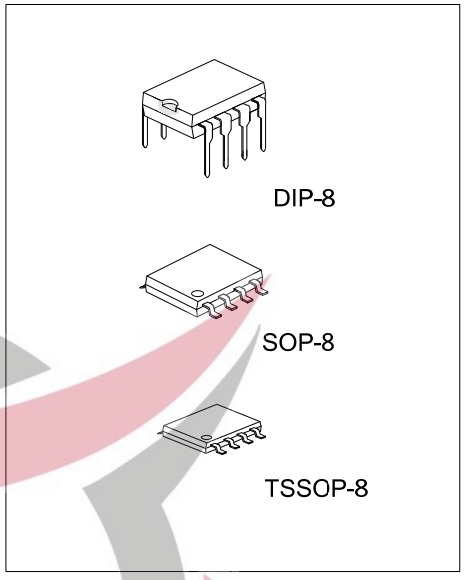
DUAL OPERATIONAL AMPLIFIER



■ DESCRIPTION

The UTC **3404** is high performance single supply dual operational amplifier.

The UTC **3404** is improved version of the UTC M2904 on slew rate & cross-over distortion.

■ FEATURES

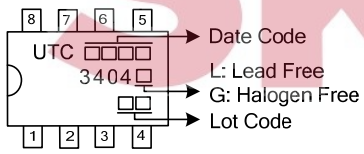
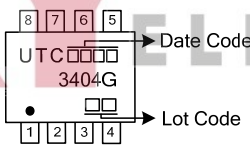
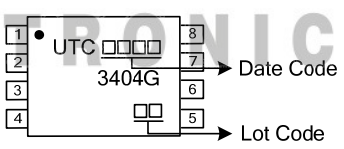
*Single Supply
*Operating Voltage: +4v~+36v
*Low Operating Current: 2.0mA (Typ.)
*Slew Rate: 1.2v/μs (typ.)

■ ORDERING INFORMATION

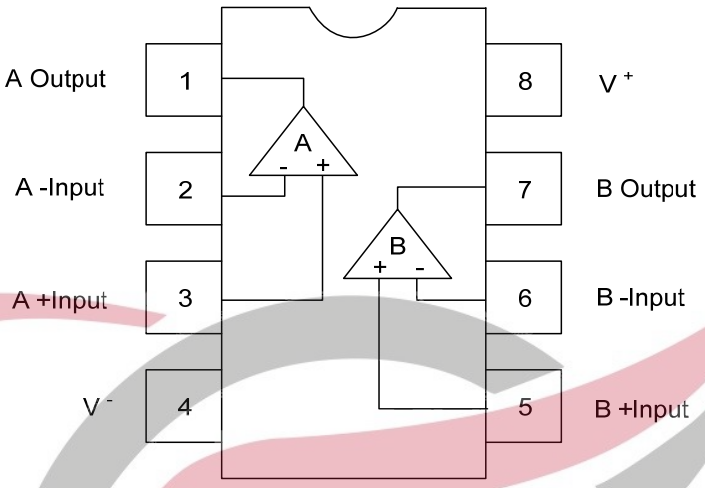
Ordering Number		Package	Packing
Lead Free	Halogen Free		
3404L-D08-T	3404G-D08-T	DIP-8	Tube
-	3404G-S08-R	SOP-8	Tape Reel
-	3404G-P08-R	TSSOP-8	Tape Reel

3404L-D08-T (1)Packing Type (2)Package Type (3)Green Package	(1) T: Tube, R: Tape Reel (2) D08: DIP-8, S08: SOP-8, P08: TSSOP-8 (3) L: Lead Free, G: Halogen Free and Lead Free

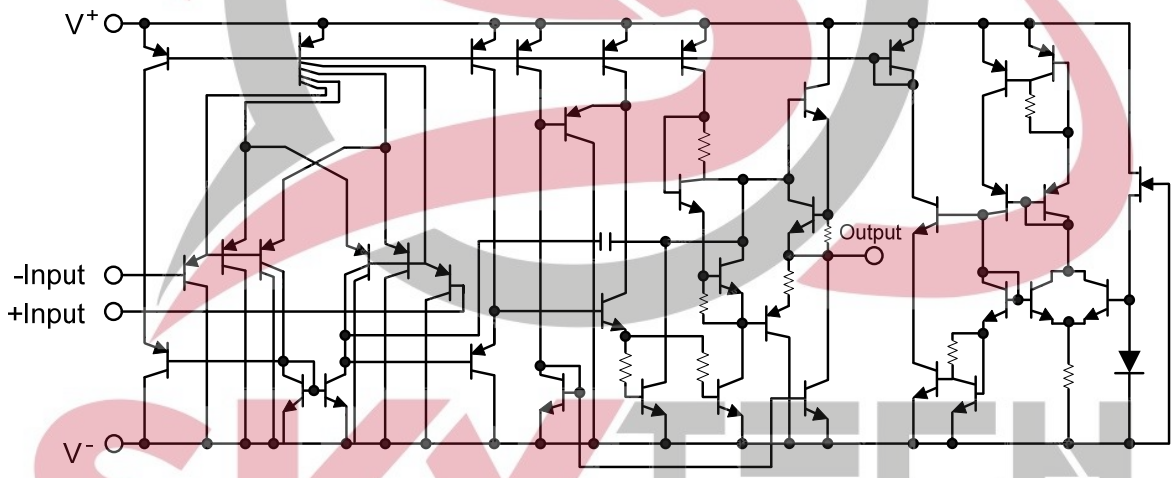
■ MARKING

DIP-8	SOP-8	TSSOP-8
		

■ PIN CONFIGURATION



■ EQUIVALENT CIRCUIT (1/2 SHOWN)



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C)

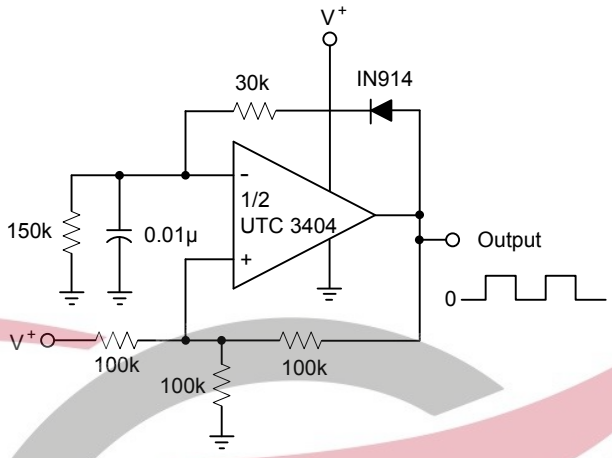
PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		$V^+(V^+/V^-)$	36V (or±18)	V
Differential Input Voltage		$V_{I(DIFF)}$	±36	V
Input Voltage		V_{IN}	-0.3 ~ 36	V
Power Dissipation	DIP-8	P_D	500	mW
	SOP-8		300	
	TSSOP8		250	
Ambient Operating Temperature		T_{OPR}	-40 ~+85	°C
Storage Temperature		T_{STG}	-40 ~+125	°C

Note: 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.

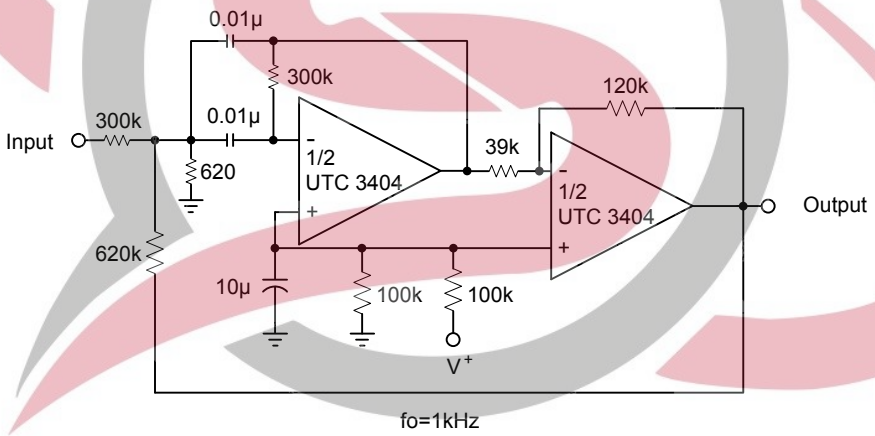
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, V^+/V^- =±15V)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Offset Voltage	$V_{I(OFF)}$	Rs=0Ω		2	5	mV
Input Offset Current	$I_{I(OFF)}$			5	50	nA
Input Bias Current	$I_{I(BIAS)}$			70	200	nA
Large Signal Voltage Gain	G_V	R_L>2KΩ	88	100		dB
Maximum Output Voltage Swing	V_{OM}	R_L=2KΩ	±13	±14		V
Input Common Mode Voltage Range	$V_{I(CM)}$		-15 ~+13			V
Common Mode Rejection Ratio	CMR	DC	70	90		dB
Supply Voltage Rejection Ratio	SVR		80	94		dB
Operating Current	I_{CC}	R_L=∞		2.0	3.5	mA
Output Source Current	I_{SOURCE}	V_{IN}+=1V,V_{IN}⁻=0V	20	30		mA
Output Sink Current	$I_{O(SINK)}$	V_{IN}+=0V,V_{IN}⁻=1V	10	20		mA
Slew Rate	SR			1.2		V/μs
Unity Gain Bandwidth	f_T			1.2		MHz

■ TYPICAL APPLICATIONS



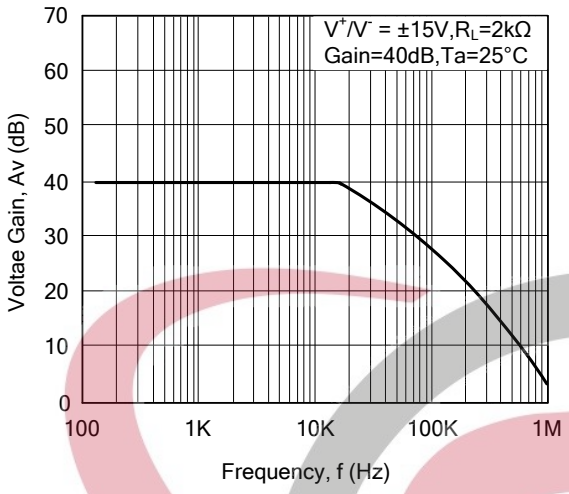
Square Wave Oscillator



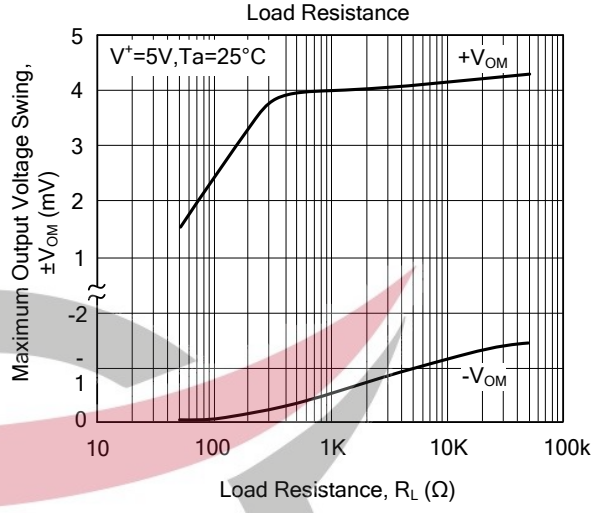
Bandpass Filter

■ TYPICAL CHARACTERISTICS

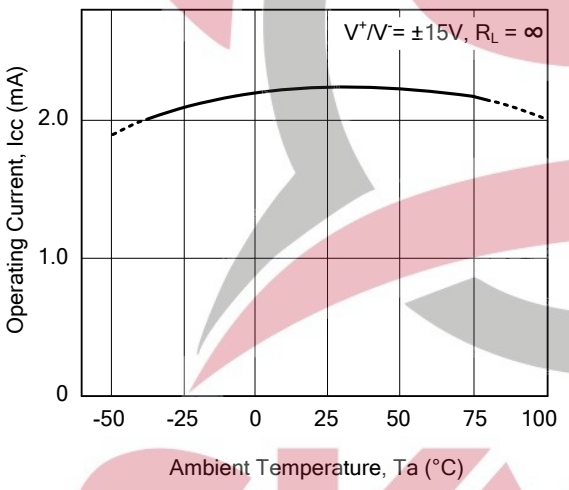
Voltage Gain vs. Frequency



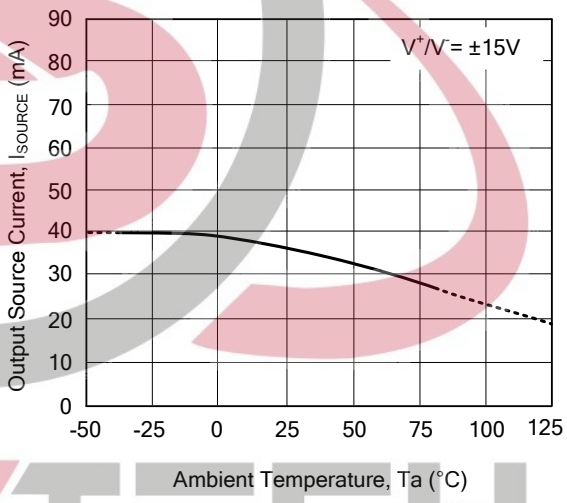
Maximum Output Voltage Swing vs. Load Resistance



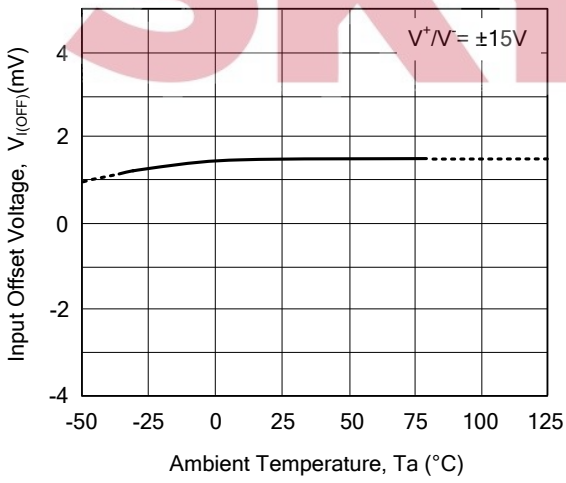
Operating Current vs. Temperature



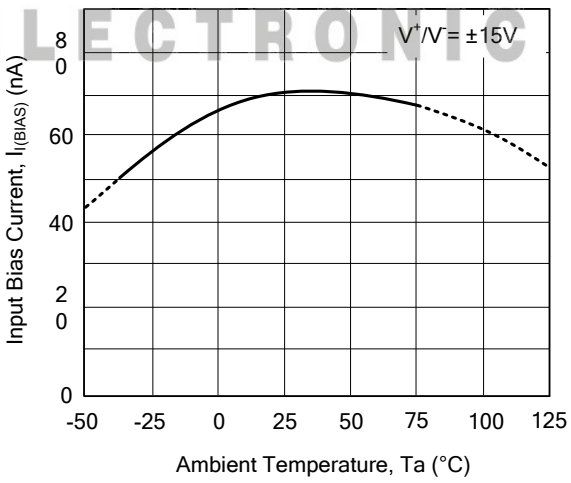
Output Source Current vs. Temperature



Input Offset Voltage vs. Temperature

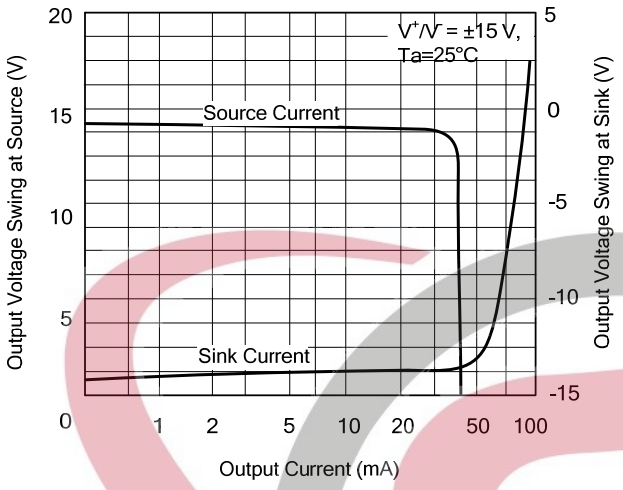


Input Bias Current vs. Temperature

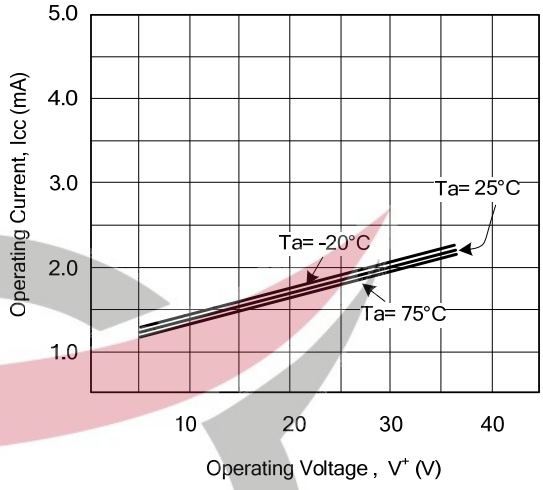


■ TYPICAL CHARACTERISTICS(Cont.)

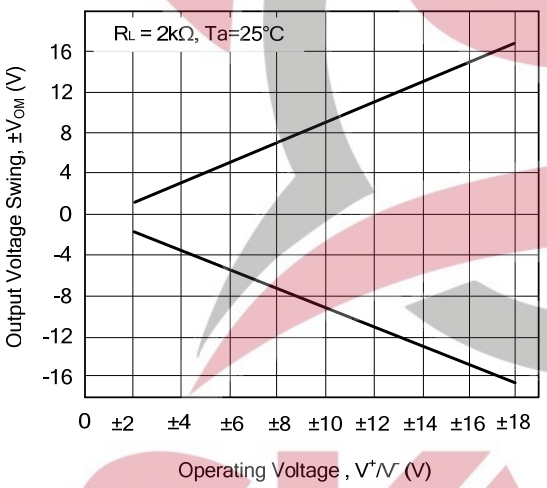
Output Source Current Output Sink Current vs. Output Voltage Swing



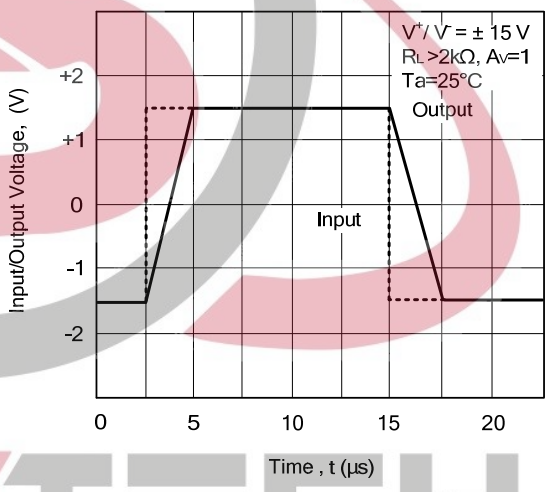
Operating Current vs.Operating Voltage



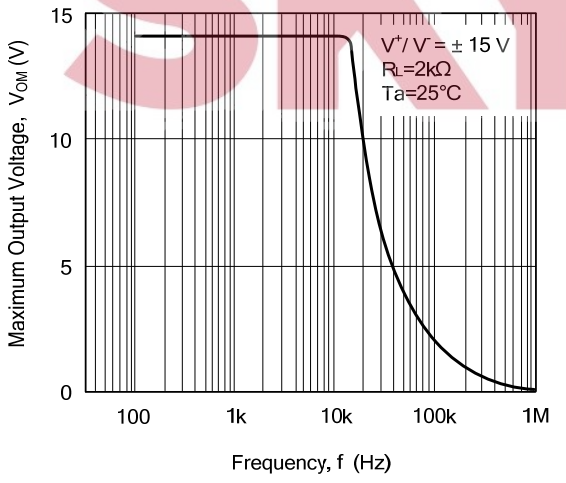
Output Voltage Swing vs. Operating Voltage



Pulse Response



Maximum Output Voltage vs. Frequency



Maximum Output Voltage vs. Temperature