Ordering number : ENA2033A

LA4537MC

Monolithic Linear IC

Power Amplifier for 1.5V Headphone Stereos

ON Semiconductor®

http://onsemi.com

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 Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max	Quiescent	4.5	V
Allowable power dissipation	Pd max		290	mW
Operating temperature	Topr		–20 to +75	°C
Storage temperature	Tstg		–40 to +125	°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 Ta = 25°C

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

Electrical Characteristics at Ta = 25°C, R_L = 16Ω, Rg = 600Ω, See specified Test Circuit.

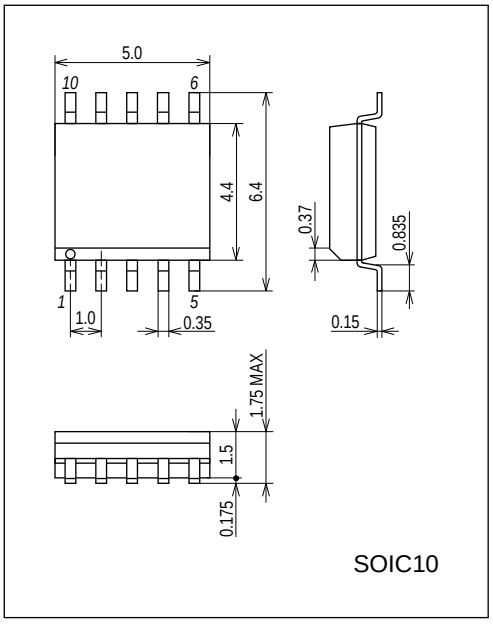
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	$I_{CCO}1$	V_{CC} = 1.2V, quiescent		3.5	6.0	mA
	$I_{CCO}2$	V_{CC} = 2.5V, pin 10 → GND		1.4	2.5	mA
	$I_{CCO}3$	V_{CC} = 2.5V, pin 1 → GND			1.0	μA
Voltage gain	VG	V_{CC} = 1.2V, f = 1kHz, V_O = –20dBm	28.5	30.0	31.5	dB
Voltage gain difference	ΔVG	V_{CC} = 1.2V, f = 1kHz, V_O = –20dBm			1.0	dB
Total harmonic distortion	THD	V_{CC} = 1.2V, f = 1kHz, P_O = 0.5mW		0.5	1.5	%
Output power	P_O	V_{CC} = 1.5V, f = 1kHz, THD = 10%	5	8		mW
Crosstalk	CT	V_{CC} = 1.2V, f = 100Hz, Rg = 1kΩ, V_O = –20dB	40	45		dB
Ripple rejection	SVRR	V_{CC} = 1.0V, f = 100Hz, Rg = 1kΩ, V_R = –30dBm, BPF = 100Hz	40	46		dB
Output noise voltage	V_{NO}	V_{CC} = 2.5V, Rg = 1kΩ, BPF = 20Hz to 20kHz		55	80	μV
Power on current sensitivity	I_1 (on)	V_{CC} = 0.85V, V5 ≥ 0.5V		0.1	1.0	μA
Power off voltage sensitivity	V_1 (off)	V_{CC} = 0.85V, V5 ≤ 0.1V	0.5	0.6		V
Muting off current sensitivity	I_{10} (off)	V_{CC} = 0.85V, V5 ≥ 0.5V		0.1	1.0	μA
Muting on voltage sensitivity	V_{10} (on)	V_{CC} = 0.85V, V5 ≤ 0.1V	0.5	0.6		V

Note) The quiescent current is respresented 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/kΩ] and the total current increases by these current values.

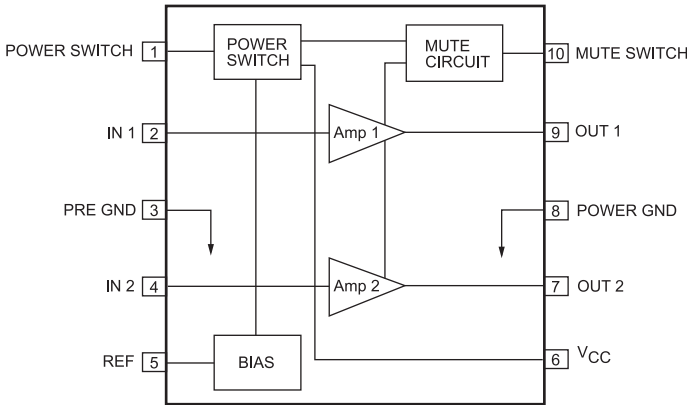
Package Dimensions

unit : mm (typ)

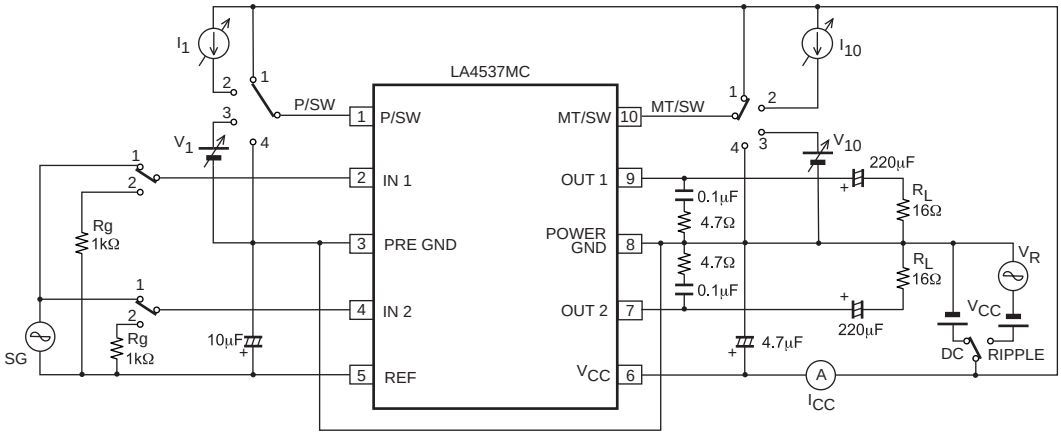
3426



Block Diagram

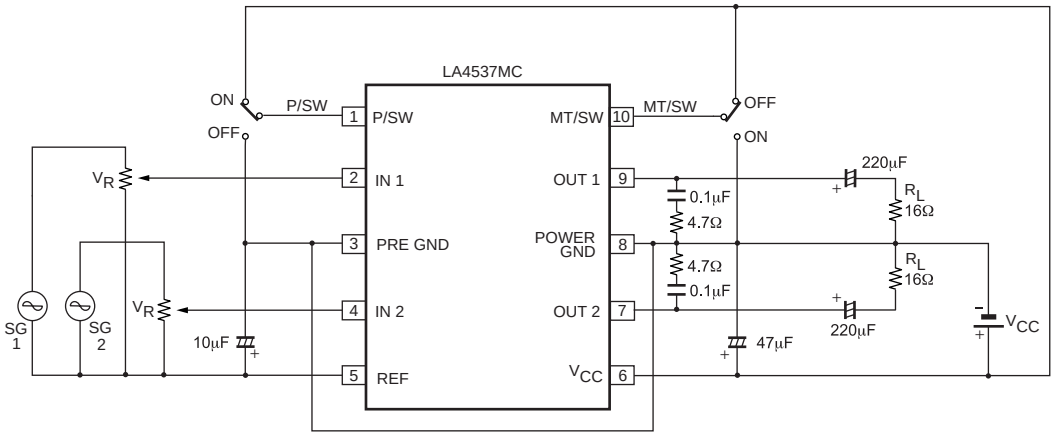


Test Circuit



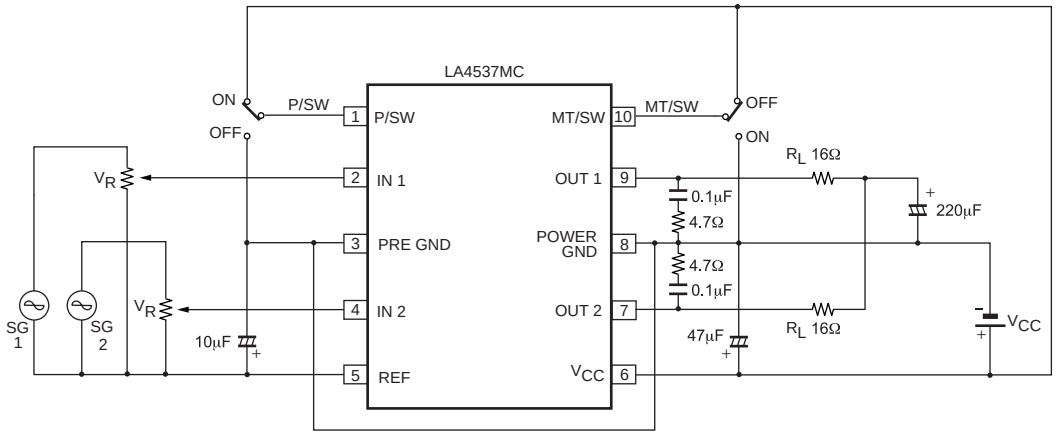
Sample Application Circuit 1

(Standard)

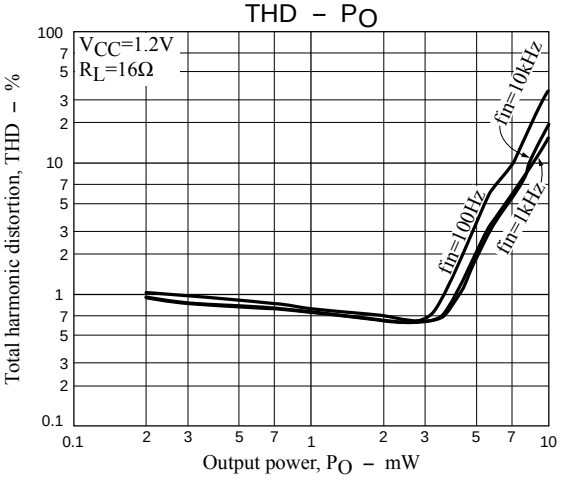


Sample Application Circuit 2

(Output capacitor shared)



THD – P_O



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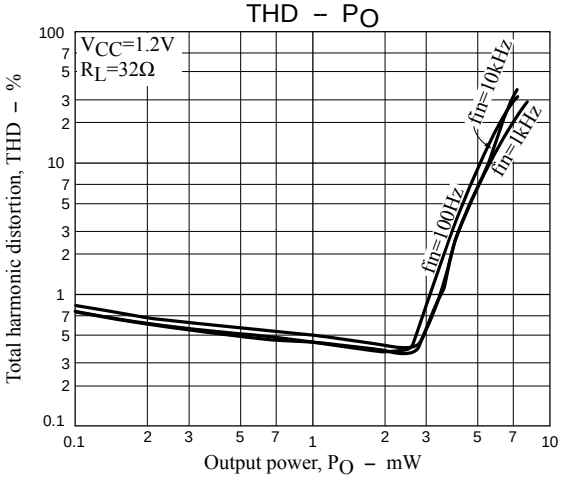
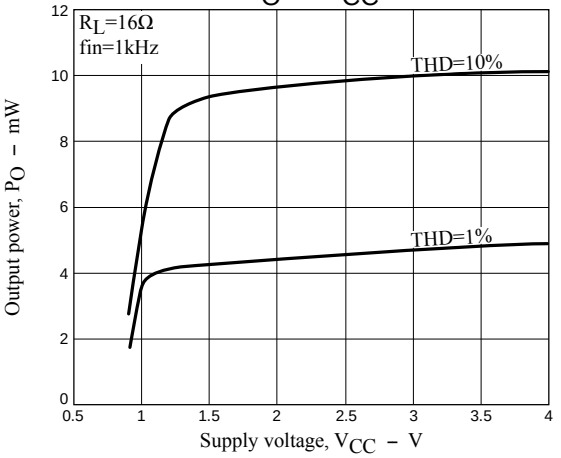
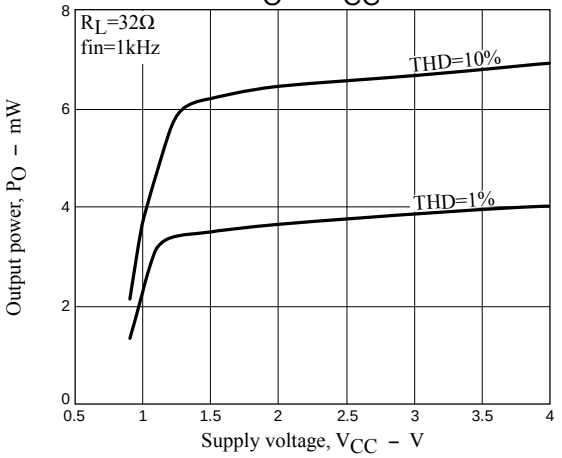


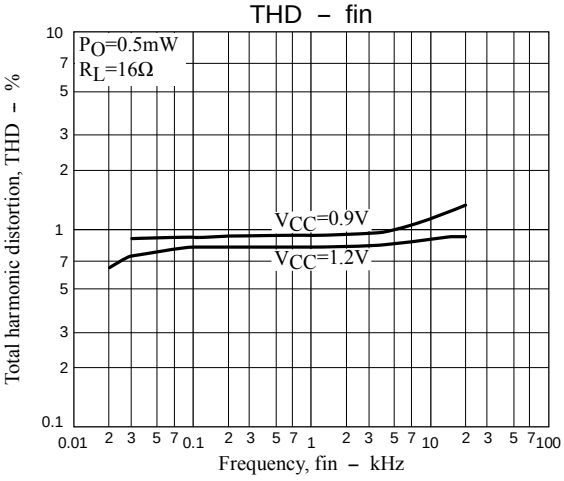
P_O – V_{CC}



P_O – V_{CC}



THD – fin



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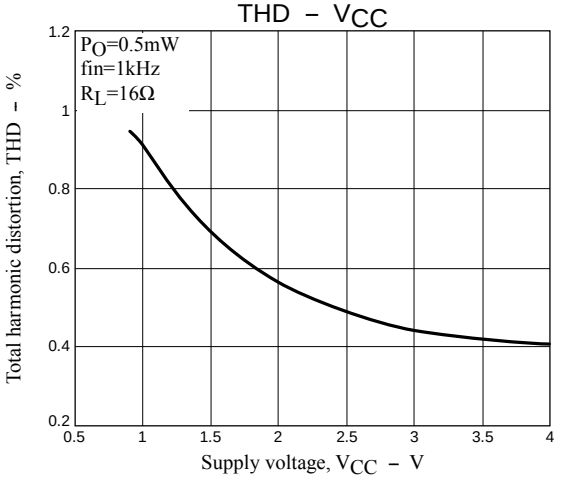
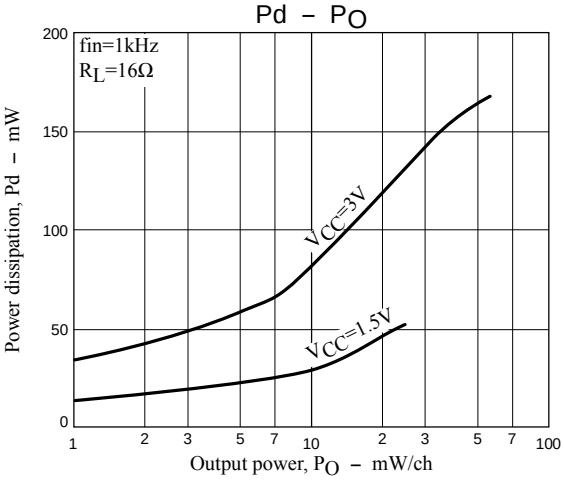
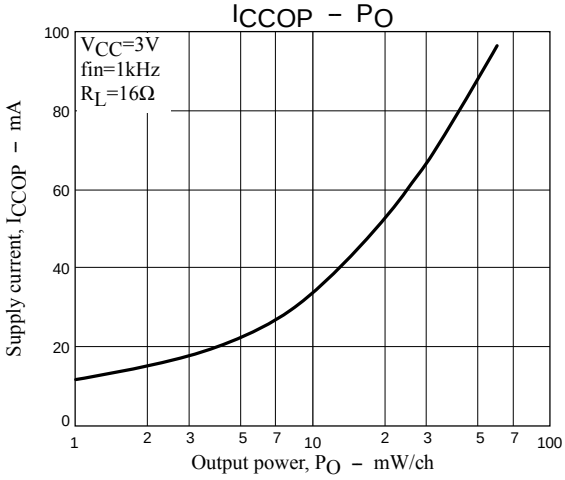


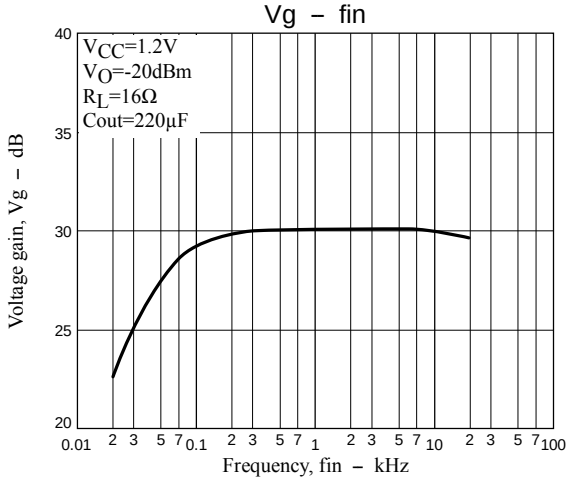
Pd – P_O



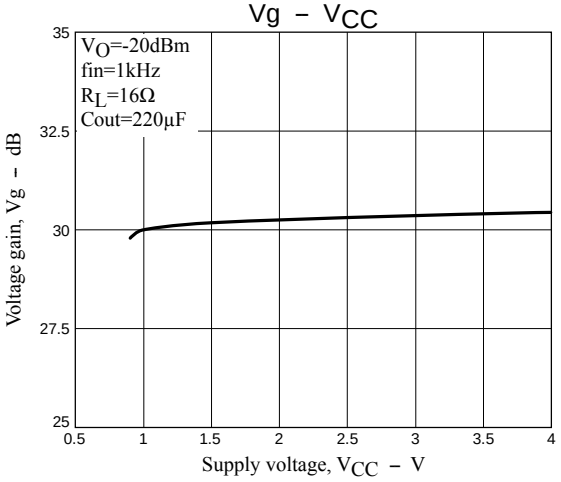
I_{CCOP} – P_O



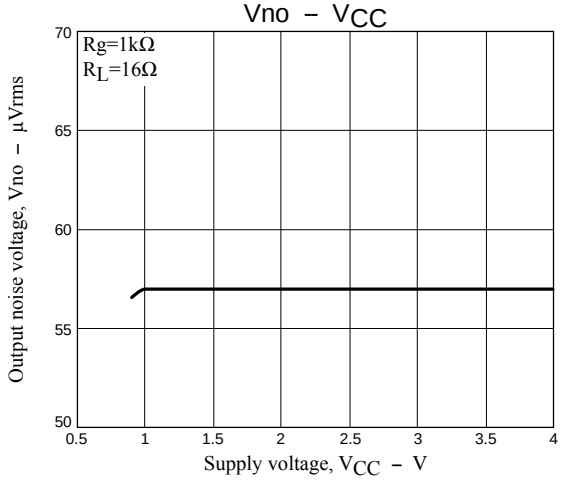
Vg – fin



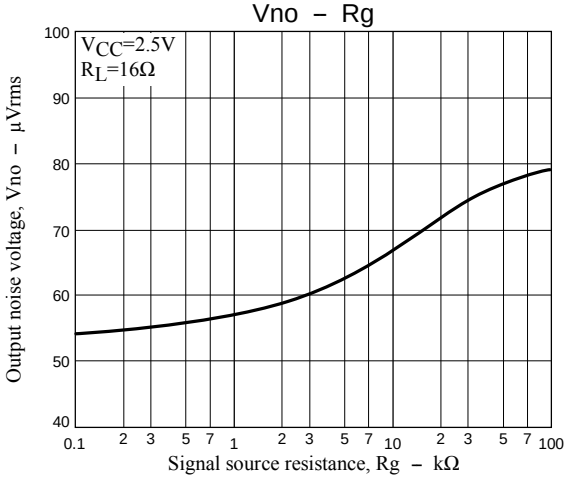
Vg – VCC



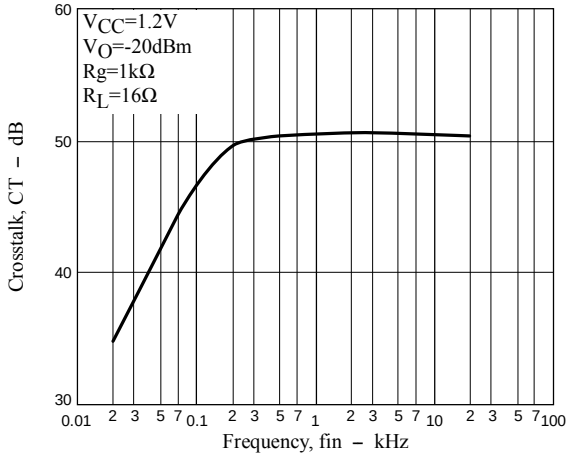
Vno – VCC



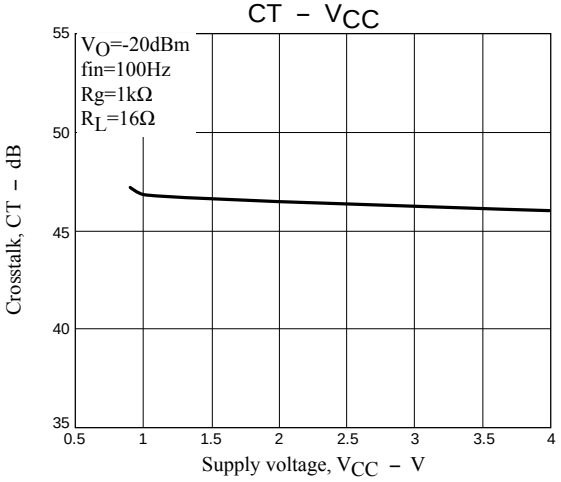
Vno – Rg



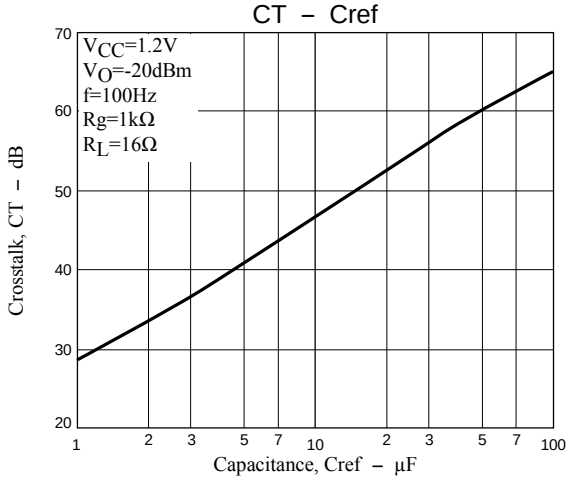
CT – fin



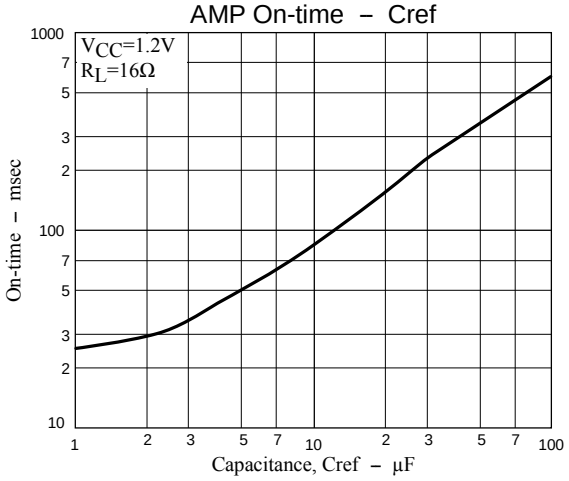
CT – VCC



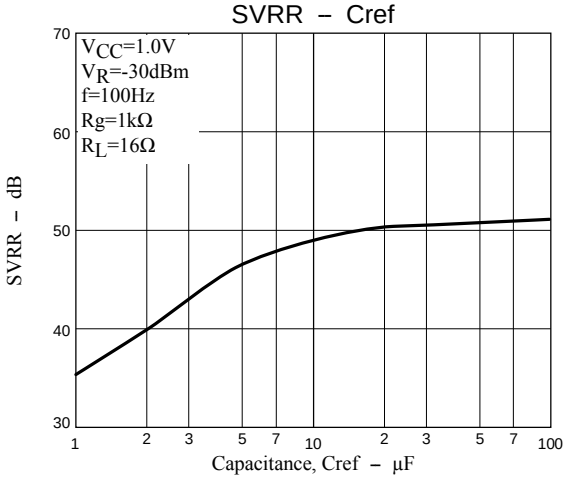
CT – Cref



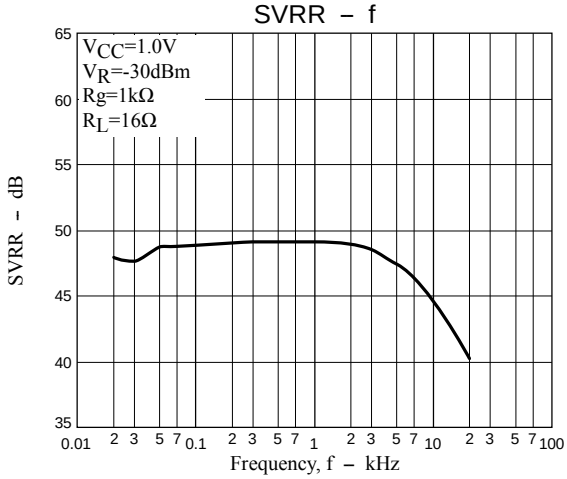
AMP On-time – Cref



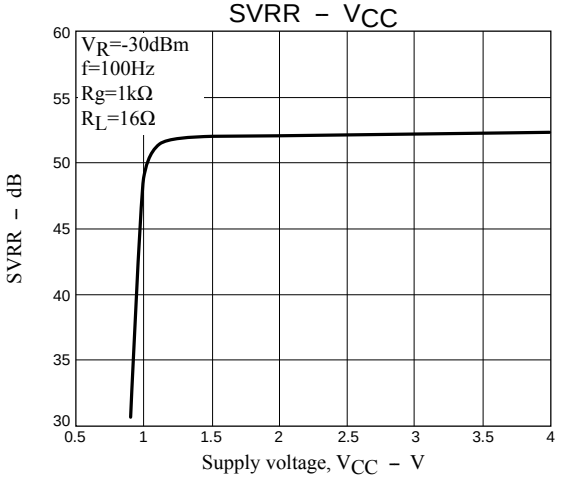
SVRR – Cref



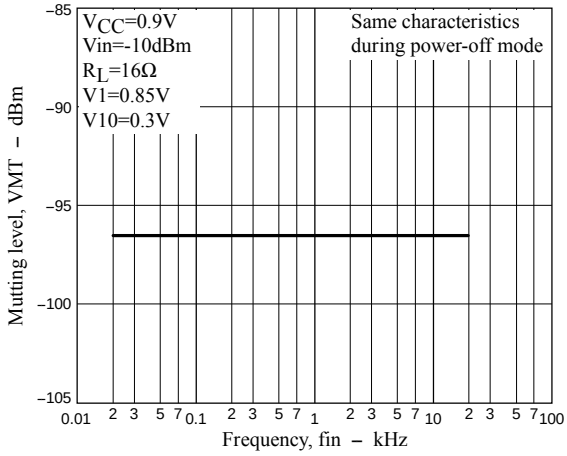
SVRR – f



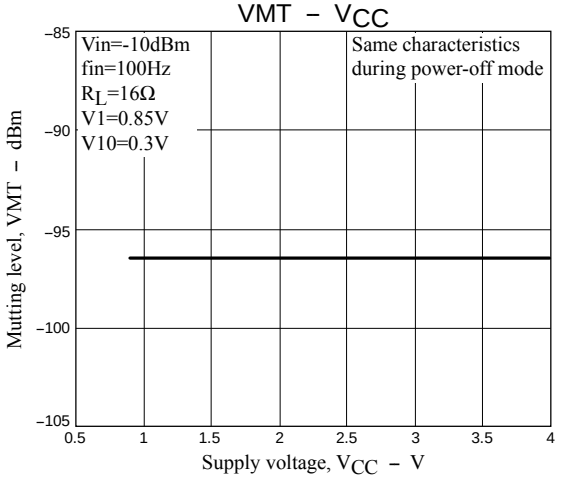
SVRR – V_{CC}



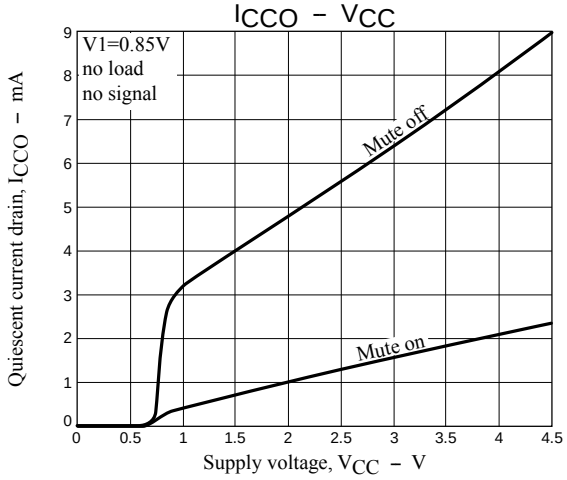
VMT – fin



VMT – V_{CC}



I_{CCO} – V_{CC}



Pin voltage – V_{CC}