



TCA0372

LINEAR INTEGRATED CIRCUIT

1.0A OUTPUT CURRENT,
DUAL POWER, OPERATIONAL
AMPLIFIERS

■ DESCRIPTION

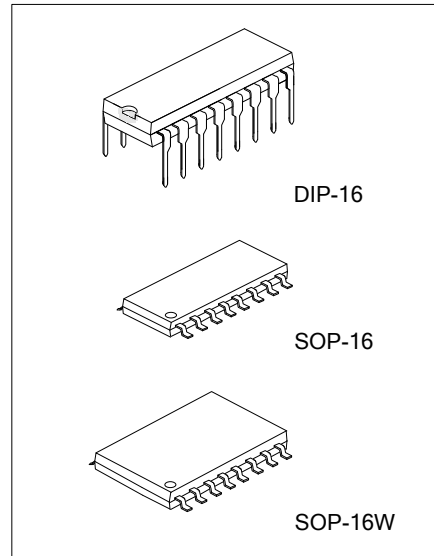
The UTC **TCA0372** is a monolithic circuit intended. It has the characteristics of no deadband crossover, large output current, excellent gain and phase margin. It is often used in power amplifier field and can provide better performance for driving coils.

■ FEATURES

- * Internal Thermal Shutdown
- * Output Current to 1.0A
- * Common Mode Input Includes Ground
- * Single or Split Supply Operation
- * Zero Deadband Crossover Distortion

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
TCA0372L-D16-T	TCA0372G-D16-T	DIP-16	Tube
TCA0372L-S16-R	TCA0372G-S16-R	SOP-16	Tape Reel
TCA0372L-S16W-R	TCA0372G-S16W-R	SOP-16W	Tape Reel

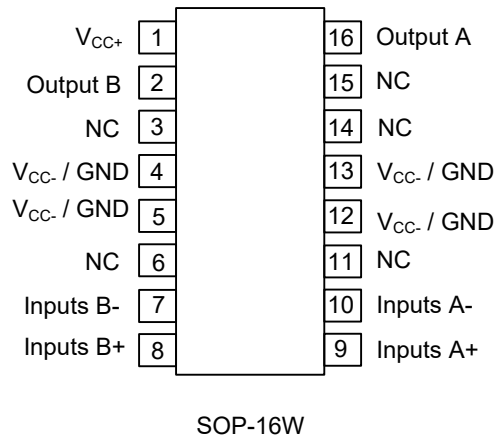
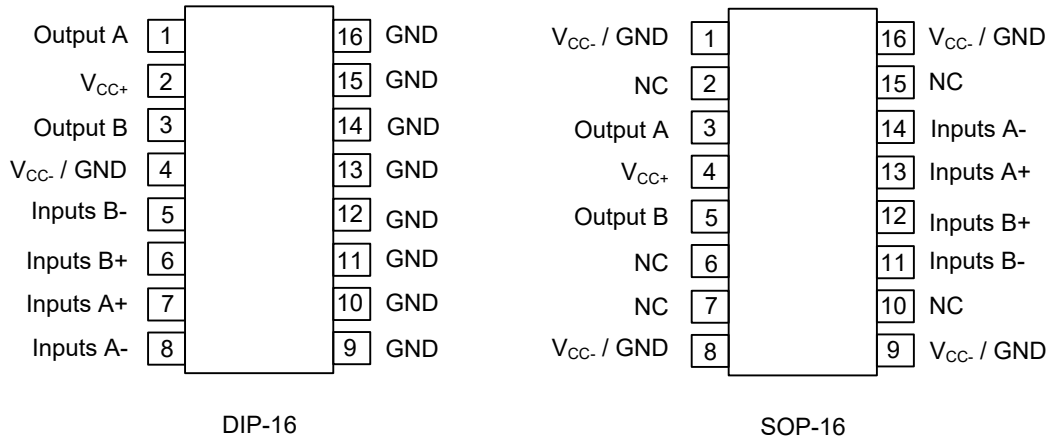


<p>TCA0372G-D16-T</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) D16: DIP-16, S16: SOP-16, S16W: SOP-16W (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

DIP-16	SOP-16 / SOP-16W

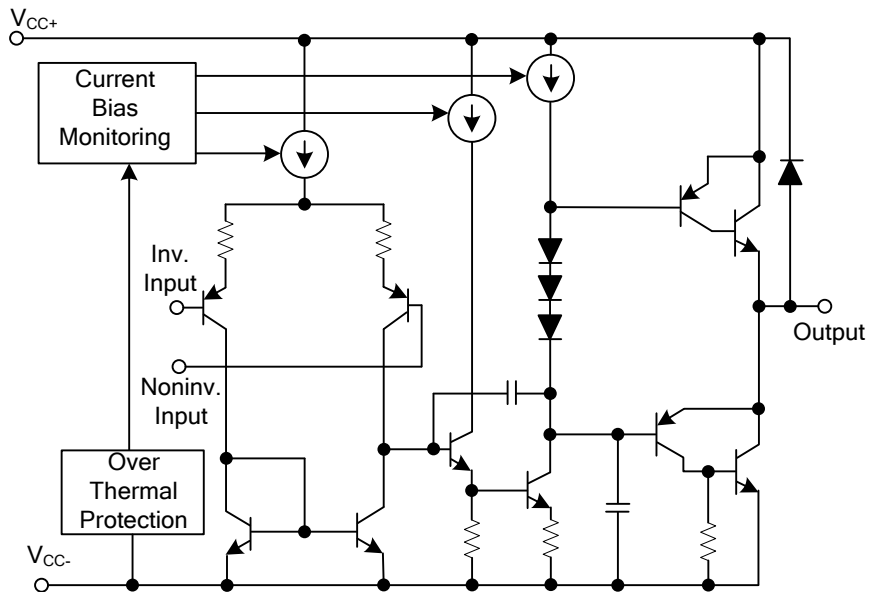
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.			PIN NAME	DESCRIPTION
DIP-16	SOP-16	SOP-16W		
2	4	1	V _{CC+}	Positive supply voltage
3	5	2	Output B	Output of channel B
-	2, 6, 7, 10, 15	3, 6, 11, 14, 15	NC	Not connected
4, 9 ~16	1, 8, 9, 16	4, 5, 12, 13	V _{CC-} / GND	Negative power supply / Ground
5	11	7	Inputs B-	Input of channel B-
6	12	8	Inputs B+	Input of channel B+
7	13	9	Inputs A+	Input of channel A+
8	14	10	Inputs A-	Input of channel A-
1	3	16	Output A	Output of channel A

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage (from V_{CC+} to V_{CC-})	V_S	40	V
Input Differential Voltage Range	V_{IDR}	(Note 2)	V
Input Voltage Range	V_{IR}	(Note 2)	V
DC Output Current	I_O	1.0	A
Peak Output Current (Nonrepetitive)	$I_{(max)}$	1.5	A
Junction Temperature (Note 3)	T_J	+150	°C
Operating Temperature Range	T_A	-40 ~ +125	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Either or both input voltages should not exceed the magnitude of V_{CC+} or V_{CC-} .

3. Power dissipation must be considered to ensure maximum junction temperature (T_J) is not exceeded.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	DIP16	θ_{JA}	72	°C/W
	SOP-16		90	°C/W
	SOP-16W		80	
Junction to Case	DIP16	θ_{JC}	10	°C/W
	SOP-16		20	°C/W
	SOP-16W		12	

■ DC ELECTRICAL CHARACTERISTICS

($V_{CC+} = +15V$, $V_{CC-} = -15V$, R_L connected to ground, $T_A = -40 \sim +125^\circ C$)

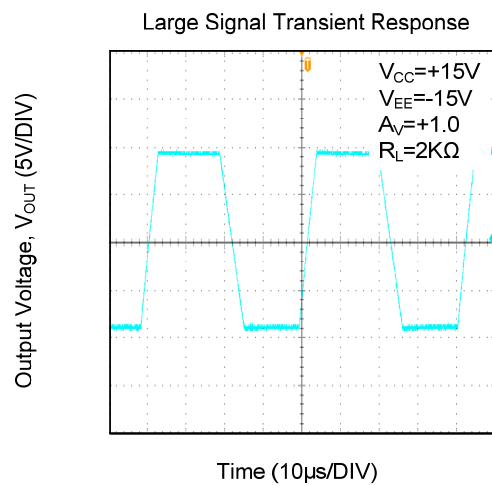
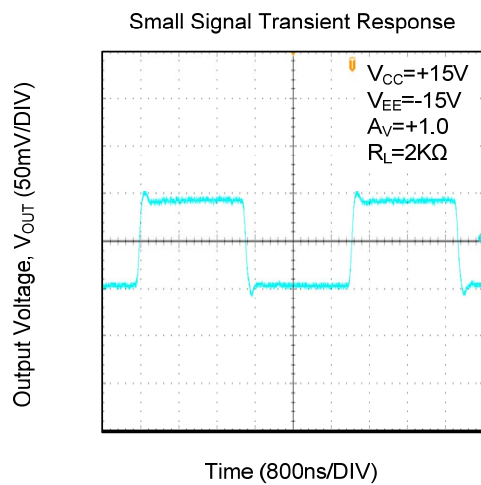
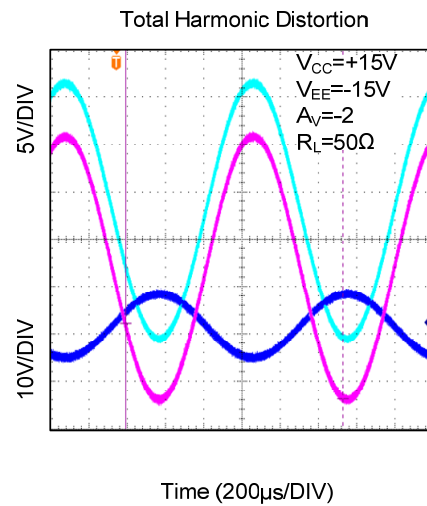
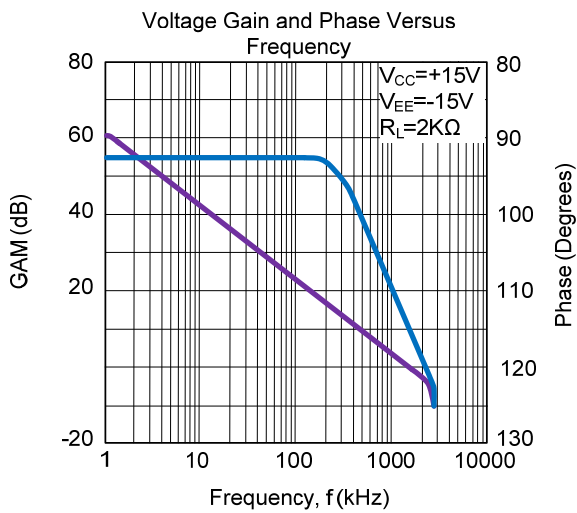
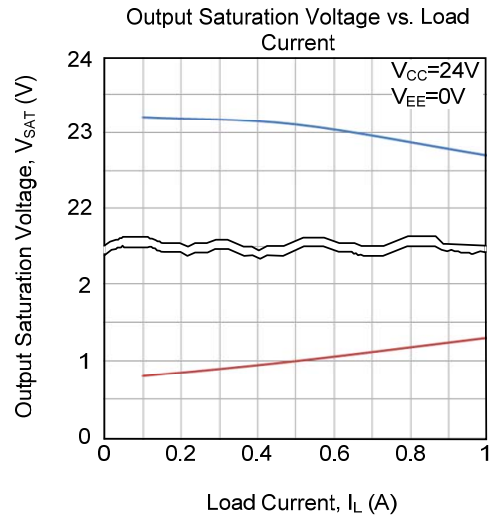
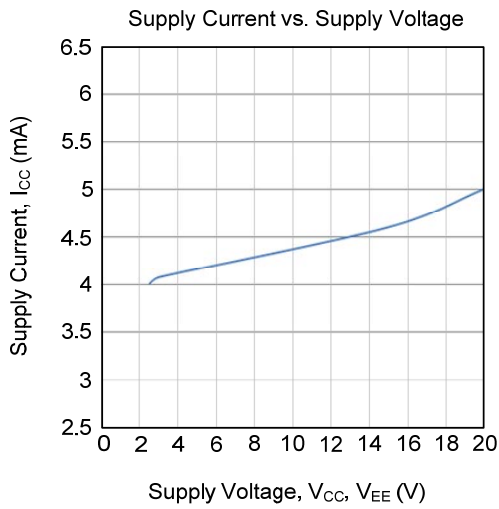
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Input Offset Voltage	V_{IO}	$V_{CM}=0$	$T_A=25^\circ C$	1.0	15	mV	
			T_A, T_{LOW} to T_{HIGH}		20	mV	
Average Temperature Coefficient of Offset Voltage	$\Delta V_{IO}/\Delta T$			20		$\mu V/^\circ C$	
Input Bias Current	I_{IB}	$V_{CM}=0$		100	750	nA	
Input Offset Current	I_{IO}	$V_{CM}=0$		10	50	nA	
Large Signal Voltage Gain	A_{VOL}	$V_O = \pm 10V$, $R_L = 2.0k$	30	100		V/mV	
Output Voltage Swing	V_{OH}	$I_L = 100mA$	$T_A=25^\circ C$	14.0	14.2	V	
			$T_A=T_{LOW}$ to T_{HIGH}	13.9		V	
	V_{OL}	$I_L = 100mA$	$T_A=25^\circ C$		-14.2	-14.0	V
			$T_A=T_{LOW}$ to T_{HIGH}			-13.9	V
Output Voltage Swing	V_{OH}	$I_L = 1.0A$	$V_{CC+} = +24V$, $V_{CC-} = 0V$, $T_A = +25^\circ C$	22.5	22.7	V	
			$V_{CC+} = +24V$, $V_{CC-} = 0V$, $T_A = T_{LOW}$ to T_{HIGH}	22.5		V	
	V_{OL}	$I_L = 1.0A$	$V_{CC+} = +24V$, $V_{CC-} = 0V$, $T_A = 25^\circ C$		1.3	1.5	V
			$V_{CC+} = +24V$, $V_{CC-} = 0V$, $T_A = T_{LOW}$ to T_{HIGH}			1.6	V
Input Common Mode Voltage Range	V_{ICR}	$T_A=25^\circ C$	$V_{CC-} \sim (V_{CC+} - 1.0)$			V	
		$T_A=T_{LOW}$ to T_{HIGH}	$V_{CC-} \sim (V_{CC+} - 1.3)$			V	
Common Mode Rejection Ratio	CMRR	$R_S = 10k$	70	90		dB	
Power Supply Rejection Ratio	PSRR	$R_S = 100\Omega$	70	90		dB	
Power Supply Current	I_D	$T_A=25^\circ C$		5.0	10	mA	
		$T_A=T_{LOW}$ to T_{HIGH}			14	mA	

■ AC ELECTRICAL CHARACTERISTICS

($V_{CC+} = +15V$, $V_{CC-} = -15V$, R_L connected to ground, $T_A=25^\circ C$, unless otherwise noted.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Slew Rate	SR	$V_{in} = -10V \sim +10V$, $R_L = 2.0k$, $C_L = 100pF$, $A_V = -1.0$, $T_A = T_{LOW}$ to T_{HIGH}	1.0	3.2		V/ μs
Gain Bandwidth Product	GBW	$f = 100kHz$, $C_L = 100pF$, $R_L = 2.0k$	$T_A = 25^\circ C$	0.9	2.8	MHz
			$T_A = T_{LOW}$ to T_{HIGH}	0.7		MHz
Phase Margin	ϕ_m	$T_J = T_{LOW}$ to T_{HIGH} , $R_L = 2.0k$, $C_L = 100pF$		65		Degrees
Gain Margin	A_m	$R_L = 2.0k$, $C_L = 100pF$		15		dB
Equivalent Input Noise Voltage	e_n	$R_S = 100\Omega$, $f = 1.0 \sim 100kHz$		22		nV/\sqrt{Hz}
Total Harmonic Distortion	THD	$A_V = -1.0$, $R_L = 50\Omega$, $V_O = 0.5V_{RMS}$, $f = 1.0kHz$		0.02		%

■ TYPICAL CHARACTERISTICS



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