



## M2073

## LINEAR INTEGRATED CIRCUIT

### DUAL LOW VOLTAGE POWER AMPLIFIER

#### DESCRIPTION

As a dual low voltage power amplifier, the UTC **M2073** has the internal circuits, such as parasitic oscillation preventing circuit and muting circuit.

Considering the fixed gain of UTC **M2073**, there's an additional voltage reducing application for the UTC **M2073**.

The normal application of **M2073** is being used as a dual audio power amplifier in lots of portable equipments.

#### FEATURES

- \* Operating Voltage (  $V_{CC}=1.8V\sim 15V$  )
- \* Low Crossover Distortion
- \* Low Operating Current
- \* Bridge or Stereo Configuration
- \* No Turn-on Noise
- \* Bipolar Technology

#### ORDERING INFORMATION

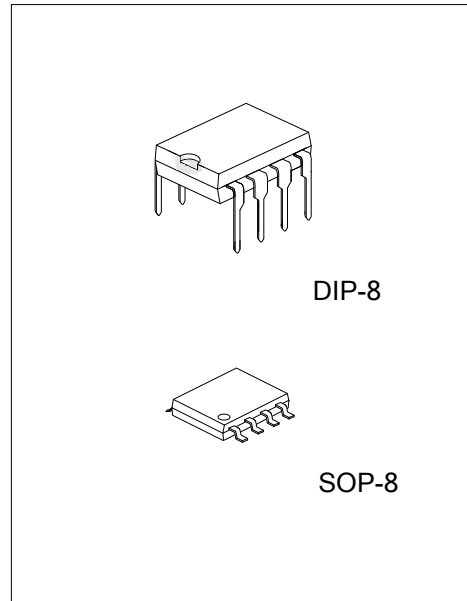
Ordering Number		Package	Packing
Lead Free	Halogen Free		
M2073L-D08-T	M2073G-D08-T	DIP-8	Tube
M2073L-S08-R	M2073G-S08-R	SOP-8	Tape Reel

Note: Pin Assignment: G: Gate D: Drain S: Source

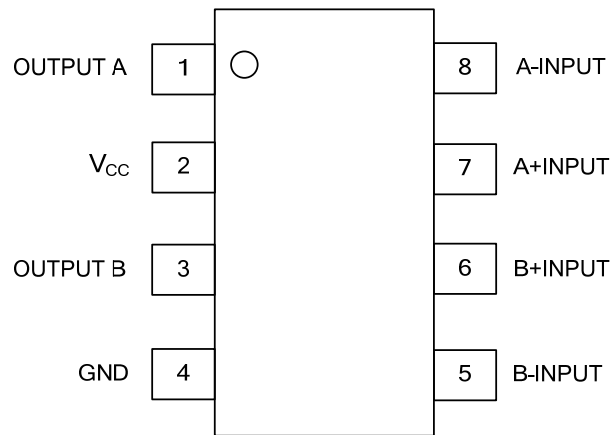
<p>M2073G-D08-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) D08: DIP-8, S08: SOP-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING

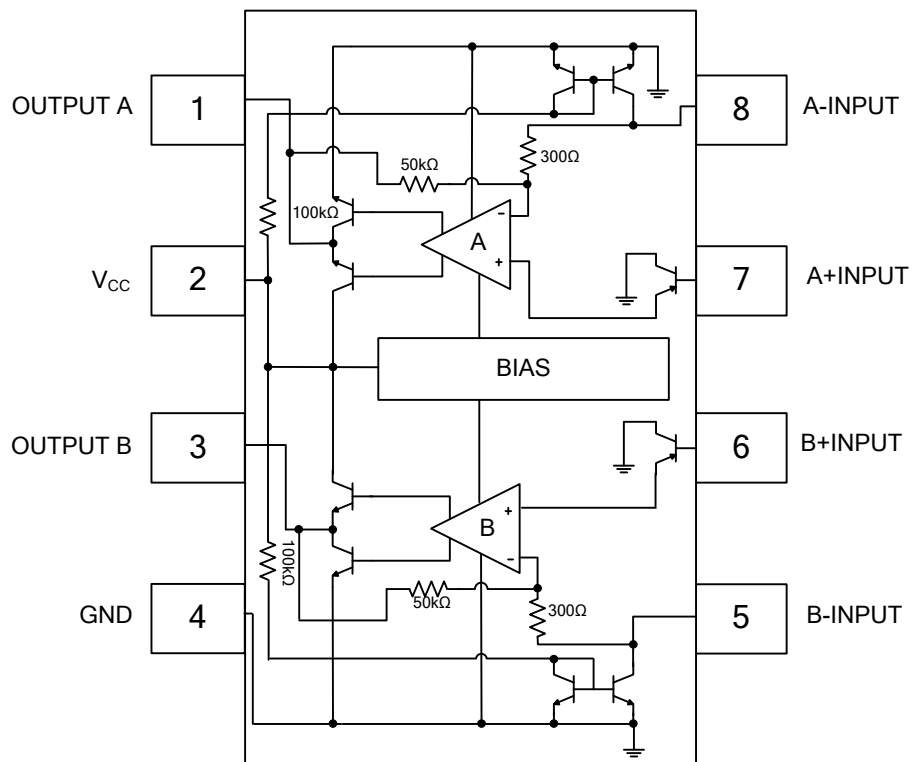
DIP-8	SOP-8
<p>UTC □ □ □ □ → Date Code</p> <p>L: Lead Free</p> <p>G: Halogen Free</p> <p>□ □ □ □ → Lot Code</p>	<p>UTC □ □ □ □ → Date Code</p> <p>L: Lead Free</p> <p>G: Halogen Free</p> <p>□ □ □ □ → Lot Code</p>



## ■ PIN CONFIGURATION



## ■ BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{CC}$	15	V
Input Voltage Range	$V_{IN}$	$\pm 0.4$	V
Output Peak Current	$I_{OP}$	1	A
Power Dissipation	DIP-8	700	mW
	SOP-8	300	mW
Junction Temperature	$T_J$	+125	$^{\circ}C$
Operating Temperature	$T_{OPR}$	-40 ~ +85	$^{\circ}C$
Storage Temperature	$T_{STG}$	-40 ~ +125	$^{\circ}C$

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

#### BTL Configuration (Page 6) ( $V_{CC}=6V, T_A=25^{\circ}C$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Operating Voltage	$V_{CC}$		1.8		15	V	
Operating Current	$I_{CC}$	$R_L=\infty$		6	9	mA	
Output Offset Voltage ( Between the Outputs )	$\Delta V_{OUT}$	$R_L=8\Omega$		10	50	mV	
Input Bias Current	$I_{I(BIAS)}$			100		nA	
Output Power	$P_{OUT}$	THD=10% f=1kHz	DIP-8	$V_{CC}=9V, R_L=16\Omega$ ( Note )	2.0	W	
				$V_{CC}=6V, R_L=8\Omega$ ( Note )	0.9	1.2	W
				$V_{CC}=4.5V, R_L=8\Omega$	0.6	W	
				$V_{CC}=4.5V, R_L=4\Omega$ ( Note )	0.8	W	
				$V_{CC}=3V, R_L=4\Omega$	200	300	mW
				$V_{CC}=2V, R_L=4\Omega$	80	mW	
		THD=1% f=40Hz~15kHz	SOP-8	$V_{CC}=6V, R_L=16\Omega$ ( Note )	0.8	W	
				$V_{CC}=4V, R_L=8\Omega$ ( Note )	350	460	mW
				$V_{CC}=3V, R_L=4\Omega$ ( Note )	200	300	mW
				$V_{CC}=2V, R_L=4\Omega$	80	mW	
				DIP-8	$V_{CC}=6V, R_L=8\Omega$	1.0	W
					$V_{CC}=4.5V, R_L=4\Omega$	0.6	W
$V_{CC}=4V, R_L=8\Omega$	380	mW					
Total Harmonic Distortion	THD	$P_{OUT}=0.5W, R_L=8\Omega, f=1kHz$	DIP-8	0.2	%		
		$V_{CC}=4V, R_L=8\Omega, P_{OUT}=200mW, R_L=8\Omega, f=1kHz$	SOP-8	0.2	%		
Close Loop Voltage Gain	$G_V$	f=1kHz	41	44	47	dB	
Input Impedance	$Z_{IN}$	f=1kHz	100			k $\Omega$	
Equivalent Input Noise Voltage	$V_{NI1}$	$R_S=10k\Omega, A$ Curve		2		$\mu V$	
	$V_{NI2}$	$R_S=10k\Omega, B=22Hz\sim 22kHz$		2.5		$\mu V$	
Ripple Rejection	RR	f=100Hz		40		dB	
Cutoff Frequency	$f_H$	$G_V=-3dB$ from f=1kHz, $R_L=8\Omega, P_{OUT}=1W$	DIP-8	130		kHz	
		$G_V=-3dB$ from f=1kHz, $R_L=16\Omega, P_{OUT}=0.5W$	SOP-8	130		kHz	

Note: At on PC Board.

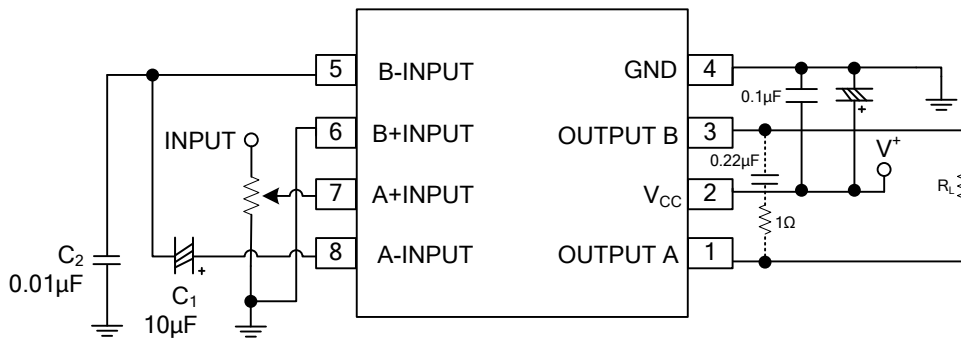
## ■ ELECTRICAL CHARACTERISTICS(Cont.)

### Stereo Configuration (Page 7)

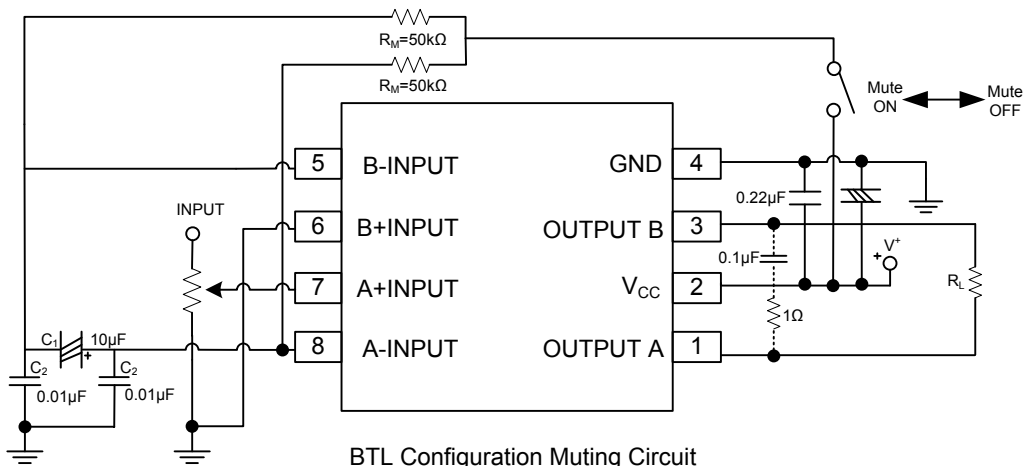
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Operating Voltage	$V_{CC}$		1.8		15	V	
Output Voltage	$V_{OUT}$			2.7		V	
Operating Current	$I_{CC}$	$R_L = \infty$		6	9	mA	
Input Bias Current	$I_{I(BIAS)}$			100		nA	
Output Power (Each Channel)	$P_{OUT}$	THD=10% f=1kHz	DIP-8	$V_{CC} = 6V, R_L = 4\Omega$ ( Note )	0.5	0.65	W
				$V_{CC} = 4.5V, R_L = 4\Omega$		0.32	W
				$V_{CC} = 3V, R_L = 4\Omega$		120	mW
				$V_{CC} = 2V, R_L = 4\Omega$		30	mW
		THD=10% f=1kHz	SOP-8	$V_{CC} = 6V, R_L = 16\Omega$		240	mW
				$V_{CC} = 5V, R_L = 8\Omega$ ( Note )		270	mW
				$V_{CC} = 4V, R_L = 4\Omega$ ( Note )	180	250	mW
				$V_{CC} = 3V, R_L = 4\Omega$		120	mW
		THD=1% f=1kHz	SOP-8	$V_{CC} = 2V, R_L = 4\Omega$		30	mW
				$V_{CC} = 6V, R_L = 4\Omega$		500	mW
				$V_{CC} = 4.5V, R_L = 4\Omega$		250	mW
				$V_{CC} = 4V, R_L = 4\Omega$		180	mW
Total Harmonic Distortion	THD	$P_{OUT} = 0.4W, R_L = 4\Omega, f = 1kHz$	DIP-8		0.25	%	
		$V_{CC} = 4V, R_L = 4\Omega, P_{OUT} = 150mW, f = 1kHz$	SOP-8		0.25	%	
Voltage Gain	$G_V$	f=1kHz	41	44	47	dB	
Channel Balance	$\Delta G_V$				$\pm 1$	dB	
Input Impedance	$Z_{IN}$	f=1kHz	100			k $\Omega$	
Equivalent Input Noise Voltage	$V_{NI1}$	$R_S = 10k\Omega, A$ Curve		2.5		$\mu V$	
	$V_{NI2}$	$R_S = 10k\Omega, B = 22Hz \sim 22kHz$		3		$\mu V$	
Ripple Rejection	RR	f=100Hz, $C_X = 100\mu F$	24	30		dB	
Cutoff Frequency	$f_H$	$G_V = -3dB$ from f=1kHz, $R_L = 8\Omega, P_{OUT} = 250mW$	DIP-8		200	kHz	
		$G_V = -3dB$ from f=1kHz, $R_L = 16\Omega, P_{OUT} = 125mW$	SOP-8		200	kHz	

Note: At on PC Board.

## APPLICATION CIRCUITS FOR BTL MODE

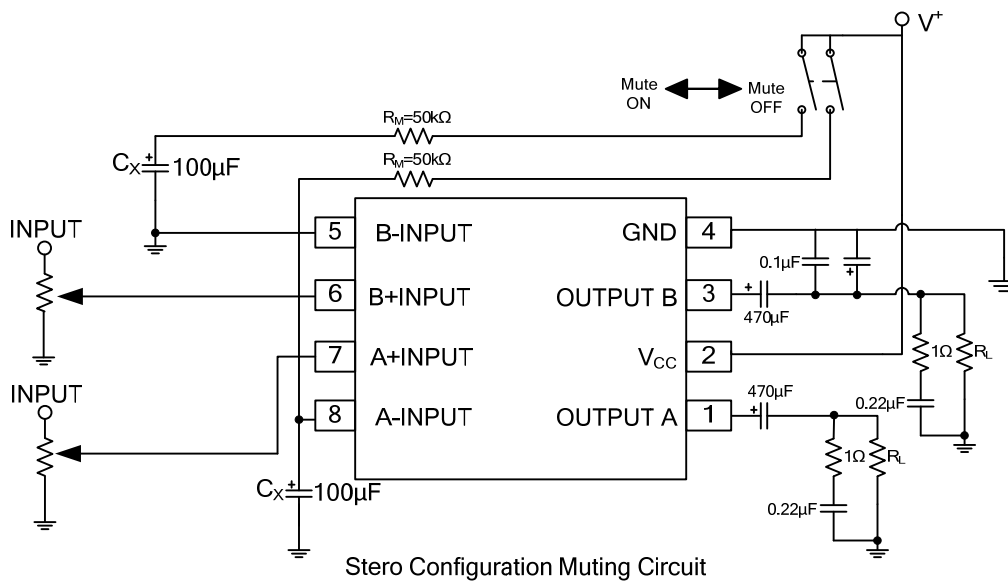
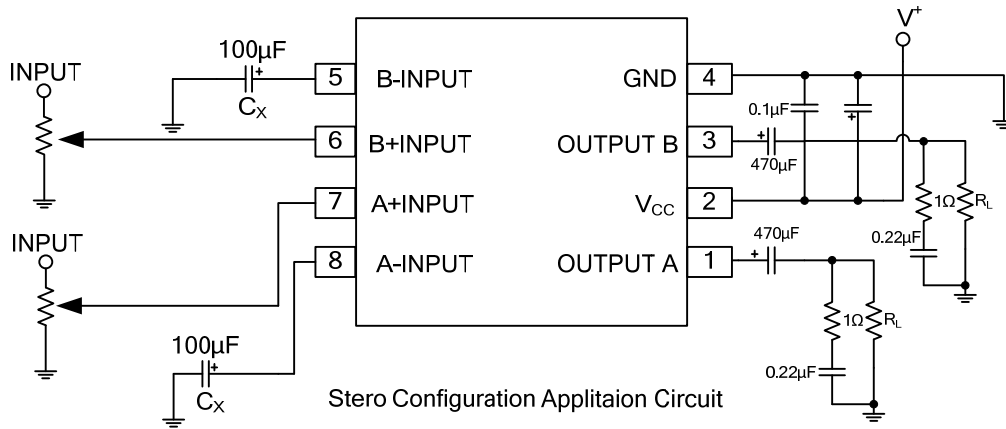


BTL Configuration Applaitaion Circuit

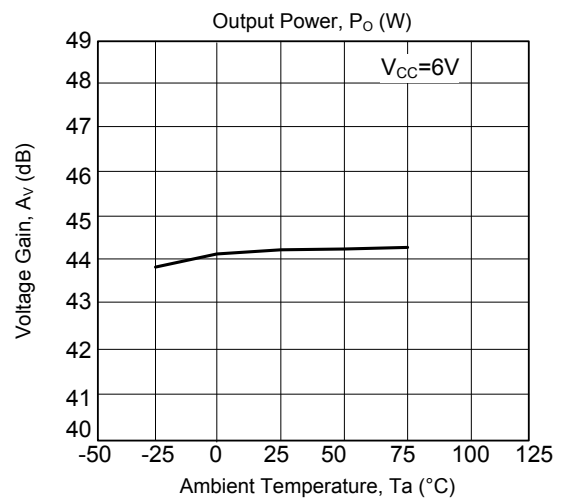
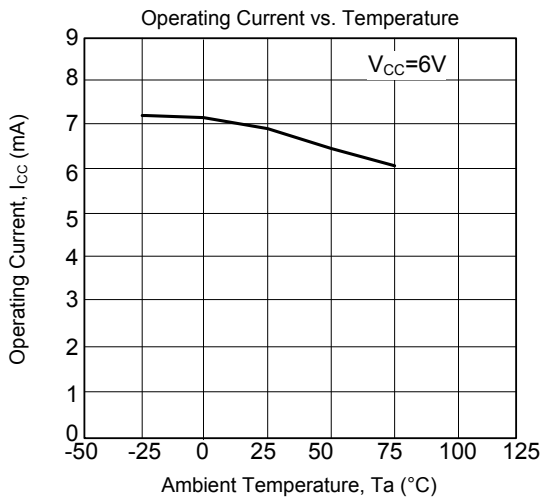
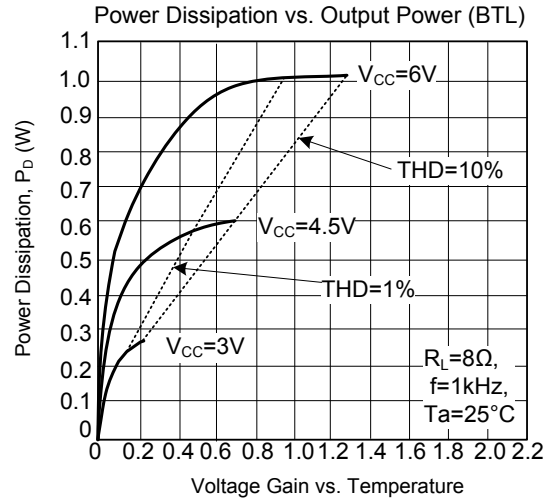
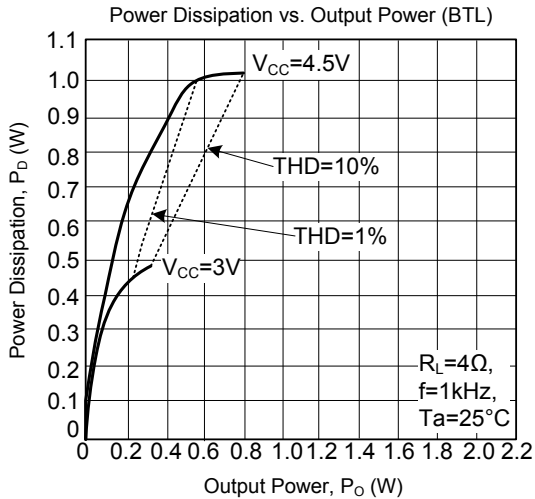
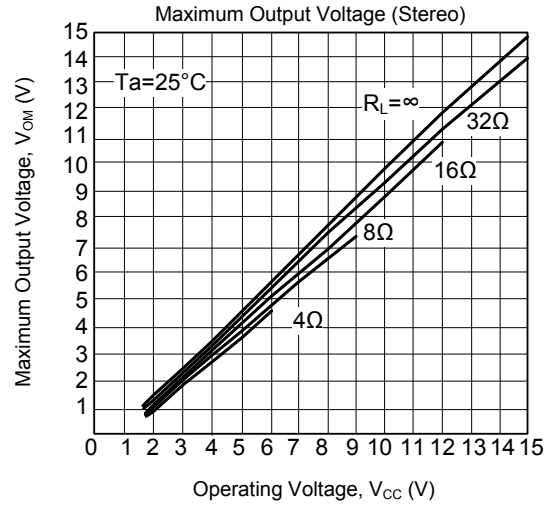
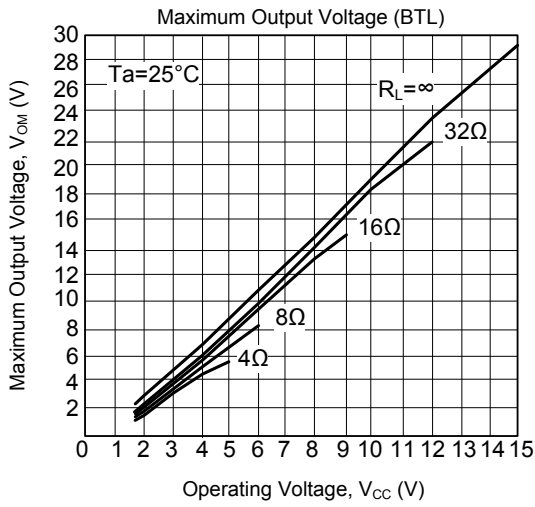


BTL Configuration Muting Circuit

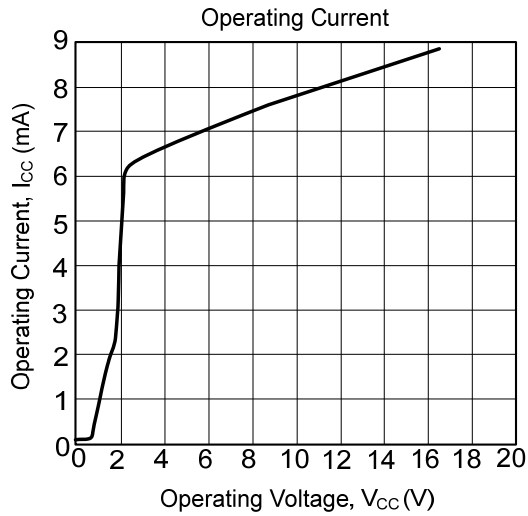
APPLICATION CIRCUITS FOR STERO MODE



■ TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS (Cont.)



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