIP	Units
AC Junction-to-Case (3)	T_C = -55 to +125°C, f < 60Hz	0.9	0.8	0.6	°C/W
DC Junction-to-Case	T_C = -55 to +125°C	1.4	1.15	0.9	°C/W
Junction-to-Air	T_C = -55 to +125°C	30	30	20	°C/W

Notes: (1) +V_S and -V_S denotes the positive and negative supply voltage respectively. Total V_S is Operating from +V_S to -V_S.

(2) SOA = Safe Operating Area.

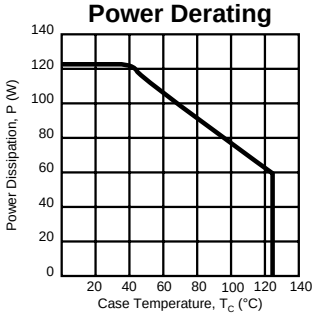
(3) Rating applies only if the output current alternates between both output transistors at a rate faster than 60 Hz.

* Guaranteed - not tested 100%.

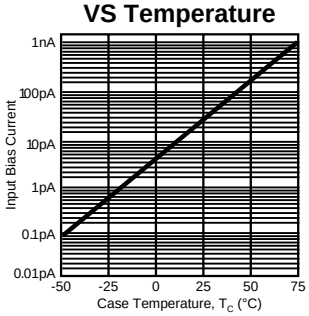
TYPICAL PERFORMANCE CURVES

T_A = +25°C, V_S = ±V_{DC} unless otherwise noted

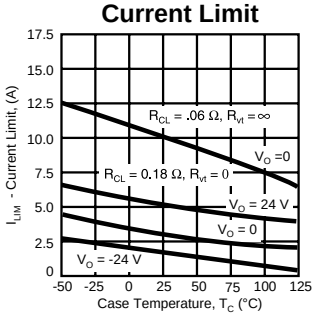
Power Derating



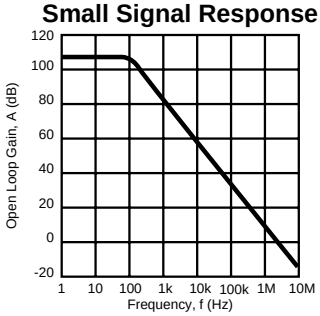
Input Bias Current VS Temperature



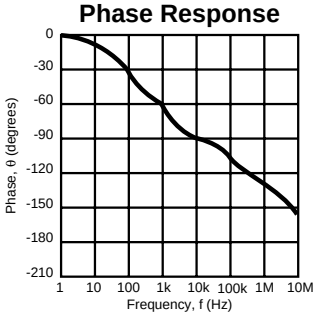
Current Limit



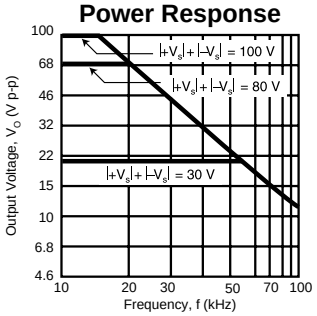
Small Signal Response



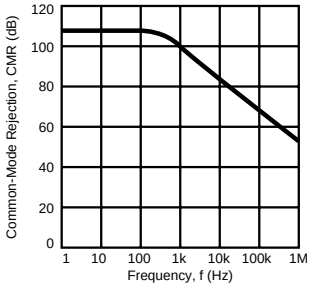
Phase Response



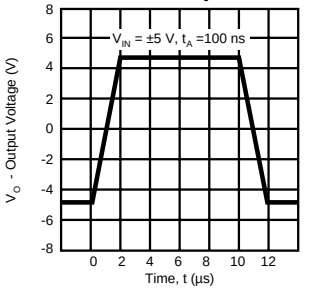
Power Response



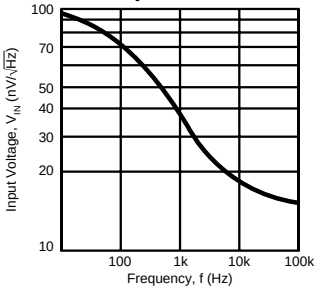
Common-Mode Rejection



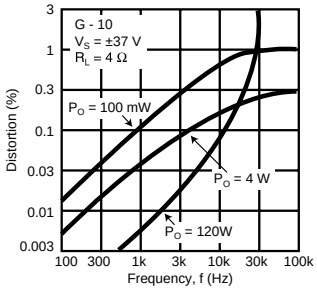
Pulse Response



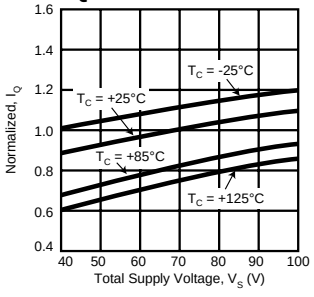
Input Noise



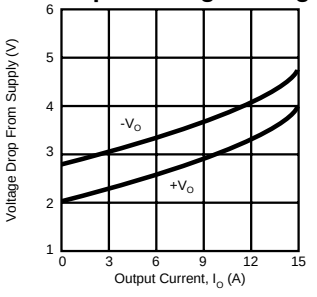
Harmonic Distortion



Quiescent Current



Output Voltage Swing



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