

# Dual operational amplifier

$\mu$ A747C

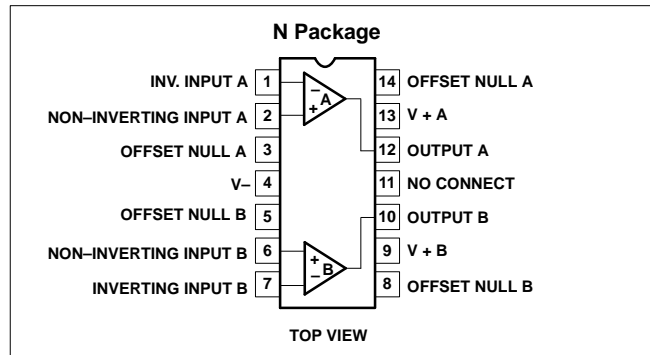
## DESCRIPTION

The 747 is a pair of high-performance monolithic operational amplifiers constructed on a single silicon chip. High common-mode voltage range and absence of "latch-up" make the 747 ideal for use as a voltage-follower. The high gain and wide range of operating voltage provides superior performance in integrator, summing amplifier, and general feedback applications. The 747 is short-circuit protected and requires no external components for frequency compensation. The internal 6dB/octave roll-off insures stability in closed-loop applications. For single amplifier performance, see  $\mu$ A741 data sheet.

## FEATURES

- No frequency compensation required
- Short-circuit protection
- Offset voltage null capability
- Large common-mode and differential voltage ranges
- Low power consumption
- No latch-up

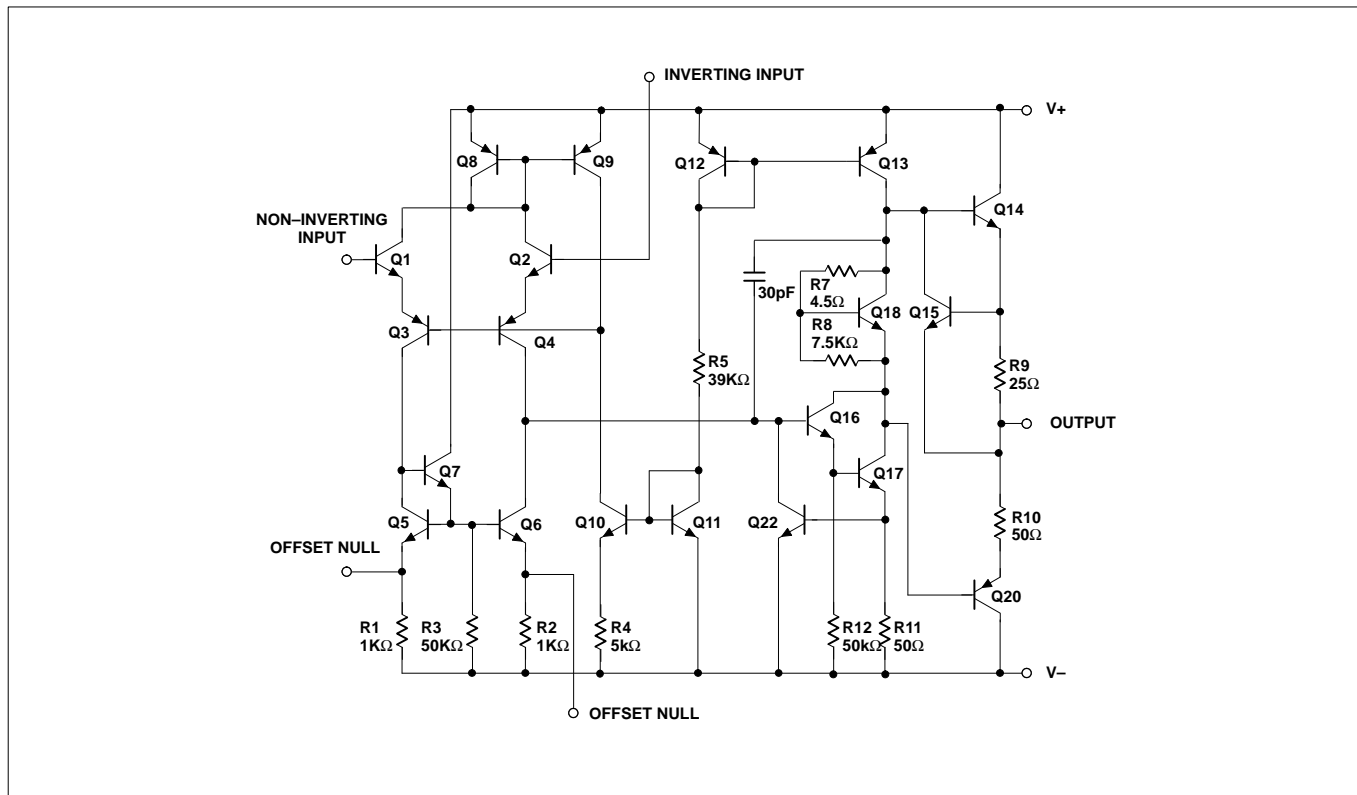
## PIN CONFIGURATION



## ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE	DWG #
14-Pin Plastic DIP	0°C to 70°C	$\mu$ A747CN	0405B

## EQUIVALENT SCHEMATIC



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## ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	RATING	UNIT
$V_S$	Supply voltage	$\pm 18$	V
$P_{D\text{ MAX}}$	Maximum power dissipation $T_A=25^\circ\text{C}$ (still air) <sup>1</sup>	1500	mW
$V_{IN}$	Differential input voltage	$\pm 30$	V
$V_{IN}$	Input voltage <sup>2</sup>	$\pm 15$	V
	Voltage between offset null and V-	$\pm 0.5$	V
$T_{STG}$	Storage temperature range	-65 to +150	$^\circ\text{C}$
$T_A$	Operating temperature range	0 to +70	$^\circ\text{C}$
$T_{SOLD}$	Lead temperature (soldering, 10sec)	300	$^\circ\text{C}$
$I_{SC}$	Output short-circuit duration	Indefinite	

## NOTES:

- Derate above  $25^\circ\text{C}$  at the following rates:  
N package at  $12\text{mW}/^\circ\text{C}$
- For supply voltages less than  $\pm 15\text{V}$ , the absolute maximum input voltage is equal to the supply voltage.

## DC ELECTRICAL CHARACTERISTICS

 $T_A=25^\circ\text{C}$ ,  $V_{CC} = \pm 15\text{V}$  unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	$\mu\text{A747C}$			UNIT
			Min	Typ	Max	
$V_{OS}$	Offset voltage	$R_S \leq 10\text{k}\Omega$		2.0	6.0	mV
		$R_S \leq 10\text{k}\Omega$ , over temp.		3.0	7.5	mV
$\Delta V_{OS}/\Delta T$				10		$\mu\text{V}/^\circ\text{C}$
$I_{OS}$	Offset current	Over temperature		20	200	nA
				7.0	300	nA
$\Delta I_{OS}/\Delta T$				200		$\text{pA}/^\circ\text{C}$
$I_{BIAS}$	Input current	Over temperature		80	500	nA
				30	800	nA
$\Delta I_B/\Delta T$				1		$\text{nA}/^\circ\text{C}$
$V_{OUT}$	Output voltage swing	$R_L \geq 2\text{k}\Omega$ , over temp.	$\pm 10$	$\pm 13$		V
		$R_L \geq 10\text{k}\Omega$ , over temp.	$\pm 12$	$\pm 14$		V
$I_{CC}$	Supply current each side	Over temperature		1.7	2.8	mA
					2.0	3.3
$P_d$	Power consumption	Over temperature		50	85	mW
					60	100
$C_{IN}$	Input capacitance			1.4		pF
	Offset voltage adjustment range			$\pm 15$		mV
$R_{OUT}$	Output resistance			75		$\Omega$
	Channel separation			120		dB
PSRR	Supply voltage rejection ratio	$R_S \leq 10\text{k}\Omega$ , over temp.		30	150	$\mu\text{V}/\text{V}$
$A_{VOL}$	Large-signal voltage gain (DC)	$R_L \geq 2\text{k}\Omega$ , $V_{OUT} = \pm 10\text{V}$	25,000			V/V
		Over temperature	15,000			V/V
CMRR	Common-mode rejection ratio	$R_S \leq 10\text{k}\Omega$ , $V_{CM} = \pm 12\text{V}$ Over temperature	70			dB

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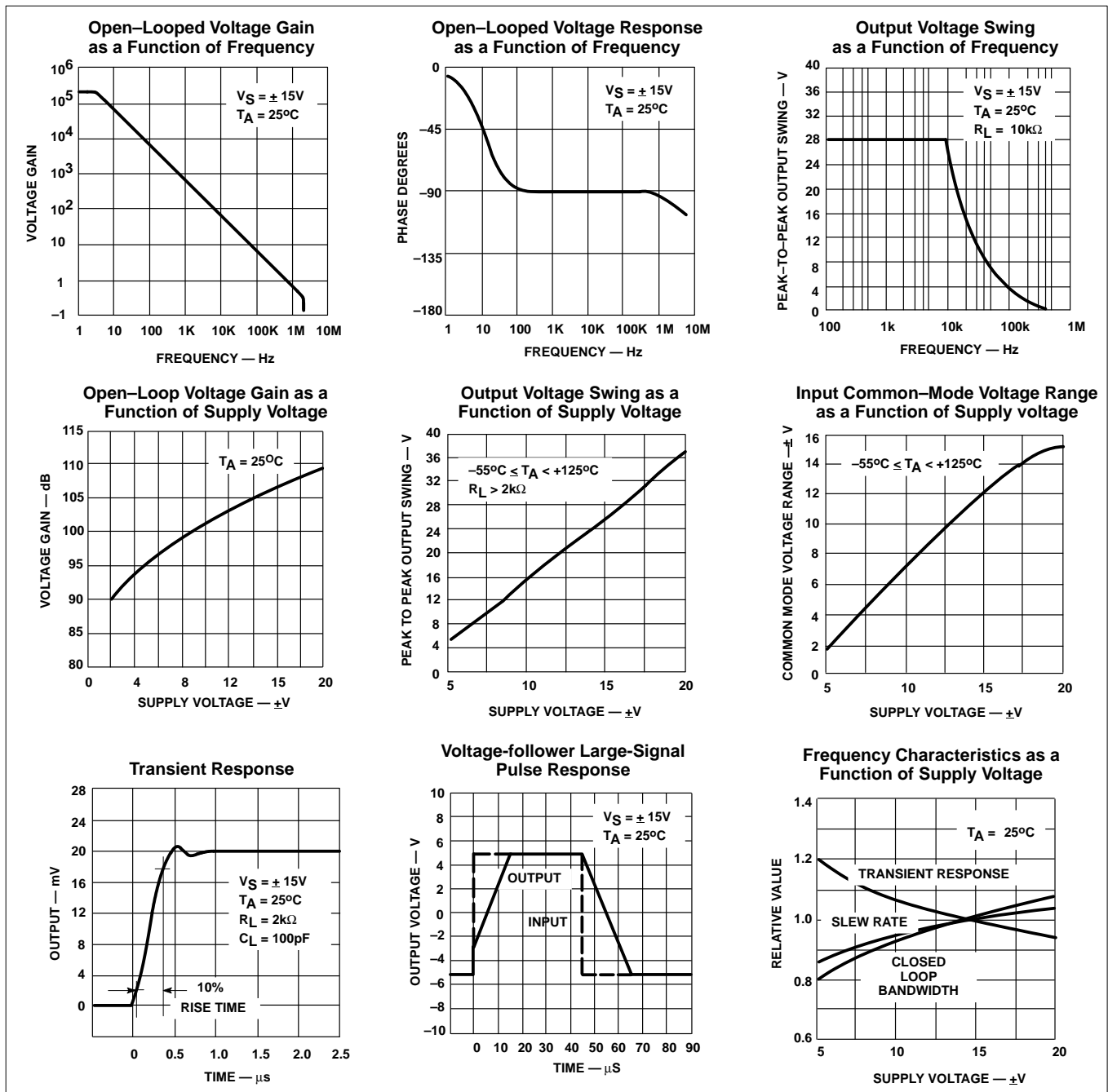
# μA747C

## AC ELECTRICAL CHARACTERISTICS

$T_A=25^\circ\text{C}$ ,  $V_S = \pm 15\text{V}$  unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	μA747C			UNIT
			Min	Typ	Max	
$t_r$	Transient response	$V_{IN}=20\text{mV}$ , $R_L=2\text{k}\Omega$ , $C_L<100\text{pF}$ Unity gain $C_L\leq 100\text{pF}$ Unity gain $C_L\leq 100\text{pF}$		0.3		$\mu\text{s}$
	Rise time			5.0		%
SR	Slew rate	$R_L>2\text{k}\Omega$		0.5		$\text{V}/\mu\text{s}$

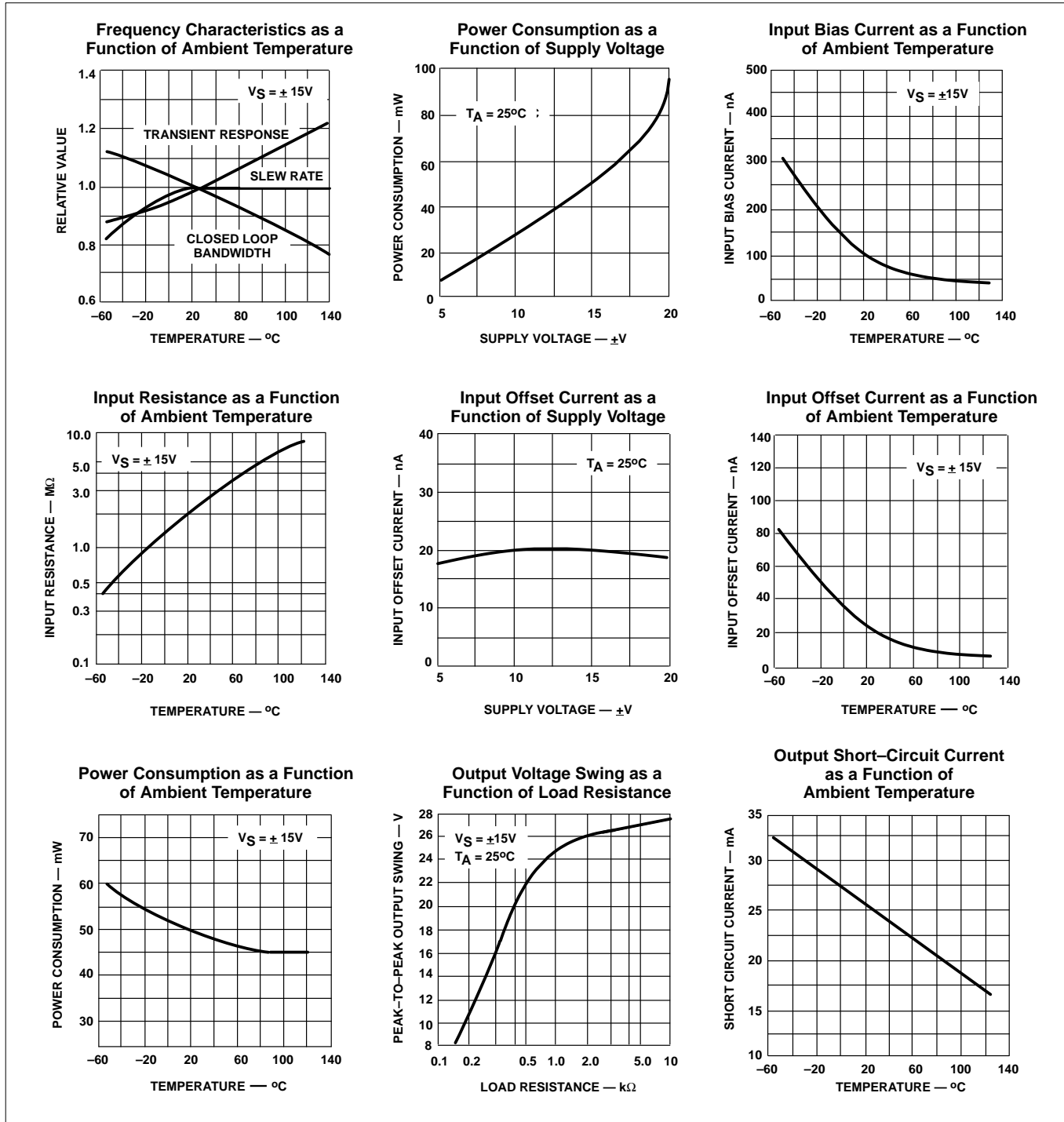
## TYPICAL PERFORMANCE CHARACTERISTICS



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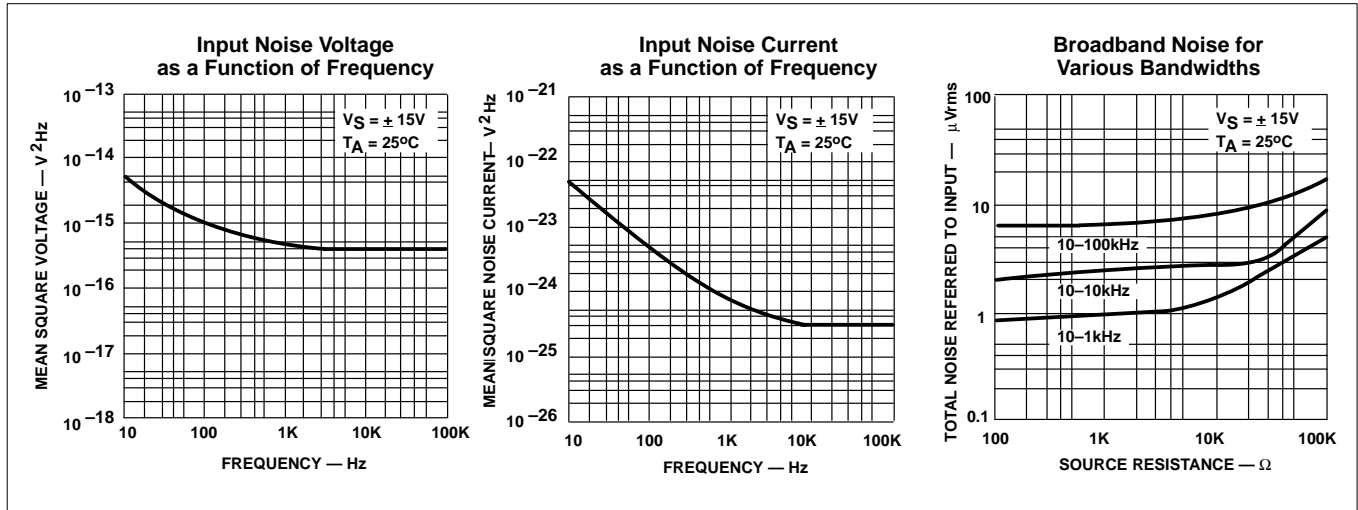
## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)



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## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)



## TEST CIRCUITS

