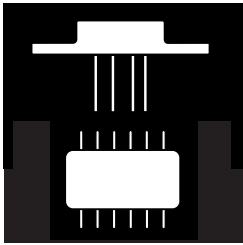


DUAL HIGH POWER OPERATIONAL AMPLIFIER



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 $\pm 40V$
- FET Input
- Dual Configuration
- Available Screened to MIL-STD-883

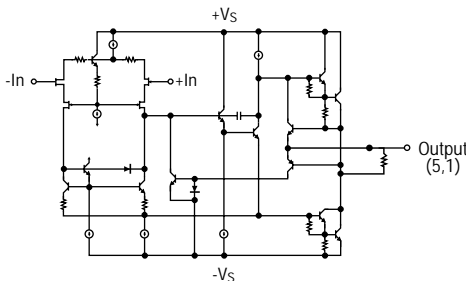
DESCRIPTION

The OMA2541 is a high performance dual power operational amplifier capable of operation from power supplies up to $\pm 40V$ 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.

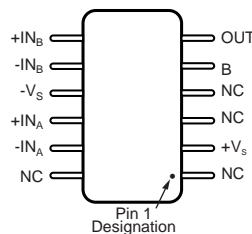
ABSOLUTE MAXIMUM RATINGS @ 25°C

Supply Voltage, $+V_S$ to $-V_S$	80V
Output Current, Continuous	5A
Power Dissipation, Internal	125W
Operating Temperature Range	$-55^\circ C$ to $125^\circ C$
Storage Temperature Range	$-55^\circ C$ to $150^\circ C$
Maximum Junction Temperature	$175^\circ C$
Lead Temperature (10 Sec. Soldering)	$300^\circ C$

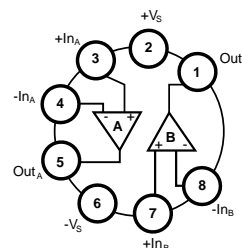
SCHEMATIC



PIN CONNECTION



TOP VIEW D-12



TOP VIEW TO-3

3.4

OMA2541SK OMA2541SKC OMA2541SD

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$; $V_s = \pm 34 V_{dc}$ unless otherwise noted.)

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Offset Voltage					
V_{os}			± 0.01	± 2	mV
vs Temperature	-25°C to $+125^\circ\text{C}$		± 15	± 30	$\mu\text{V}/^\circ\text{C}$
vs Temperature	-55°C to -25°C		± 20	± 40	$\mu\text{V}/^\circ\text{C}$
vs Supply Voltage	$V_s = \pm 10\text{V}$ to $\pm V_{max}$		± 2.5	± 10	$\mu\text{V}/\text{V}$
vs Power			± 20	± 60	$\mu\text{V}/\text{W}$
Input Bias Current			4	50	pA
I_b					
Input Offset Current			± 1	± 30	pA
I_{os}	Specified Temperature Range		± 5	± 20	nA
Input Characteristics					
Common-Mode Voltage Range	-55°C to $+85^\circ\text{C}$	$\pm(\text{CMV}_{GE} - 6)$	$\pm(\text{CMV}_{GE} - 3)$		V
	$+85^\circ\text{C}$ to $+125^\circ\text{C}$	$\pm(\text{CMV}_{GE} - 6.5)$	$\pm(\text{CMV}_{GE} - 3.2)$		V
Common-Mode Rejection	$V_{cm} = \pm(\text{CMV}_{GE} - 6\text{V})$		113		dB
	$V_{cm} = \pm 22\text{V}$	95			dB
Input Capacitance*			5		pF
Input Capacitance, DC*			1		T
Gain Characteristics					
Open Loop Gain at 10Hz	$R_L = 10\text{k}$	90	97		dB
Gain Bandwidth Product*			1.6		MHz
Output					
Voltage Swing	$I_o = 5\text{A}$, Continuous	$\pm(\text{OV}_{GE} - 5.5)$	$\pm(\text{OV}_{GE} - 4.5)$		V
	$I_o = 2\text{A}$	$\pm(\text{OV}_{GE} - 4.5)$	$\pm(\text{OV}_{GE} - 3.6)$		V
	$I_o = 0.5\text{A}$	$\pm(\text{OV}_{GE} - 4)$	$\pm(\text{OV}_{GE} - 3.2)$		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, $\pm V_s$		± 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
θ_{jc} (Junction-to-Case)	Both Amplifiers ⁽²⁾ , AC Output $f > 60\text{Hz}$	1.0	.8	.65	$^\circ\text{C}/\text{W}$
	Both Amplifiers ⁽²⁾ , DC Output	1.2	1.0	.80	$^\circ\text{C}/\text{W}$
	One Amplifier, AC Output $f > 60\text{Hz}$	1.5	1.2	1.00	$^\circ\text{C}/\text{W}$
	One Amplifier, DC Output	1.9	1.5	1.15	$^\circ\text{C}/\text{W}$
θ_{ja} (Junction-to-Ambient)	No Heat Sink	30	30	30	$^\circ\text{C}/\text{W}$

NOTES: (1) Input bias and offset current approximately doubles for every 10°C increase in temperature.

(2) Assumes equal dissipation in both amplifiers.

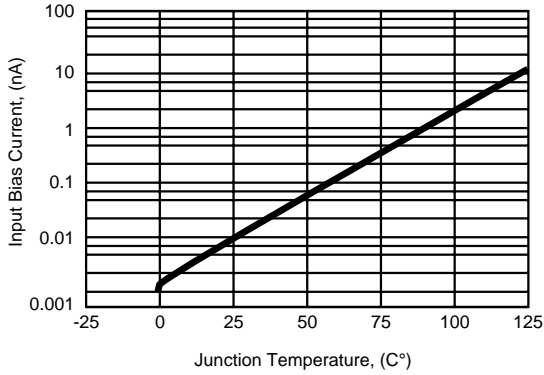
* Guaranteed - not tested 100%.

3.4

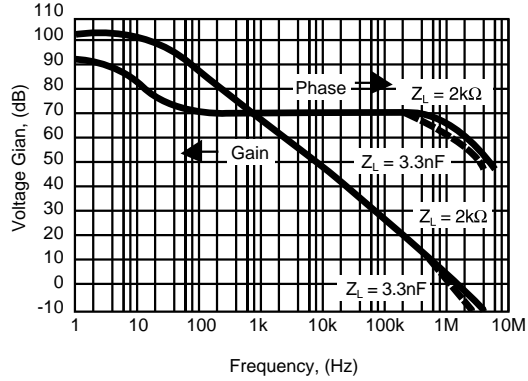
TYPICAL PERFORMANCE CURVES

$T_A = +25^\circ\text{C}$, $V_S = \pm V_{DC}$ unless otherwise noted

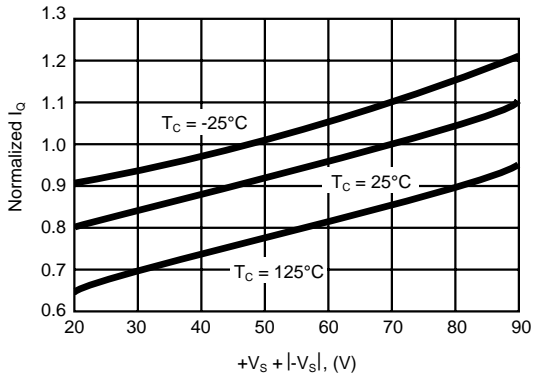
Input Bias Current VS Temperature



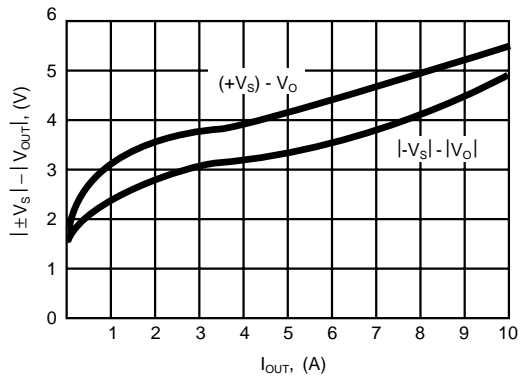
Open-Loop Gain and Phase VS Frequency



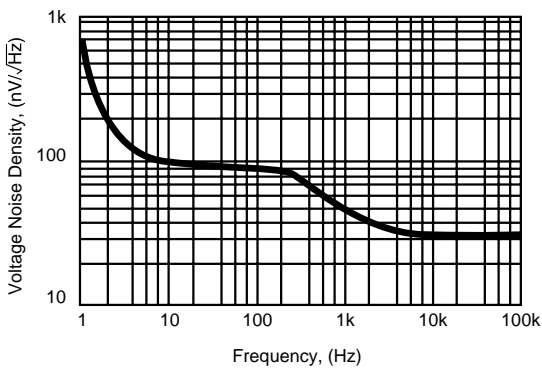
Normalized Quiescent Current VS Total Power Supply Voltage



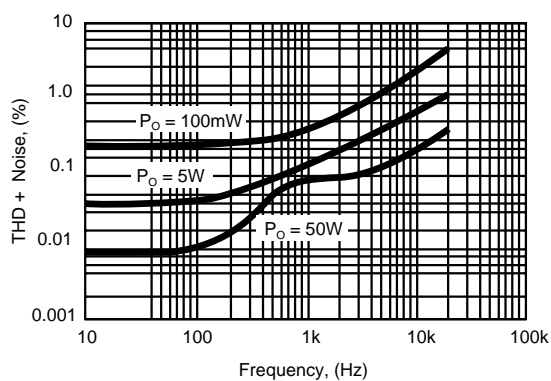
Output Voltage Swing VS Output Current



Voltage Noise Density VS Frequency



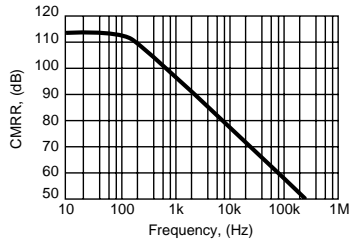
Total Harmonic Distortion VS Frequency



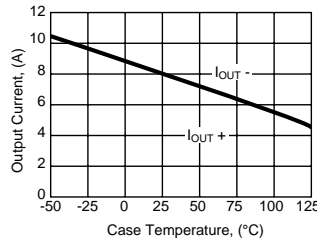
3.4

OMA2541SK OMA2541SKC OMA2541SD

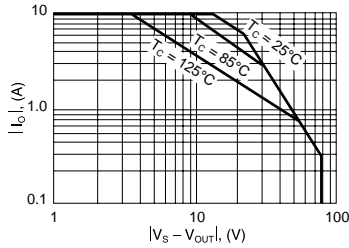
Typical Common-Mode Rejection VS Frequency (Case Dependent)



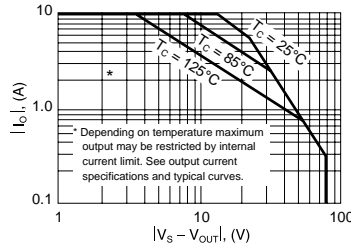
Typical Output Current VS Temperature (Case Dependent)



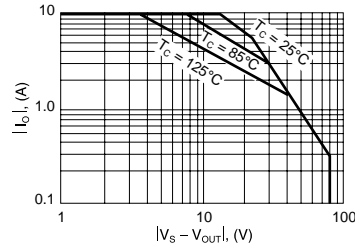
Copper Slug TO-3 Safe Operating Area OMA2541SKC



Standard TO-3 Safe Operating Area OMA2541SK

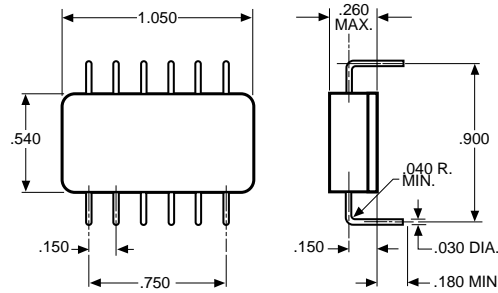


Power DIP Safe Operating Area OMA2541SD/SDZ

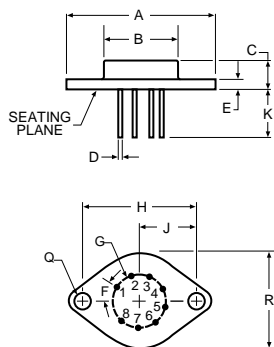


MECHANICAL OUTLINE

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.