DUAL HIGH POWER OPERATIONAL AMPLIFIER

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

FEATURES

- 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
- Available Screened to MIL-STD-883

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.

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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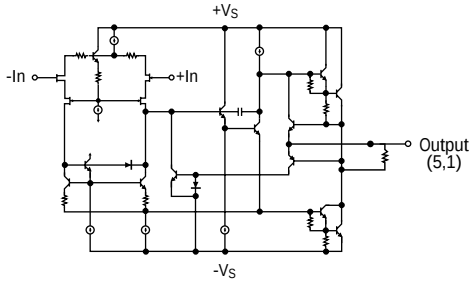
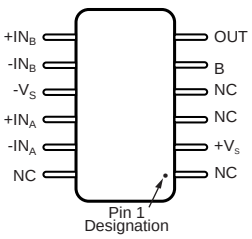
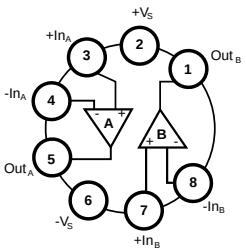
SCHEMATIC



PIN CONNECTION



TOP VIEW D-12



TOP VIEW TO-3

ELECTRICAL CHARACTERISTICS (T_c = 25°C; V_s = ±34 V_{DC} unless otherwise noted.)

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Offset Voltage					
V_{OS}			±.01	±2	mV
vs Temperature	-25°C to +125°C		±15	±30	µV/°C
vs Temperature	-55°C to -25°C		±20	±40	µV/°C
vs Supply Voltage	V_S = ±10V to ± V_{MAX}		±2.5	±10	µV/V
vs Power			±20	±60	µV/W
Input Bias Current					
I_B			4	50	pA
Input Offset Current			±1	±30	pA
I_{OS}	Specified Temperature Range		±5	±20	nA
Input Characteristics					
Common-Mode Voltage Range	-55°C to +85°C	±(œV$_S$œ- 6)	±(œV$_S$œ- 3)		V
	+85°C to +125°C	±(œV$_S$œ- 6.5)	±(œV$_S$œ- 3.2)		V
Common-Mode Rejection	V_{CM} = ±(œV$_S$œ- 6V)		113		dB
	V_{CM} = ±22V	95			dB
Input Capacitance*			5		pF
Input Capacitance, DC*			1		T
Gain Characteristics					
Open Loop Gain at 10Hz	R_L = 10k	90	97		dB
Gain Bandwidth Product*			1.6		MHz
Output					
Voltage Swing	I_O = 5A, Continuous	±(œV$_S$œ- 5.5)	±(œV$_S$œ- 4.5)		V
	I_O = 2A	±(œV$_S$œ- 4.5)	±(œV$_S$œ- 3.6)		V
	I_O = 0.5A	±(œV$_S$œ- 4)	±(œV$_S$œ- 3.2)		V
Current Peak		9	10		A
AC Performance					
Slew Rate		6	10		V/µS
Power Bandwidth*	R_L = 8 , V_O = 20V_{rms}		55		KHz
Setting Time to 0.1%*	2V Step		2		µS
Capacitive Load*	Specified Temperature Range, G =1	3.3			A
	Specified Temperature Range, G >10			SOA	
Phase Margin*	Specified Temperature Range, R_L = 8		40		Degrees
Power Supply					
Power Supply Voltage, ±V_S		±10	±35	±40	V
Current Quiescent -			50	60	mA
Both Amplifiers	Specified Temperature Range		60	70	mA

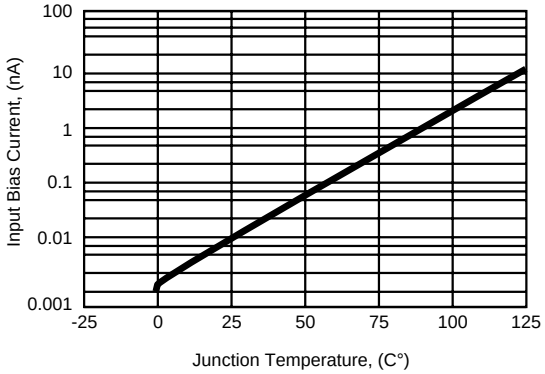
Thermal Resistance Maximum	Conditions	Standard TO-3	Copper Slug TO-3	Power DIP	Units
q_{JC} (Junction-to-Case)	Both Amplifiers(2), AC Output f > 60Hz	1.0	.8	.65	°C/W
	Both Amplifiers(2), DC Output	1.2	1.0	.80	°C/W
	One Amplifier, AC Output f > 60Hz	1.5	1.2	1.00	°C/W
	One Amplifier, DC Output	1.9	1.5	1.15	°C/W
q_{JA} (Junction-to-Ambient)	No Heat Sink	30	30	30	°C/W

NOTES: (1) Input bias and offset current approximately doubles for every 10°C increase in temperature.
(2) Assumes equal dissipation in both amplifiers.
* Guaranteed - not tested 100%.

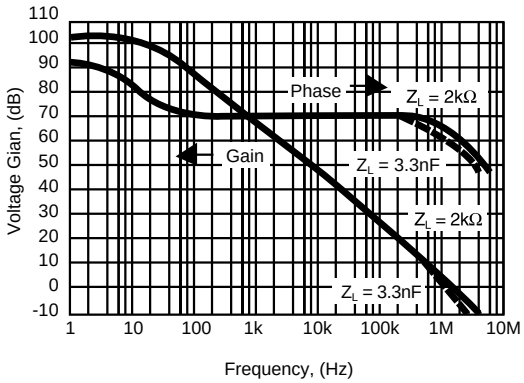
TYPICAL PERFORMANCE CURVES

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

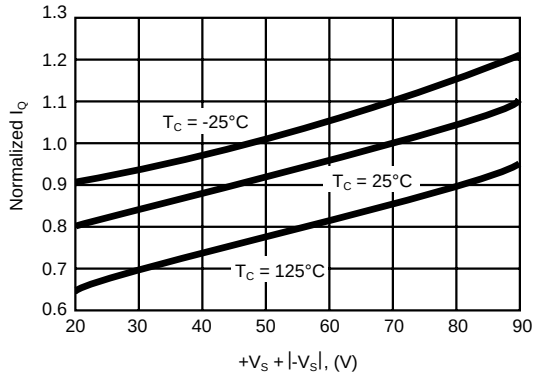
Input Bias Current VS Temperature



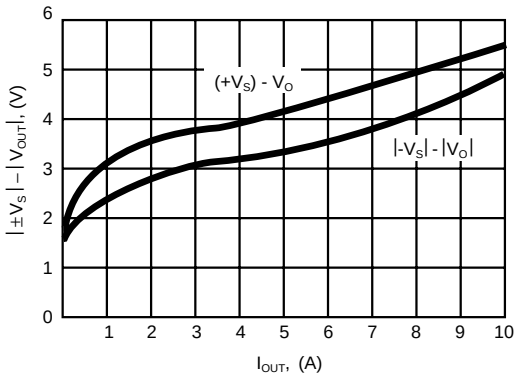
Open-Loop Gain and Phase VS Frequency



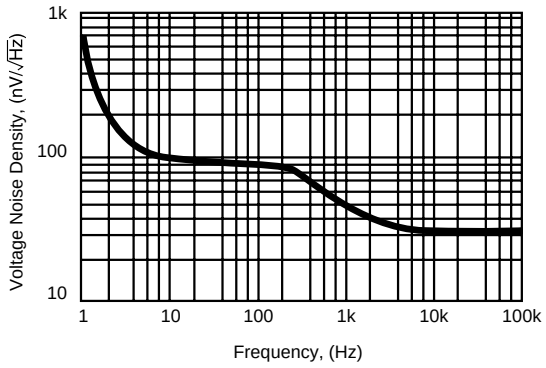
Normalized Quiescent Current VS Total Power Supply Voltage



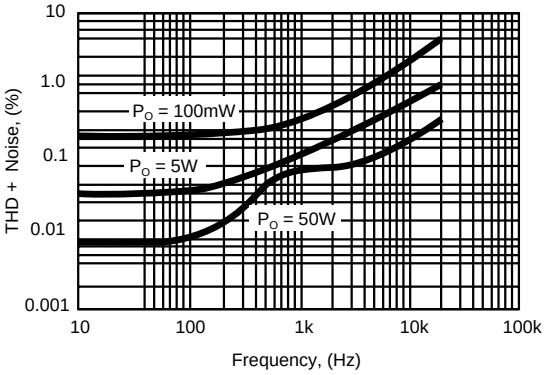
Output Voltage Swing VS Output Current



Voltage Noise Density VS Frequency



Total Harmonic Distortion VS Frequency



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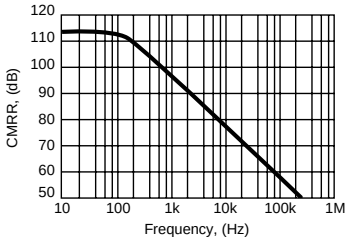
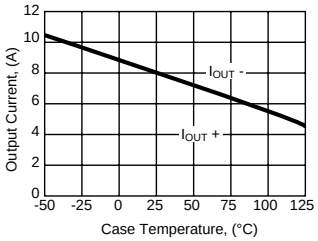
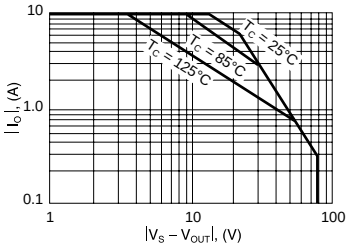
Typical Common-Mode Rejection VS Frequency (Case Dependent)



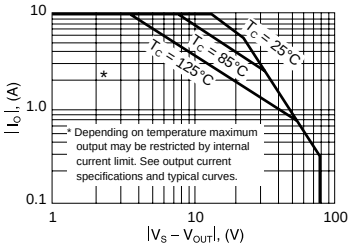
Typical Output Current VS Temperature (Case Dependent)



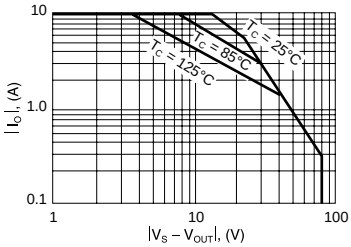
Copper Slug TO-3 Safe Operating Area OMA2541SKC



Standard TO-3 Safe Operating Area OMA2541SK

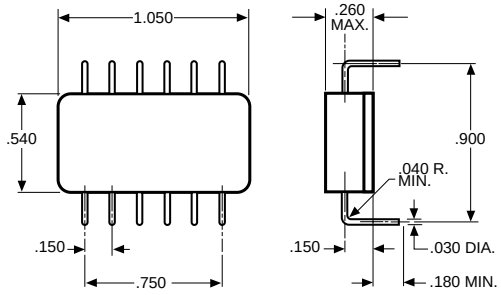


Power DIP Safe Operating Area OMA2541SD/SDZ

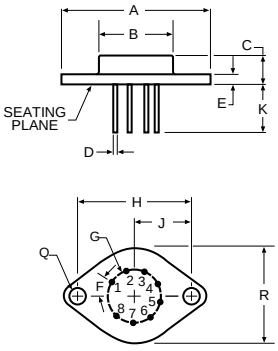


MECHANICAL OUTLINE

D-12



TO-3-8



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.

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