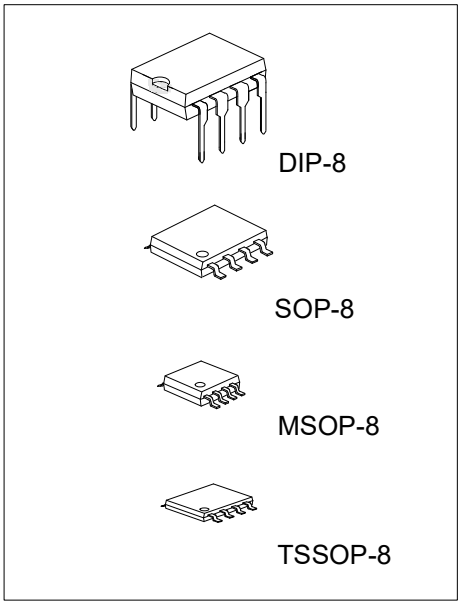
MC34072B

LINEAR INTEGRATED CIRCUIT

HIGH SLEW RATE, WIDE BANDWIDTH , SINGLE SUPPLY OPERATIONAL AMPLIFIER



■ DESCRIPTION

The UTC **MC34072B** offer 4.5MHz of gain bandwidth product, 13V/μs slew rate and fast setting time without the use of JFET device technology. Although it can be operated from split supplies, it is particularly suited for single supply operation, since the common mode input voltage range includes ground potential (V_{EE}). With a Darlington input stage, it exhibits high input resistance, low input offset voltage and high gain. The all NPN output stage, characterized by no deadband crossover distortion and large output voltage swing, provides high capacitance drive capability, excellent phase and gain margins, low open loop high frequency output impedance and symmetrical source/sink AC frequency response.

■ FEATURES

* Wide bandwidth: 4.5 MHz
* High slew rate: 13V/μs
* Wide single supply operation: 3.0V to 44V
* Wide input common mode voltage range
  Includes ground (V_{EE})
* Low input offset voltage: 3.0mV maximum
* Large output voltage swing: -14.5V to +14V
  (with +-15V supplies)
* Output short circuit protection
* Green Product

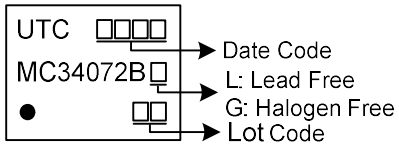
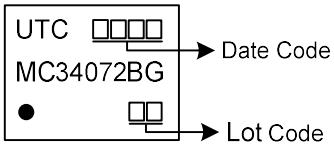
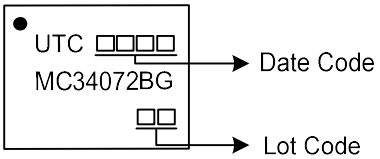
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
MC34072BL-D08-T	MC34072BG-D08-T	DIP-8	Tube
-	MC34072BG-S08-R	SOP-8	Tape Reel
-	MC34072BG-SM1-R	MSOP-8	Tape Reel
-	MC34072BG-P08-R	TSSOP-8	Tape Reel

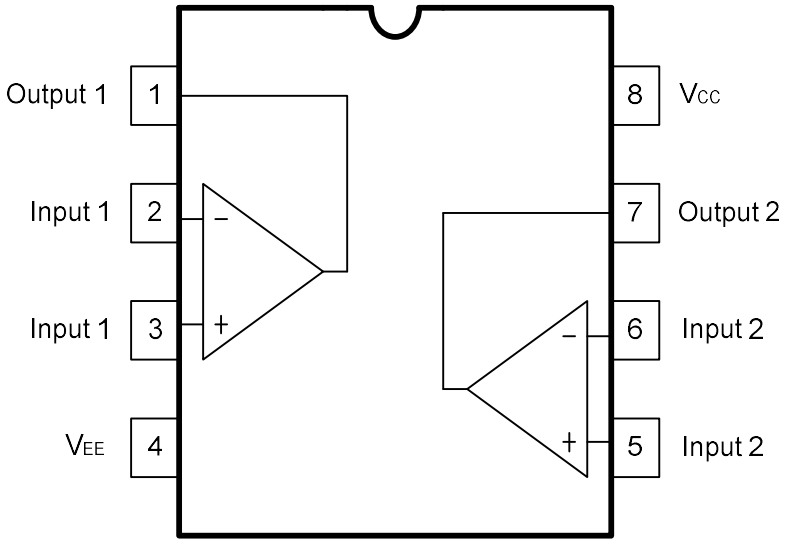
MC34072BG-D08-T
(1)Packing Type
(2)Package Type
(3)Green Package

(1) T: Tube, R: Tape Reel
(2) D08: DIP-8, S08: SOP-8, SM1: MSOP-8
P08: TSSOP-8
(3) G: Halogen Free and Lead Free, L: Lead Free

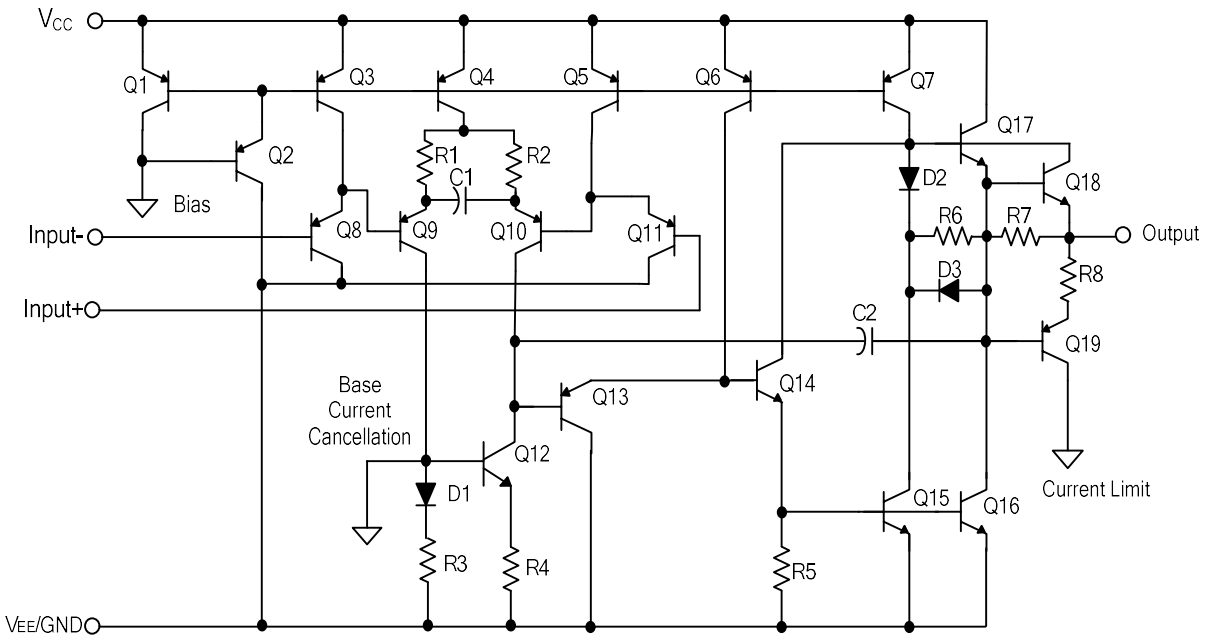
■ MARKING

DIP-8	SOP-8 / MSOP-8
	
TSSOP-8	-
	-

■ PIN DESCRIPTION



■ REPRESENTATIVE SCHEMATIC DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified) (Note1, 4)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage (from V_{EE} to V_{CC})	V_S	+44 or ±22	V
Differential Input Voltage	$V_{I(DIFF)}$	(Note 3)	V
Input Voltage	V_{IN}	(Note 3)	V
Output Short Circuit Duration (Note 2)	t_{SC}	Indefinite	sec
Junction Temperature	T_J	+150	°C
Operating Temperature	T_{OPR}	-40 ~ +125	°C
Storage Temperature Range	T_{STG}	-40~ +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. Power dissipation must be considered to ensure maximum junction temperature (T_J) is not exceeded.
3. Either or both input voltages should not exceed the magnitude of V_{CC} or V_{EE}.
4. It's guarantee by design, this parameter is not production tested.

■ ELECTRICAL CHARACTERISTICS

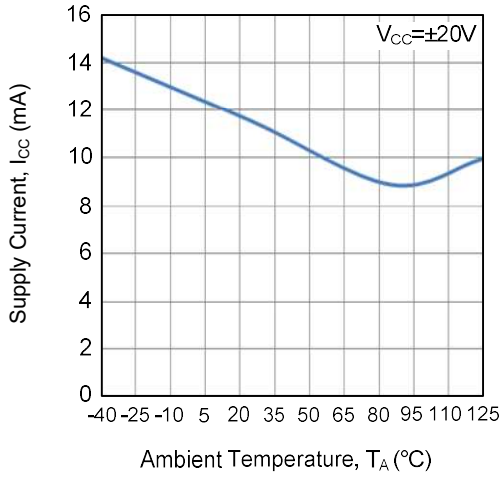
(V_{CC}= +15V, V_{EE}= -15V, T_A=25°C, R_L=connected to ground, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Input Offset Voltage	$V_{I(OFF)}$	R_S=100Ω, V_{CM}=0V, V_{OUT}=0V	V_{CC}=+15V,V_{EE}=-15V		0.5	3.0	mV
			V_{CC}=+5V,V_{EE}=0V		0.5	3.0	mV
Input Bias Current	$I_{I(BIAS)}$	V_{CM}=0V, V_{OUT} =0V			100	500	nA
Input Offset Current	$I_{I(OFF)}$	V_{CM}=0V, V_{OUT} =0V			6.0	50	nA
Input Common Mode Voltage	V_{ICR}			V_{EE} to (V_{CC} –1.8)			V
Large Signal Voltage Gain	G_V	V_{OUT} =±10V, R_L=2.0kΩ		50	100		V/mV
Output Voltage Swing (V_{ID}=±1.0V)	V_{OH}	V_{CC}=+5.0V,V_{EE}=0V,R_L=2.0kΩ		3.7	4.0		V
		V_{CC}=+15V, V_{EE}=-15V, R_L=10kΩ		13.6	14		V
Output Voltage Swing (V_{ID}=±1.0V)	V_{OL}	V_{CC}=+5.0V,V_{EE}=0V,R_L=2.0kΩ			0.15	0.3	V
		V_{CC}=+15V, V_{EE}=-15V, R_L=10kΩ			-14.5	-14.3	V
Output Short Circuit current	I_{SC}	$V_{I(DIFF)}$=1.0V, V_{OUT}=0V	Source	10	55		mA
			Sink	20	75		mA
Common Mode Rejection	CMR	R_S<=10kΩ,V_{CM}=V_{ICR}		80	97		dB
Power Supply Rejection (R_S=100Ω)	SVR	V_{CC}/V_{EE}=+16.5V/-16.5V to +13.5V/-13.5V		80	97		dB
Power Supply Current (Per Amplifier, No Load)	I_D	V_{CC}=+5.0V,V_{EE}=0V, V_{OUT} =+2.5V				5	mA
		V_{CC}=+15V,V_{EE}=-15V, V_{OUT} =0V			10	15	mA
Slew Rate	SR	V_{IN}=-10V to +10V, R_L=2.0kΩ, C_L=500pF	Av=+1.0	8.0	10		V/μs
			Av=-1.0		13		V/μs
Setting Time	ts	10V Step, Av=-1.0 to 0.1% (+1/2 LSB of 9-Bits) to 0.01% (+1/2 LSB of 12-Bits)			1.1 2.2		μs
Gain Bandwidth Product	GB_W	f=100kHz		3.5	4.5		MHz
Power Bandwidth	B_W	Av=+1.0, R_L=2kΩ, V_{OUT}=20V_{pp}, THD=5.0%			160		kHz
Phase Margin	fm	R_L=2kΩ			60		Deg
		R_L=2kΩ, C_L=300pF			40		Deg
Gain Margin	Am	R_L=2kΩ			12		dB
		R_L=2kΩ, C_L=300pF			4		dB
Total Harmonic distortion	THD	Av=+10,R_L=2.0kΩ, 2.0V_{pp}≤V_{OUT}≤20V_{pp}, f=10kHz			0.02		%
Channel Separation		f=10kHz			120		dB

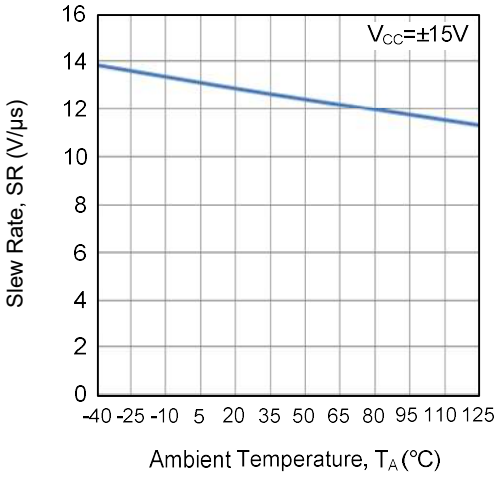
Note: It's guarantee by design, this parameter is not production tested.

■ TYPICAL CHARACTERISTICS

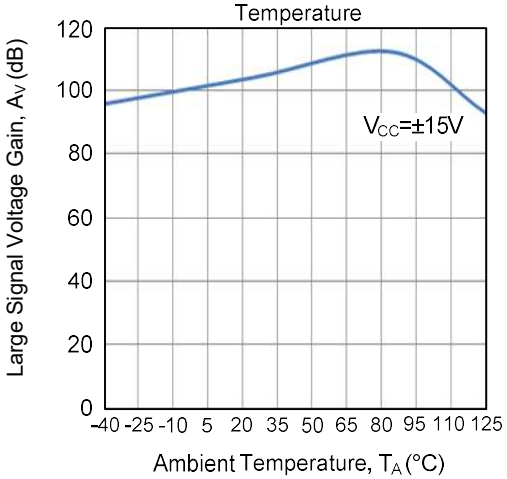
Supply Current vs. Temperature



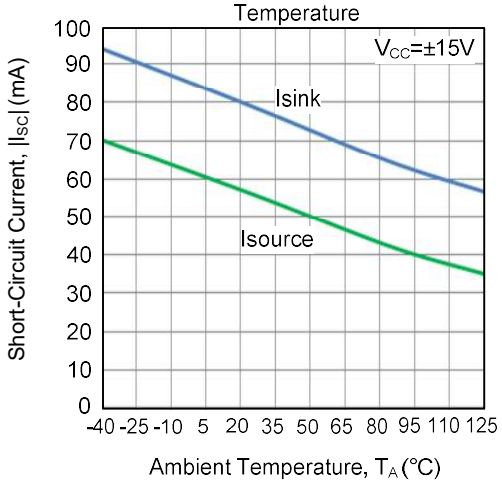
Slew Rate vs. Temperature



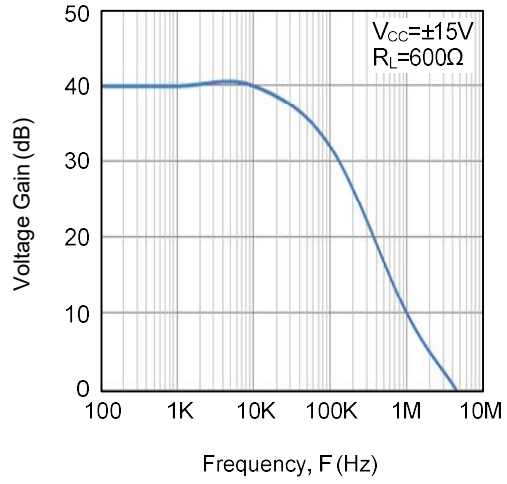
Large Signal Voltage Gain vs. Temperature



Output Short Circuit Current vs. Temperature



Voltage Gain vs. Frequency



Phase Shift vs. Frequency