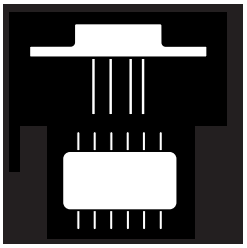
HIGH POWER, VERY HIGH CURRENT OPERATIONAL AMPLIFIER APPROVED TO DESC DRAWING 5962-90659



15 Amp Peak Operational Amplifier

FEATURES

- Approved to DESC 5962-90659
- 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

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	±50V
Output Current: Source	15A
Sink	See SOA
Power Dissipation, Internal	125W
Input Voltage: Differential	±50V - 3V
Common Mode	±50V
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-65°C to 150°C
Lead Temperature (10 Sec. Soldering)	300°C

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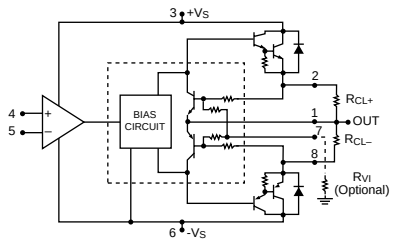
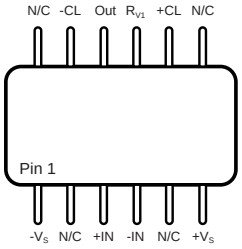
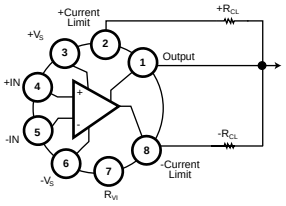
SCHEMATIC TO-3



PIN CONNECTION



D-12 Top View



TO-3 Top View

ELECTRICAL PERFORMANCE CHARACTERISTICS

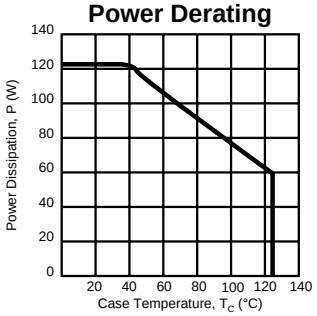
TEST	SYMBOL	CONDITIONS 1/ -55 °C ≤ T_C ≤ +125 °C V_S = ±40 V dc unless otherwise specified	GROUP A Subgroups 3/	LIMITS MIN	LIMITS MAX	Units
Supply Current	I_S	V_{IN} = 0 V dc, G = 100, 2/ ±R_{CL} = 1.0 Ω VCM = 0 V dc	1,2 3		50 100	mA
Input Offset Voltage	V_{OS}	V_{IN} = 0 V dc, G = 100, 2/ V_S = ±10 V dc, ± R_{CL} = 1.0 Ω	1 2 3	-12.0 -18.5 -17.2	+12.0 +18.5 +17.2	mV
		V_{IN} = 0 V dc, G = 100, 2/ V_S = ±40 V dc, ± R_{CL} = 1.0 Ω	1 2 3	-6.0 -12.5 -11.2	+6.0 +12.5 +11.2	mV
		V_{IN} = 0 V dc, G = 100, 2/ V_S = ±45 V dc, ± R_{CL} = 1.0 Ω	1 2 3	-7.0 -13..5 -12.2	+7.0 +13.5 +12.2	mV
Input Bias Current, +IN	$+I_B$	V_{IN} = 0 V dc, R_{BIAS} ≤ 100 MΩ	1 2 3		30.0 70.0 115.0	nA
Input Bias Current, -IN	$-I_B$	V_{IN} = 0 V dc, R_{BIAS} ≤ 100 MΩ	1 2 3		30.0 70.0 115.0	nA
Input Offset Current	I_{OS}	V_{IN} = 0 V dc, R_{BIAS} ≤ 100 MΩ	1 2 3		30.0 70.0 115.0	nA
Output Voltage	V_O	V_S = ±45 V dc, I_O = 80 mA, R_L = 500 Ω	4,5,6	40		V
		V_S = ±14 V dc, I_O = 8 A, R_L = 1 Ω	5,6	8		V
		V_S = ±16 V dc, I_O = 10 A, R_L = 1 Ω	4	10		V
Current Limits	I_{CL}	R_L = 6 Ω, ± R_{CL} = 1.0 Ω 2/ V_S = ±14 V dc	4	0.6	.89	A
Stability/noise	E_N	G = 1, V_S = ± 40 V dc, C_L = 1.5 nF	4,5,6		1.0	mV
Slew rate	S_R	R_L = 500 Ω, = ± 40 V dc, V_{IN} ≥ 4 V_{p-p}	4,5,6	2.5	10.0	V/ms
Open loop gain	A_{OL}	R_L = 500 Ω, V_S = ±40 V dc, f = 15 Hz, V_{IN} ≥ .4 V_{p-p}	4,5,6	96		dB
Common mode rejection	CMR	V_S = ±15 V dc, f = dc V_{CM} = ±9 V dc	4,5,6	74		dB

1) During all testing, terminal connection F.O. (pin 7) is left open.
2) A current limiting resistor (R_{CL}) is connected between C_L + to the output and C_L - to the output during these tests.
3) See MIL-H-38524 for definition.

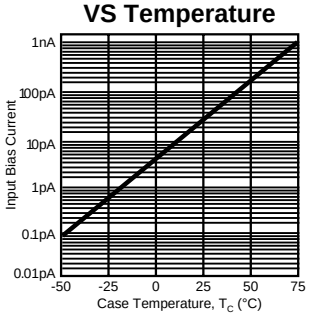
TYPICAL PERFORMANCE CURVES

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

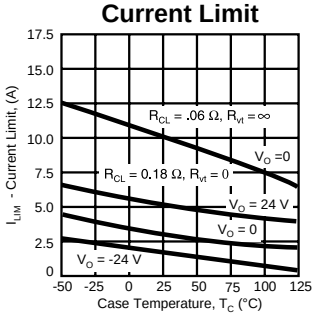
Power Derating



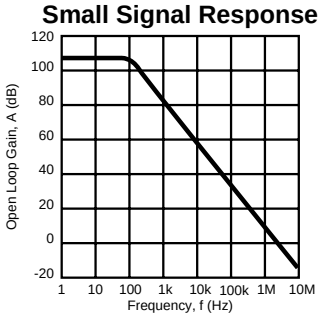
Input Bias Current VS Temperature



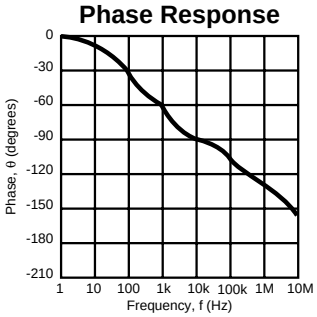
Current Limit



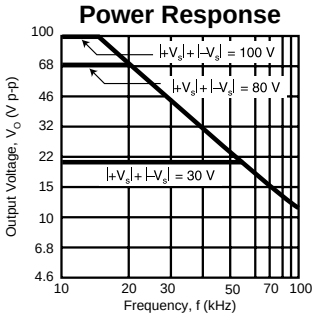
Small Signal Response



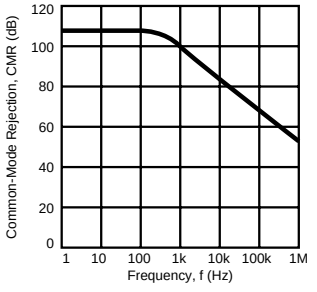
Phase Response



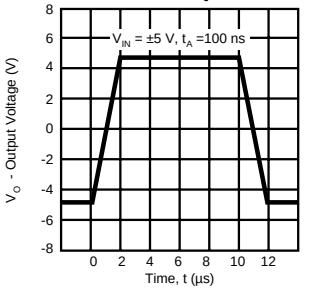
Power Response



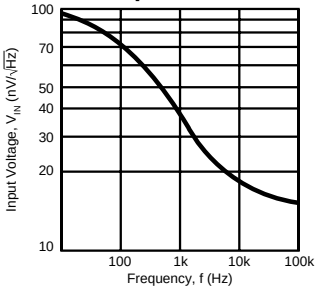
Common-Mode Rejection



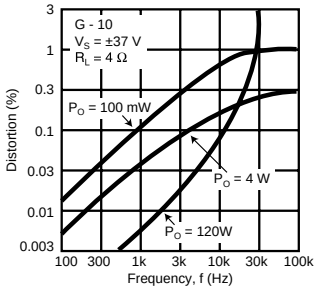
Pulse Response



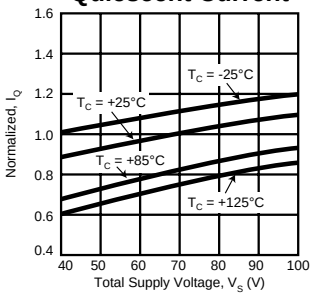
Input Noise



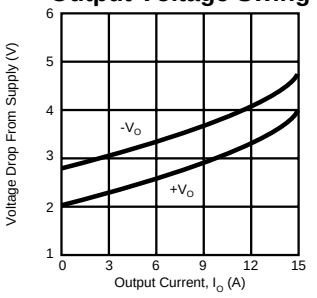
Harmonic Distortion



Quiescent Current



Output Voltage Swing

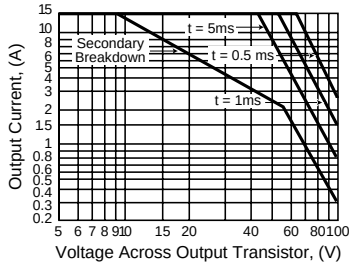


3.4

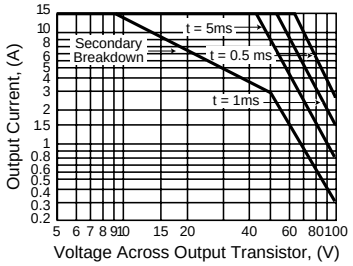
Omnirel

Safe Operating Area, T_C = 25°C

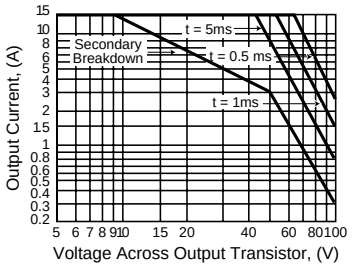
Standard TO-3



Copper Slug TO-3



Power DIP



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

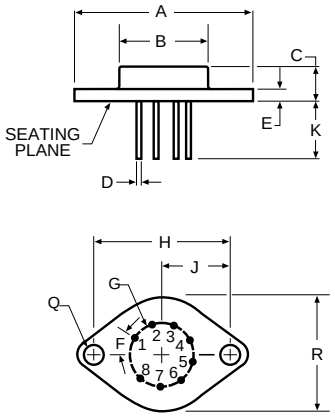
Rating applies only if the output current alternates between both output transistors at a rate faster than 60 Hz.

Part Number Designator

Standard Military Drawing Number	Omnirel Part Number	Package
5962-9065901HXX	OMA512SKB	TO-3
5962-9065902HXX	OMA512SKCB	TO-3 Copper Slug
5962-9065901HYX	OMA512SDB	D-12

MECHANICAL OUTLINE

TO-3-8

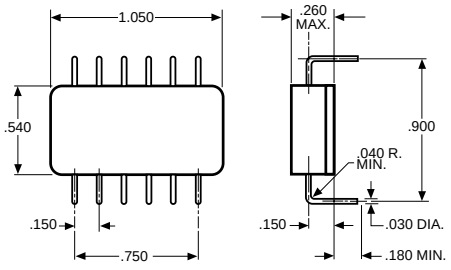


DIM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	1.510	1.550	38.35	39.37
B	.745	.770	18.92	19.56
C	.260	.300	6.60	7.62
D	.038	.042	0.97	1.07
E	.080	.105	2.03	2.67
F	40° BASIC		40° BASIC	
G	.500 BASIC		12.7 BASIC	
H	1.186 BASIC		30.12 BASIC	
J	.593 BASIC		15.06 BASIC	
K	.400	.500	10.16	12.70
Q	.151	.161	3.84	4.09
R	.980	1.020	24.89	25.91

Note: Leads in true position within 0.010" (0.25mm) R at MMC at seating plane.

Pin numbers shown for reference only. Numbers may not be marked on package.

D-12



Omnirel 205 Crawford Street, Leominster, MA 01453 USA (508) 534-5776 FAX (508) 537-4246