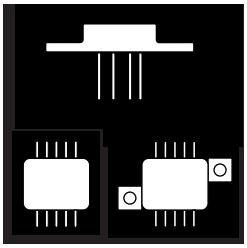
HIGH POWER, HIGH CURRENT OPERATIONAL AMPLIFIER APPROVEDTO DESC DRAWING 5962-87620



8-Pin TO-3 And 10-Pin DIP, 10 Amp Operational Amplifier

FEATURES

- Approved to DESC 5962-87620
- Available In Isolated Standard TO-3, “Copper Slug” TO-3 And Power DIP Packages
- 10 Amp Peak Output Current
- ±10V to ±40V Supply Range

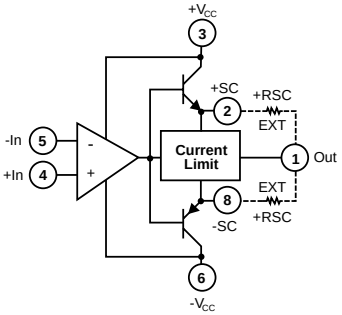
DESCRIPTION

The OMA501 is a high power operational amplifier capable of 260 watts peak output power. The high current output stage delivers ±10A, yet the amplifier is unity-gain stable and it can be used in any operational amplifier configuration. This device is ideally suited for Military motor driver, servo amplifiers, actuator control and other power drive circuits. All products are available with Hi-Rel screening and approved to DESC drawing 5962-87620.

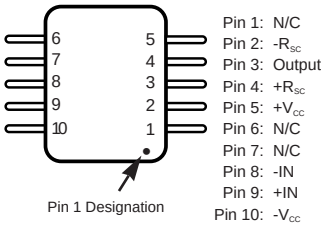
ABSOLUTE MAXIMUM RATINGS @ 25°C

Power Supply Voltage	±40VDC
Differential Input Voltage	±V_{CC} -3V
Power Dissipation @ 25°C	79W
Operating Temperature Range	-55°C to 125°C
Storage Temperature Range	-55°C to 150°C
Maximum Junction Temperature	175°C
Lead Temperature (10 Sec. Soldering)	300°C

SCHEMATIC

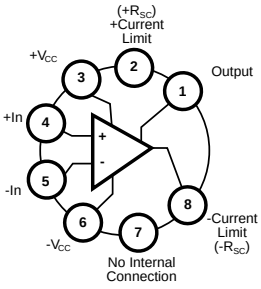


PIN CONNECTION



Pin 1: N/C
Pin 2: -R_{sc}
Pin 3: Output
Pin 4: +R_{sc}
Pin 5: +V_{cc}
Pin 6: N/C
Pin 7: N/C
Pin 8: -IN
Pin 9: +IN
Pin 10: -V_{cc}

TOP VIEW D-10



TOP VIEW TO-3

3.4

ELECTRICAL CHARACTERISTICS (At T_C = 25°C; $\pm V_{CC}$ = 34V_{DC} unless otherwise noted.)

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Output(1)					
Continuous,(2)	R_L = 2.6	±10			A
Output Voltage(2)	I_O = 10A peak	±26	±29		V
	-55°C < T < 125°C, R_L = 10K	±30	±30		
Dynamic Response					
Bandwidth, Unity Gain	Small Signal		1		MHz
Full Power Bandwidth	V_O = 40Vp-p, R_L = 8		16		kHz
Slew Rate	R_L = 6.5	1.35			V/µs
Input Offset Voltage					
Initial Offset			±3	±5	mV
vs Temperature	-55°C < T < 125°C		±10	±40	µV/°C
vs Supply Voltage			±35		µV/V
Input Bias Current					
Initial			±15	±20	nA
vs Temperature				±35	nA/°C
vs Supply Voltage			±0.02		nA/V
Input Difference Current					
Initial			±2	±3	nA
vs Temperature	-55°C < T < 125°C		±5	±7	nA/°C
Open-Loop Gain, DC	R_L = 10K	94	115		dB
Input Impedance*					
Differential			10		M
Common-mode			250		M
Power Supply					
Rejection Ratio	V_{CC} = -34V_{DC} + V_{CC} = +10 to +40 V_{DC}	-100		+100	µV/V
	-55°C < T < 125°C	-200		+200	
	V_{CC} = +34V_{DC} + V_{CC} = -10 to -40 V_{DC}	-100		+100	µV/V
	-55°C < T < 125°C	-200		+200	
Input Voltage Range					
Common-mode Rejection	F = DC, V_{CM} = ± 22V	80	110		dB
	-55°C < T < 125°C	76			
Power Supply					
Rated Voltage			±34		V
Operating Voltage Range		±10		±40	V
Current, Quiescent			±5	±10	mA

Thermal Resistance*		Standard TO-3	Copper Slug TO-3	Power DIP	Units
Steady State q_{jc}	Typical	2.0	1.8	1.35	°C/W
	Maximum	2.2	1.9	1.45	°C/W

NOTES:

(1) Safe Operating Area and Power Derating Curves must be observed.

(2) With ±R_{SC} = 0. Peak output current is typically greater than 10A if duty cycle and pulse width limitations are observed. Output current greater than 10A is not guaranteed.

(*) Guaranteed - not tested 100%.

3.4

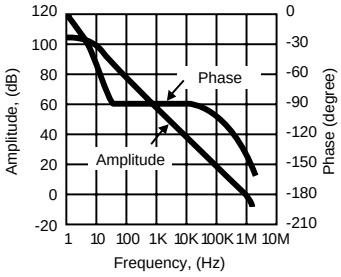
Part Number Designator

Standard Military Drawing Number	Omnirel Part Number	Package
5962-8762001XX	OMA501SKB	TO-3
5962-8762003XX	OMA501SKCB	TO-3 Copper Slug
5962-8762001UX	OMA501SDB	D-10
5962-8762001ZX	OMA501SDZB	D-10Z

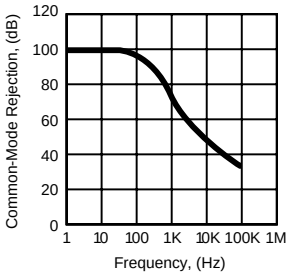
TYPICAL PERFORMANCE CURVES

(Package Dependent)

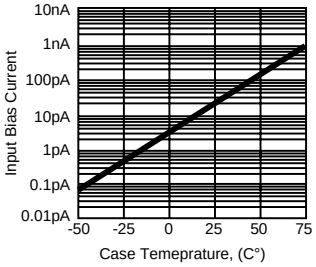
Open-Loop
Frequency Response



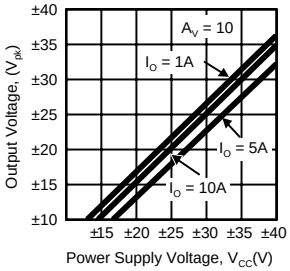
Common Mode Rejection
VS Frequency



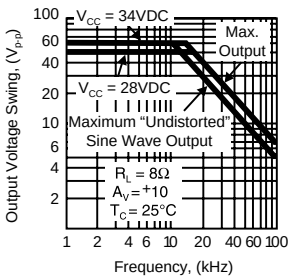
Input Bias Current
VS Temperature



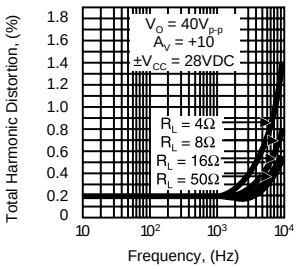
Output Voltage Swing
VS Power Supply Voltage



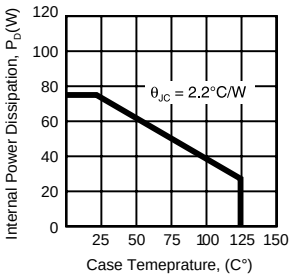
Full Power Response



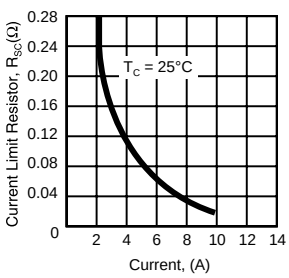
Harmonic Distortion



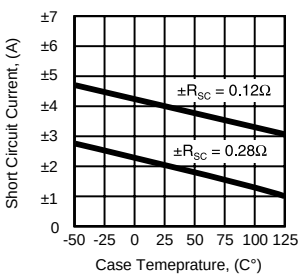
Power Derating Curve



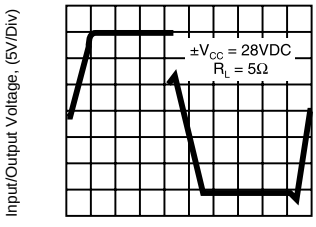
Current Limiting



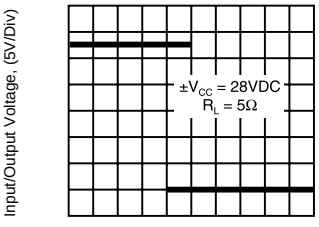
Current Limiting



Pulse Response, A_V = +1



Pulse Response, A_V = +1



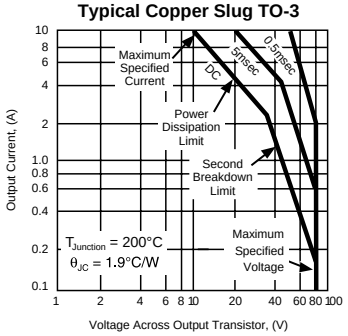
3.4

Omnirel

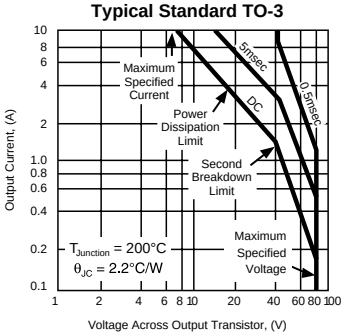
TRANSISTOR SAFE OPERATING AREA (SOA)

@ 25°C Case Temperature

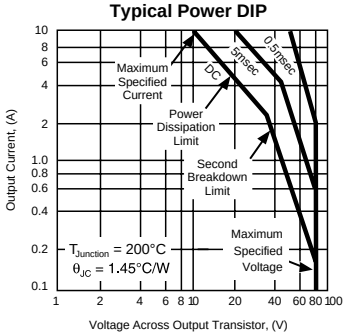
Typical Copper Slug TO-3



Typical Standard TO-3

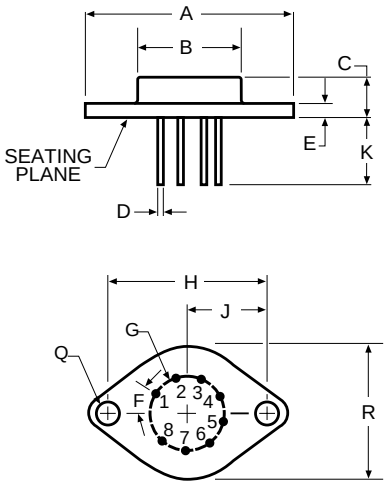


Typical Power DIP



MECHANICAL OUTLINE

TO-3-8

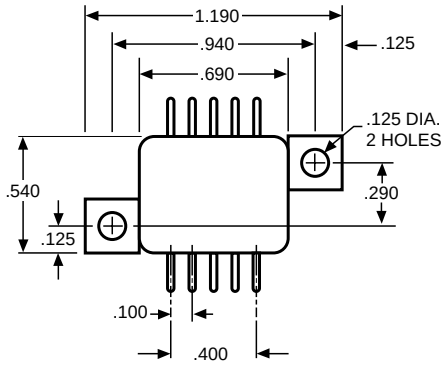


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.510	1.550	38.35	39.37
B	.745	.770	18.92	19.56
C	.260	.300	6.60	7.62
D	.038	.042	0.97	1.07
E	.080	.105	2.03	2.67
F	40° BASIC		40° BASIC	
G	.500 BASIC		12.7 BASIC	
H	1.186 BASIC		30.12 BASIC	
J	.593 BASIC		15.06 BASIC	
K	.400	.500	10.16	12.70
Q	.151	.161	3.84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

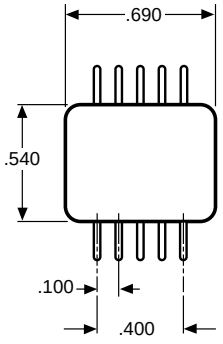
Note: Leads in true position within 0.010" (0.25mm) R at MMC at seating plane.

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

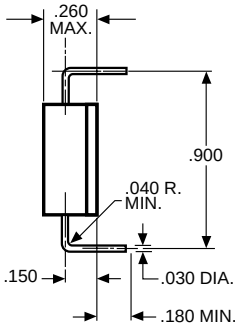
D-10Z



D-10



Common Lead



3.4