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LA4537MC

Monolithic Linear IC

Power Amplifier for 1.5V Headphone Stereos

Features

- Low current drain
- 16Ω load drive capability
- Excellent reduced voltage characteristics
- Excellent power supply ripple rejection
- Minimum number of external parts required (no input capacitor, feedback capacitor required)
- Less harmonic interference in radio band
- On-chip power switch function, muting function

Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC \text{ max}}$	Quiescent	4.5	V
Allowable power dissipation	$P_d \text{ max}$		290	mW
Operating temperature	T_{opr}		-20 to +75	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to +125	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		1.5	V
Operating voltage range	$V_{CC \text{ op}}$		0.9 to 4.0	V
Recommended load resistance	R_L		16 to 32	Ω

LA4537MC

Electrical Characteristics at $T_a = 25^{\circ}\text{C}$, $R_L = 16\Omega$, $R_g = 600\Omega$, See specified Test Circuit.

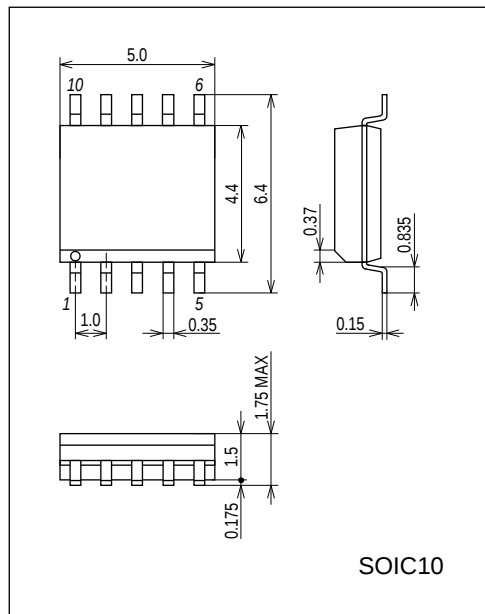
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	I_{CCO1}	$V_{CC} = 1.2\text{V}$, quiescent		3.5	6.0	mA
	I_{CCO2}	$V_{CC} = 2.5\text{V}$, pin 10 $\rightarrow$ GND		1.4	2.5	mA
	I_{CCO3}	$V_{CC} = 2.5\text{V}$, pin 1 $\rightarrow$ GND			1.0	μA
Voltage gain	VG	$V_{CC} = 1.2\text{V}$, $f = 1\text{kHz}$, $V_O = -20\text{dBm}$	28.5	30.0	31.5	dB
Voltage gain difference	ΔVG	$V_{CC} = 1.2\text{V}$, $f = 1\text{kHz}$, $V_O = -20\text{dBm}$			1.0	dB
Total harmonic distortion	THD	$V_{CC} = 1.2\text{V}$, $f = 1\text{kHz}$, $P_O = 0.5\text{mW}$		0.5	1.5	%
Output power	P_O	$V_{CC} = 1.5\text{V}$, $f = 1\text{kHz}$, THD = 10%	5	8		mW
Crosstalk	CT	$V_{CC} = 1.2\text{V}$, $f = 100\text{Hz}$, $R_g = 1\text{k}\Omega$, $V_O = -20\text{dB}$	40	45		dB
Ripple rejection	SVRR	$V_{CC} = 1.0\text{V}$, $f = 100\text{Hz}$, $R_g = 1\text{k}\Omega$, $V_R = -30\text{dBm}$, BPF = 100Hz	40	46		dB
Output noise voltage	V_{NO}	$V_{CC} = 2.5\text{V}$, $R_g = 1\text{k}\Omega$, BPF = 20Hz to 20kHz		55	80	μV
Power on current sensitivity	I_1 (on)	$V_{CC} = 0.85\text{V}$, $V_5 \geq 0.5\text{V}$		0.1	1.0	μA
Power off voltage sensitivity	V_1 (off)	$V_{CC} = 0.85\text{V}$, $V_5 \leq 0.1\text{V}$	0.5	0.6		V
Muting off current sensitivity	I_{10} (off)	$V_{CC} = 0.85\text{V}$, $V_5 \geq 0.5\text{V}$		0.1	1.0	μA
Muting on voltage sensitivity	V_{10} (on)	$V_{CC} = 0.85\text{V}$, $V_5 \leq 0.1\text{V}$	0.5	0.6		V

Note) The quiescent current is resrepresented by the current flowing into pin 6. The respective maximum currents flowing into pin 1 and pin 10 are calculated by (pin voltage -0.5) / 16 [V/k Ω] and the total current increases by these current values.

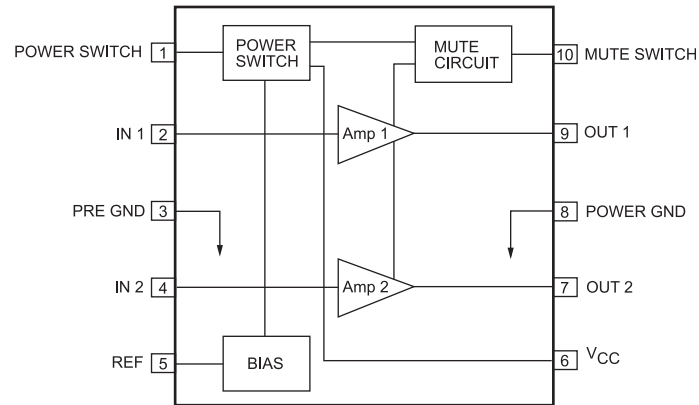
Package Dimensions

unit : mm (typ)

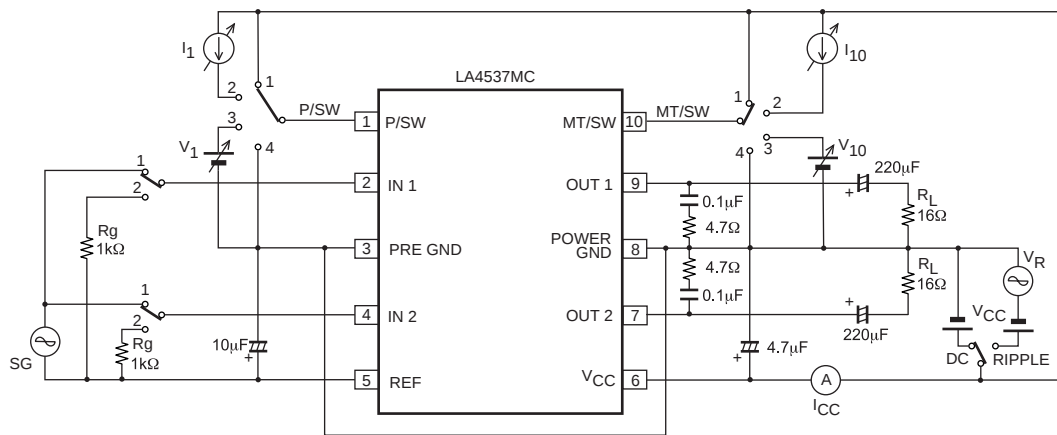
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Block Diagram

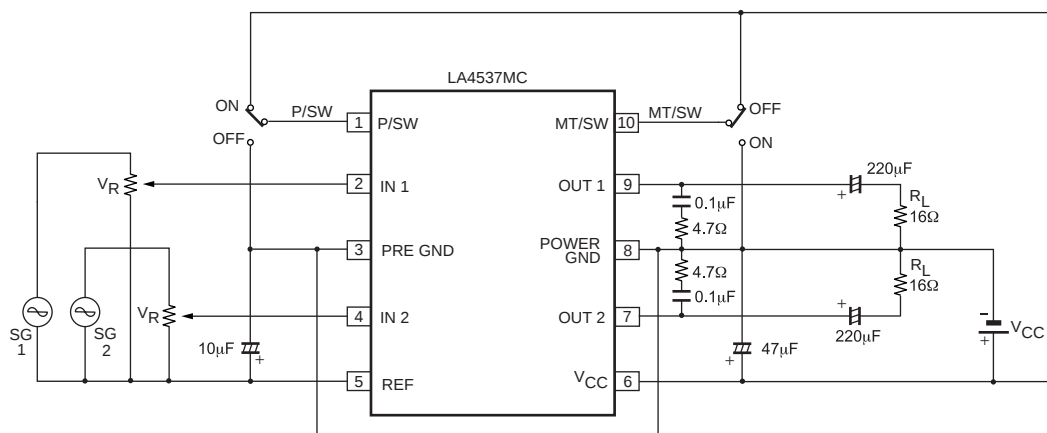


Test Circuit



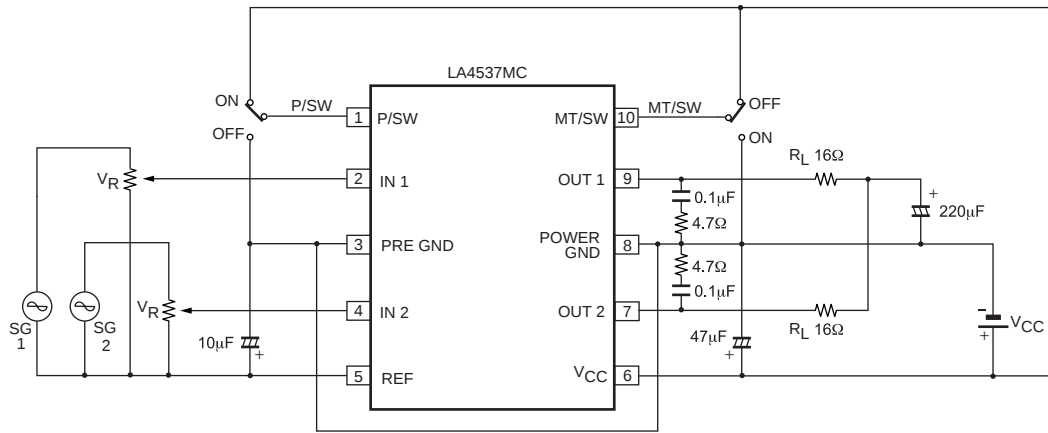
Sample Application Circuit 1

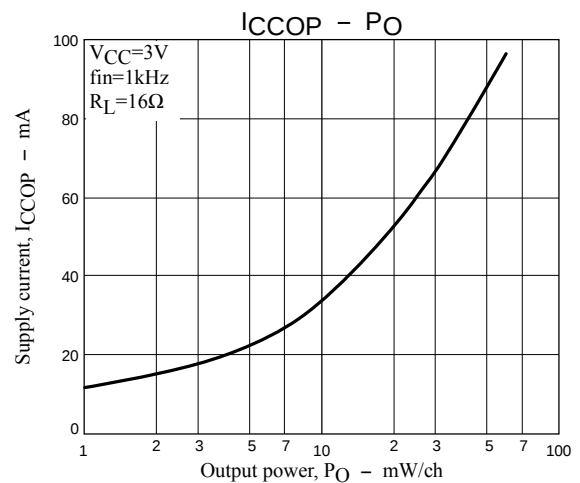
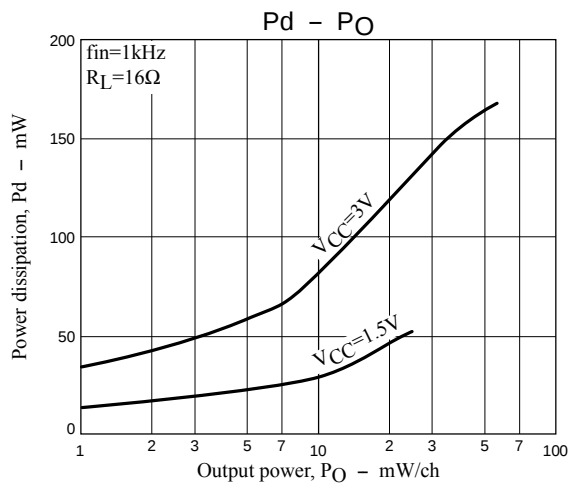
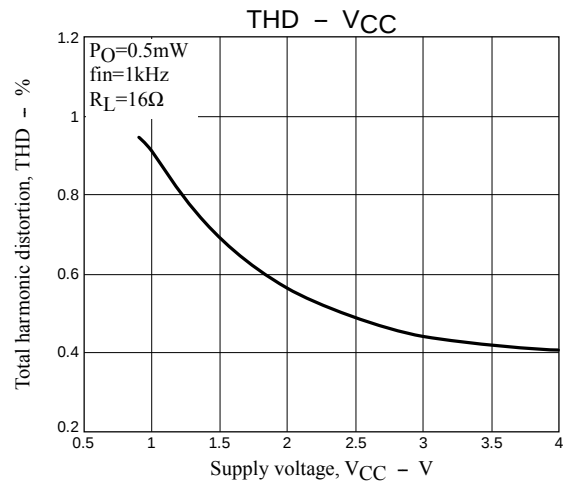
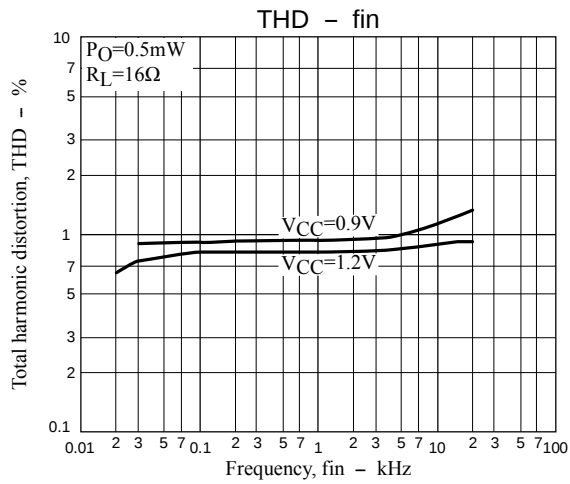
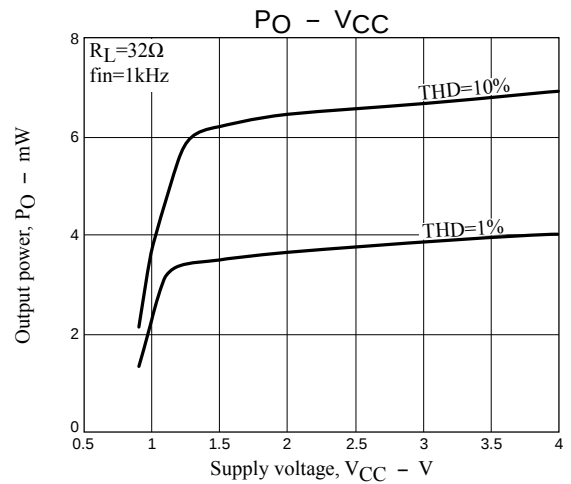
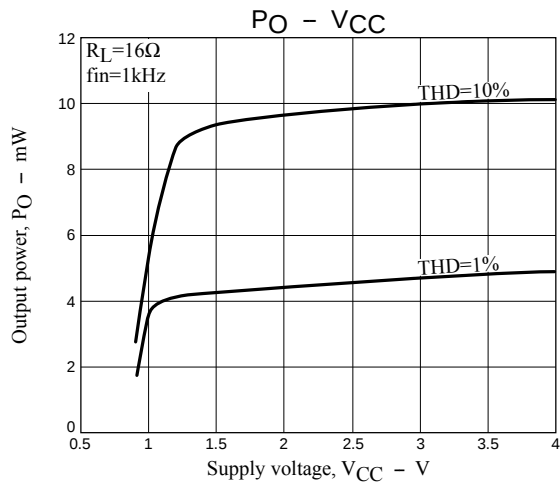
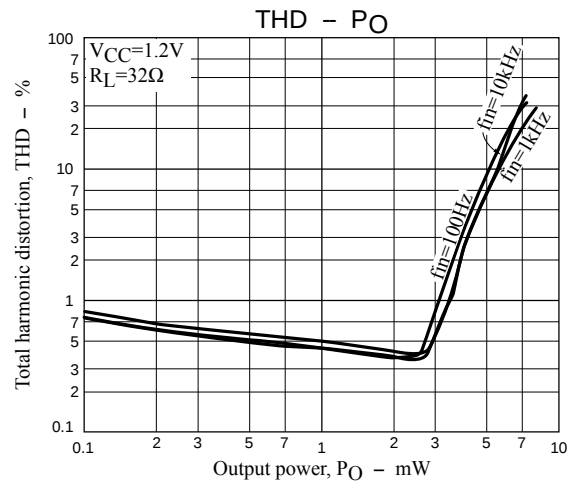
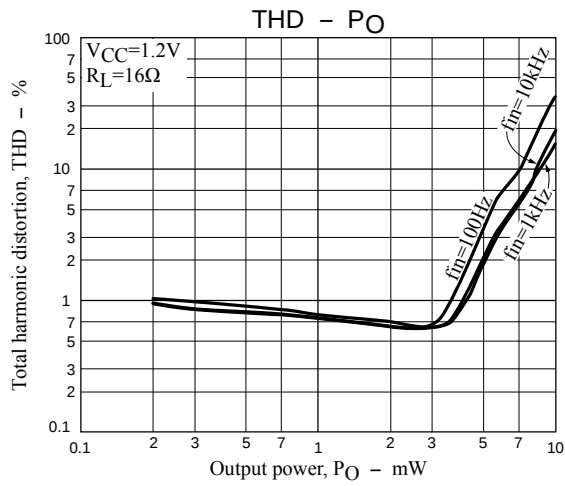
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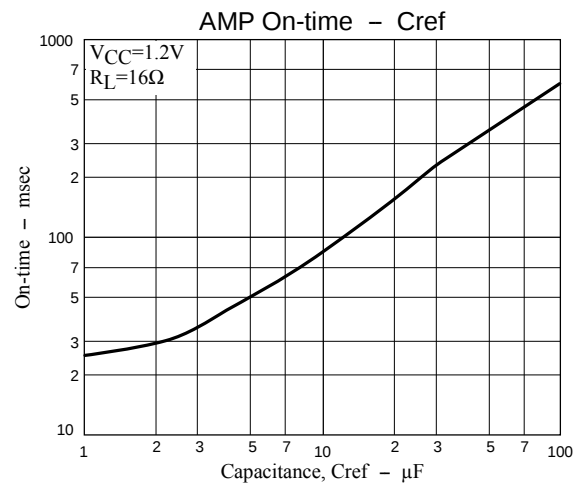
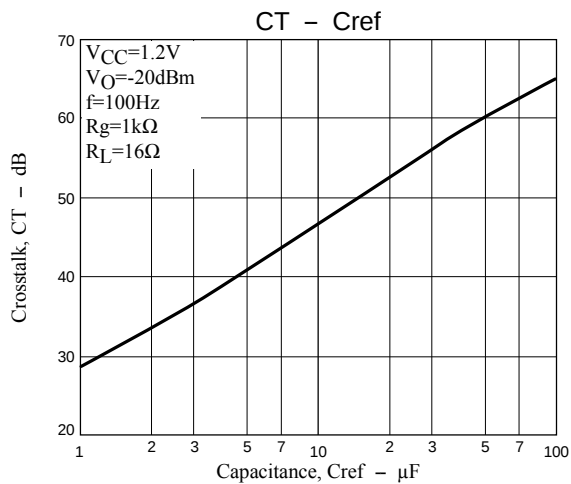
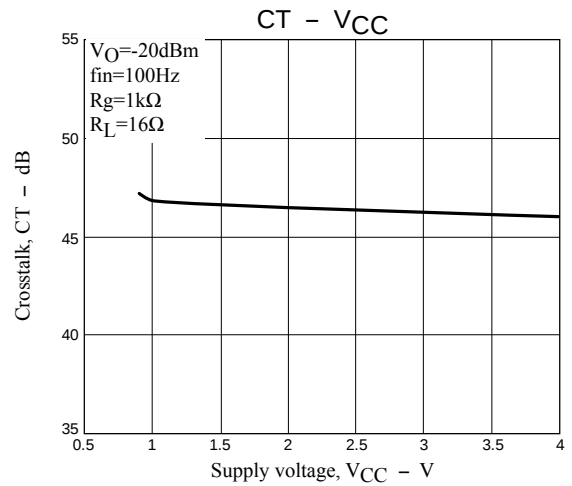
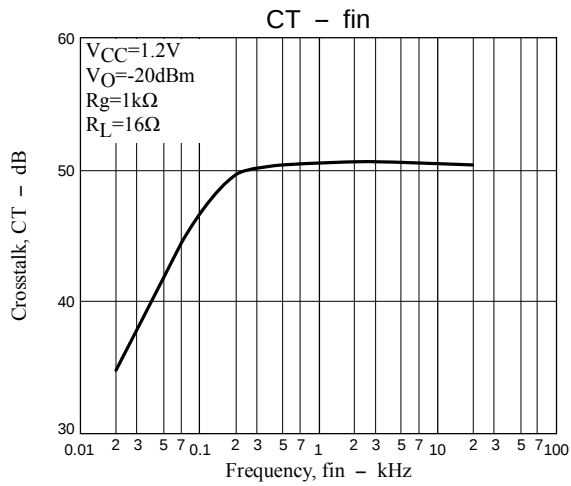
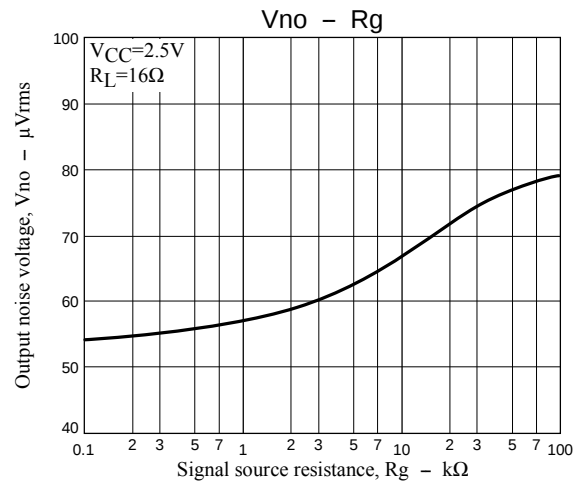
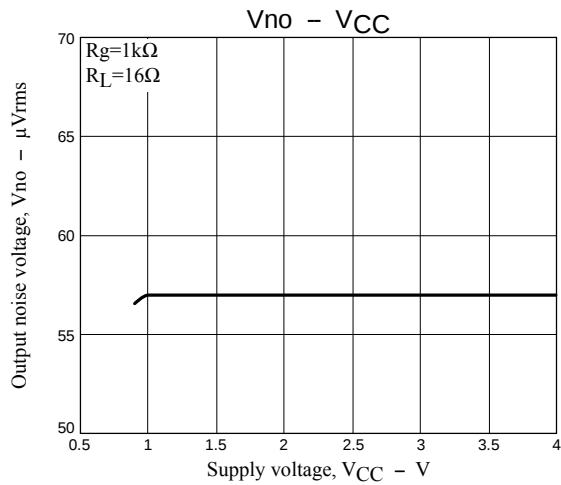
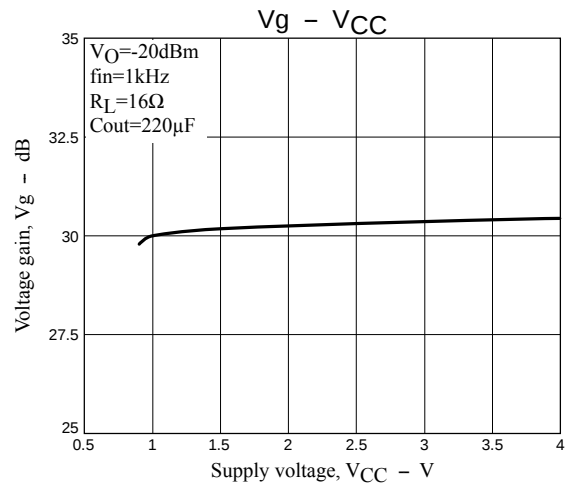
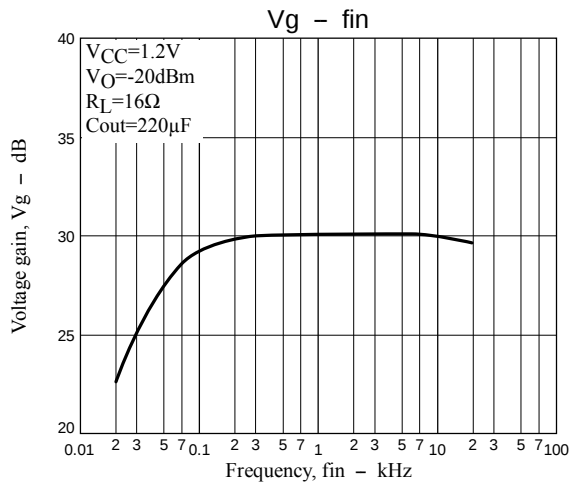


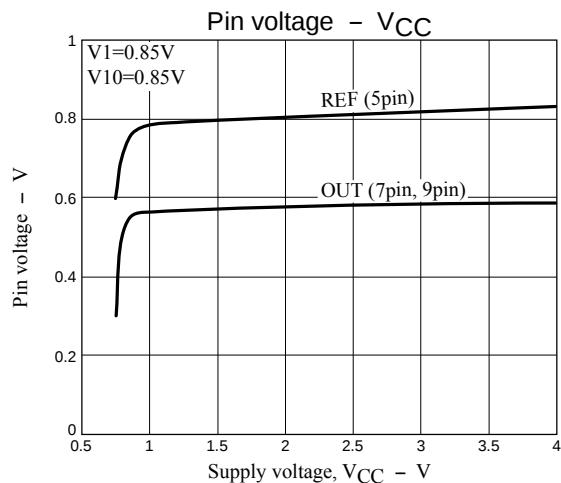
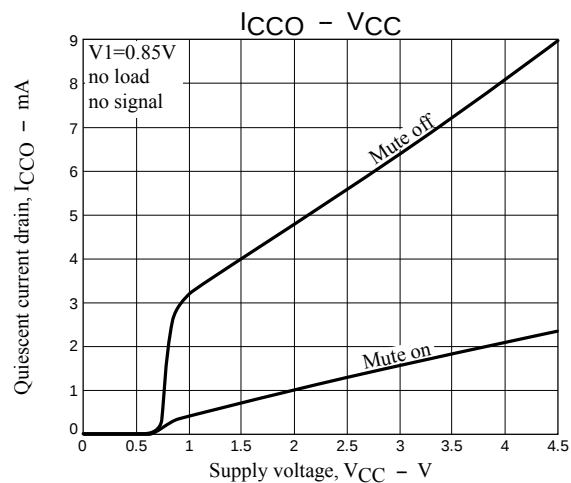
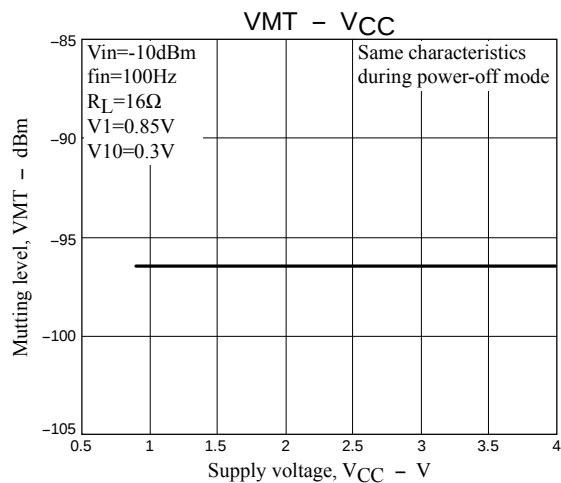
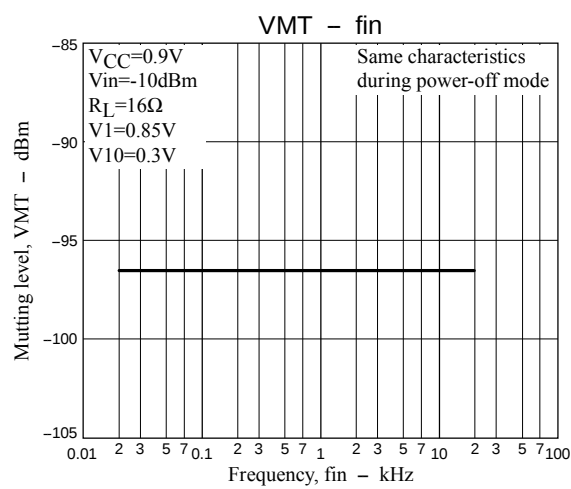
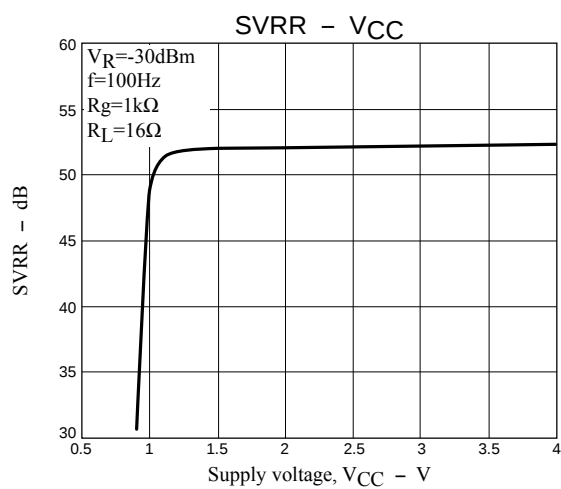
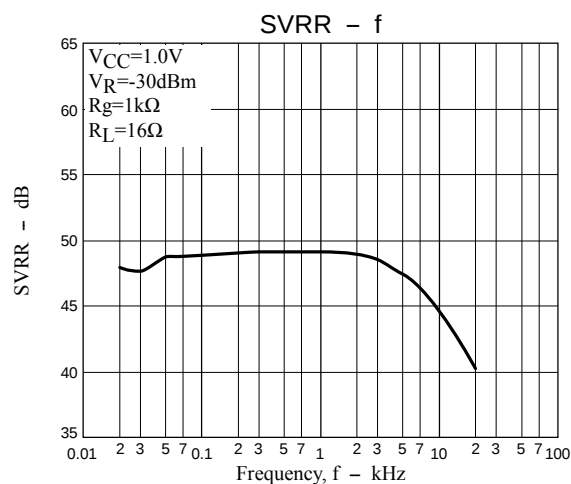
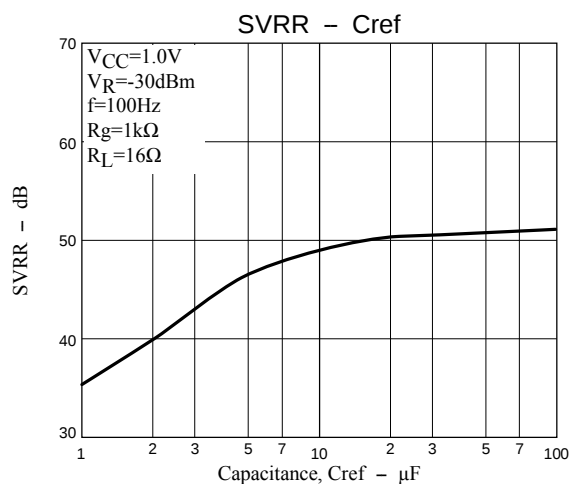
Sample Application Circuit 2

(Output capacitor shared)









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Skype ameyasales1 ameyasales2

➤ Customer Service :

Email service@ameya360.com

➤ Partnership :

Tel +86 (21) 64016692-8333

Email mkt@ameya360.com