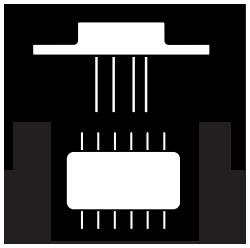
DUAL HIGH POWER OPERATIONAL AMPLIFIER APPROVED TO DESC DRAWING 5962-90838



8-Pin TO-3 And 12-Pin DIP, Dual 5 Amp Operational Amplifier

FEATURES

- Approved to DESC Drawing 5962-90838.
- Available In Isolated Standard TO-3, “Copper Slug” TO-3 And Power DIP Packages
- 5 Amp Peak Output Current
- Power Supplies to ±40V
- FET Input
- Dual Configuration

DESCRIPTION

The OMA2541 is a high performance dual power operational amplifier capable of operation from power supplies up to ±40V and continuous output current up to 5A. This device is ideally suited for Military motor driver, servo amplifiers, bridge amplifier, synchro/resolver exertation as well as other power management driver applications. Internal circuitry limits output current to approximately 6 Amps. All products are available with Hi-Rel screening and approved to DESC drawing 5962-90838.

ABSOLUTE MAXIMUM RATINGS @ 25°C

Supply Voltage, $+V_S$ to $-V_S$	80V
Output Current, Continuous	5A
Power Dissipation, Internal	125W
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

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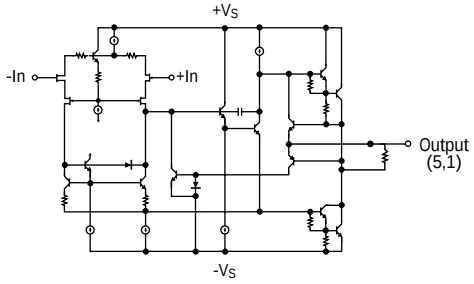
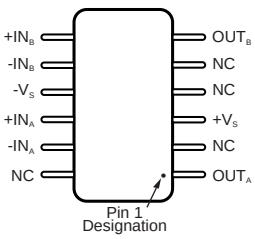
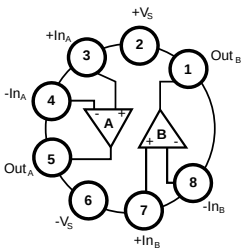
SCHEMATIC



PIN CONNECTION



TOP VIEW D-12



TOP VIEW TO-3

ELECTRICAL CHARACTERISTICS (-55°C T_A +125°C; V_{CC} = ±37V_{DC} (1)

Parameter	Symbol	Conditions		Min.	Max.	Units
Input Offset Voltage	V_{IO}	T_A = +25°C		-1	+1	mV
Input Offset Voltage Drift	$\frac{^3V_{IO}}{^3_T}$	T_A = -55°C and +125°C	•	-30	+30	µV/°C
Input Bias Current	±I_B			-50	+50	pA
			•	-50	+50	nA
Input Offset Current	I_{OS}			-30	+30	pA
			•	-20	+20	nA
Power Supply Rejection Ratio	+PSRR	-V_{CC} = -34V_{DC}, +V_{CC} = +10 to +40V_{DC}		-10	+10	µV/V
			•	-20	+20	
	-PSRR	+V_{CC} = +34V_{DC}, -V_{CC} = -10 to -40V_{DC}		-10	+10	µV/V
			•	-20	+20	
Common Mode Rejection Ratio	CMRR	V_{CM} = +22V_{DC}, f = DC		95		dB
			•	90		
Supply Currents	±I_{CC}	V_{CM} = 0V, no load condition, total supply current	•	-60	+60	mA
Output Voltage Peak	V_{OP}	I_O = 5A peak, R_L = 5.6 , 10 kHz sine wave, T_A = 25°C		±28.6		V
		R_L = 10 , 10 kHz sine wave T_A = -55°C and +125°C	•	±30		V
Output Current Peak	I_{OP}	R_L = 5.6 , V_{OUT} = ±30V_{DC}, T_A = 25°C (2)			±5	A
		R_L = 10k , V_{OUT} = ±30V_{DC} T_A = -55°C and +125°C (2)	•		±3	A
Voltage Gain	A_{VS}	R_L = 10k T_A = 25°C		95		dB
		T_A = 125°C		90		
		T_A = -55°C		85		
Slew Rate	±SR	R_L = 6.5 , T_A = +25°C		±6		V/µs

Thermal Resistance Maximum		Conditions	Standard TO-3	Copper Slug TO-3	Power DIP	Units
Junction-to-Case	q_{JC}	Both Amplifiers(3), AC Output f > 60Hz	1.0	.8	.65	°C/W
		Both Amplifiers(3), DC Output	1.2	1.0	.8	°C/W
		One Amplifier, AC Output f > 60Hz	1.5	1.2	1.0	°C/W
		One Amplifier, DC Output	1.9	1.5	1.15	°C/W
Junction-to-Ambient	q_{JA}	No Heat Sink	30	30	30	°C/W

NOTES: (1) Unless otherwise specified, these tests are for each amplifier.

(2) Internal current limit circuitry is controlled by a single external resistor, R_{CL}. To calculate the value of the current limit resistor, use R_{CL} = (0.809/I_{LIM}) - 0.057, where I_{LIM} is equal to the desired output current (I_{OP}).

(3) Assumes equal dissipation in both amplifiers.

• Denotes over specified temperature range.

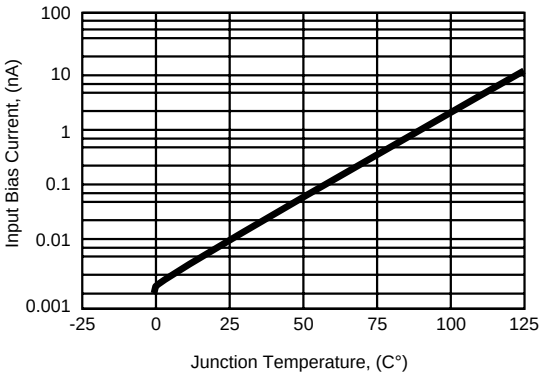
Part Number Designator

Standard Military Drawing Number	Omnirel Part Number	Package
5962-9083801HXX	OMA2541SKB	TO-3
5962-9083802HXX	OMA2541SKCB	TO-3 Copper Slug
5962-9083801HYX	OMA2541SDB	12 Pin DIP

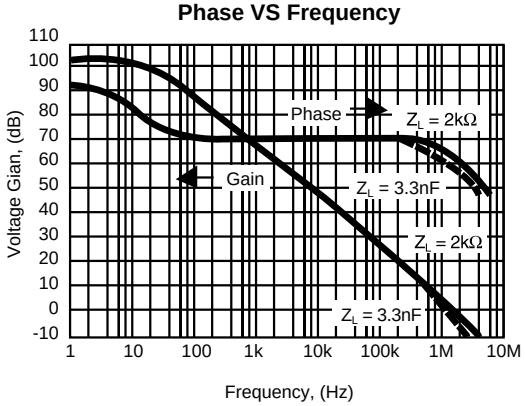
TYPICAL PERFORMANCE CURVES

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

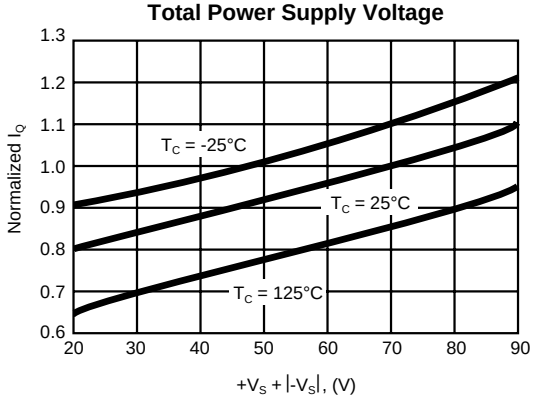
Input Bias Current VS Temperature



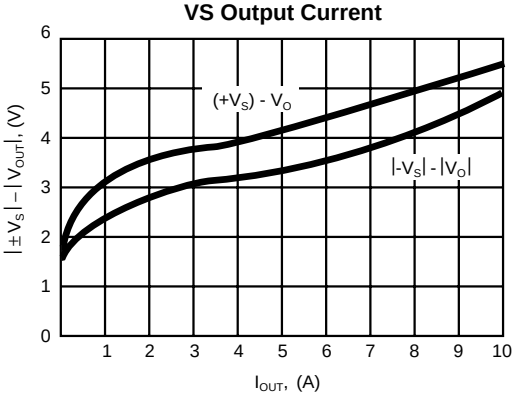
Open-Loop Gain and Phase VS Frequency



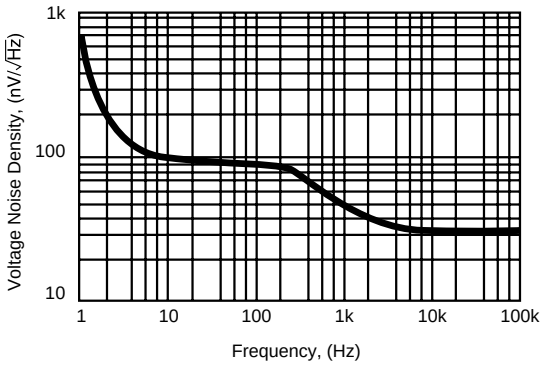
Normalized Quiescent Current VS Total Power Supply Voltage



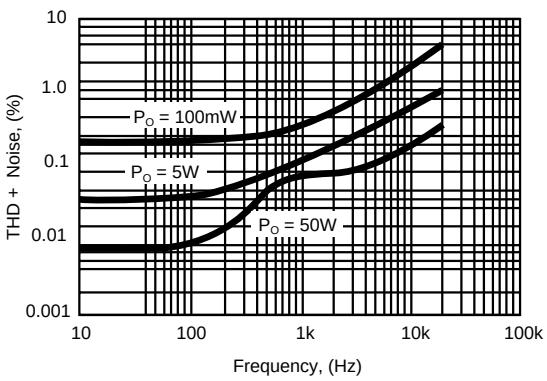
Output Voltage Swing VS Output Current



Voltage Noise Density VS Frequency



Total Harmonic Distortion VS Frequency



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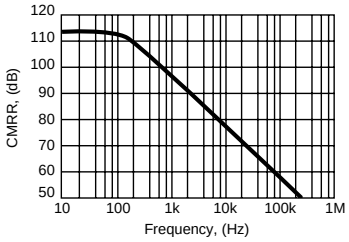
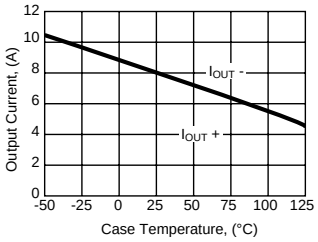
Omnirel

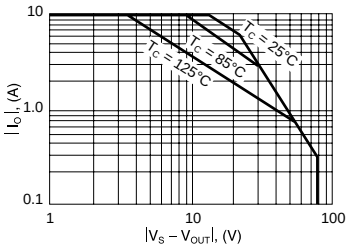
Typical Common-Mode Rejection VS Frequency (Case Dependent)



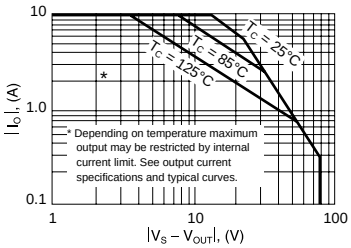
Typical Output Current VS Temperature (Case Dependent)



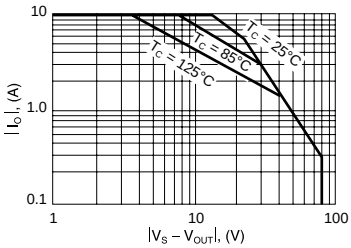
Copper Slug TO-3 Safe Operating Area OMA2541SKC



Standard TO-3 Safe Operating Area OMA2541SK

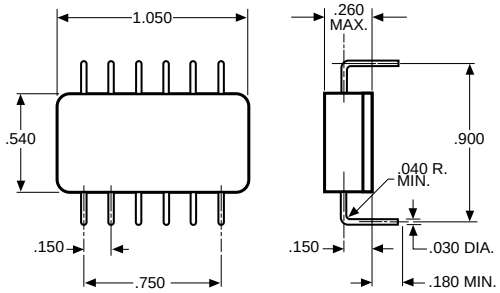


Power DIP Safe Operating Area OMA2541SD/SDZ

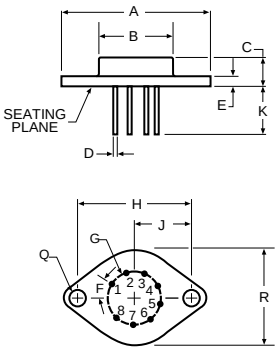


MECHANICAL OUTLINE

D-12



TO-3-8
STANDARD AND COPPER SLUG



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.

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