



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

Monolithic Linear IC

LA1225MC — FM IF Detector IC

Overview

The LA1225MC is a Low-voltage operation (1.8V or higher) FM IF detector IC for the electronic tuning system.

Features

- Low-voltage operation (1.8V or higher)
- Supports electronic tuning systems (provides built-in SD output and IF count output functions)
- FM detector circuit accepts an even wider input frequency range. (Supports the use of an external phase capacitor.)
- Miniature package: SOIC10

Functions

- IF amplifier
- Quadrature detector
- Signal meter
- SD
- IF buffer

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\text{ max}}$		9.0	V
Allowable power dissipation	$P_d\text{ max}$	$T_a \leq 85^\circ\text{C}$	100	mW
Operating temperature	T_{opr}		-20 to +85	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		3.0	V
Operating supply voltage range	$V_{CC\text{ op}}$		1.8 to 8.0	V

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LA1225MC

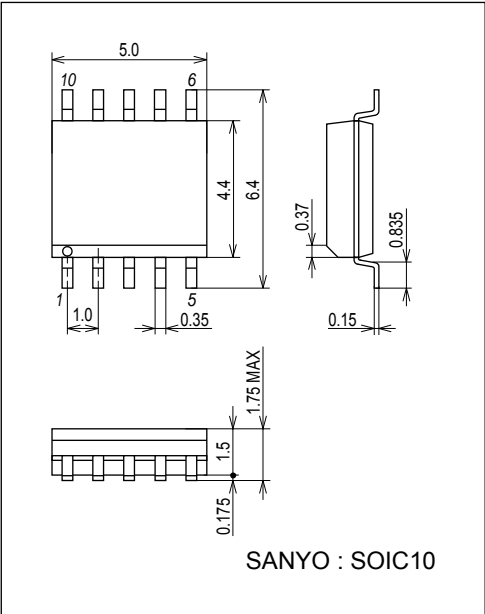
Operating Characteristics at Ta = 25°C, VCC = 3.0V, fC = 10.7MHz

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current drain	ICCO	No input	3.0	4.0	5.0	mA
Demodulator output	VO	100dBμV, 100% mod., fm = 1kHz	70	150	220	mV
Total harmonic distortion	THD	100dBμV, 100% mod., fm = 1kHz		0.5	0.8	%
Signal-to-noise ratio	S/N	100dBμV, 100% mod., fm = 1kHz	65	73		dB
3dB sensitivity	-3dBL.S	100dBμV, 100% mod., fm = 1kHz output reference, when the input is -3dB	19	28	37	dBμV
SD sensitivity	SDON	0% mod.	35	50	65	dBμV
IF counter buffer output	VIFBuff	100dBμV	90	130	170	mV

Package Dimensions

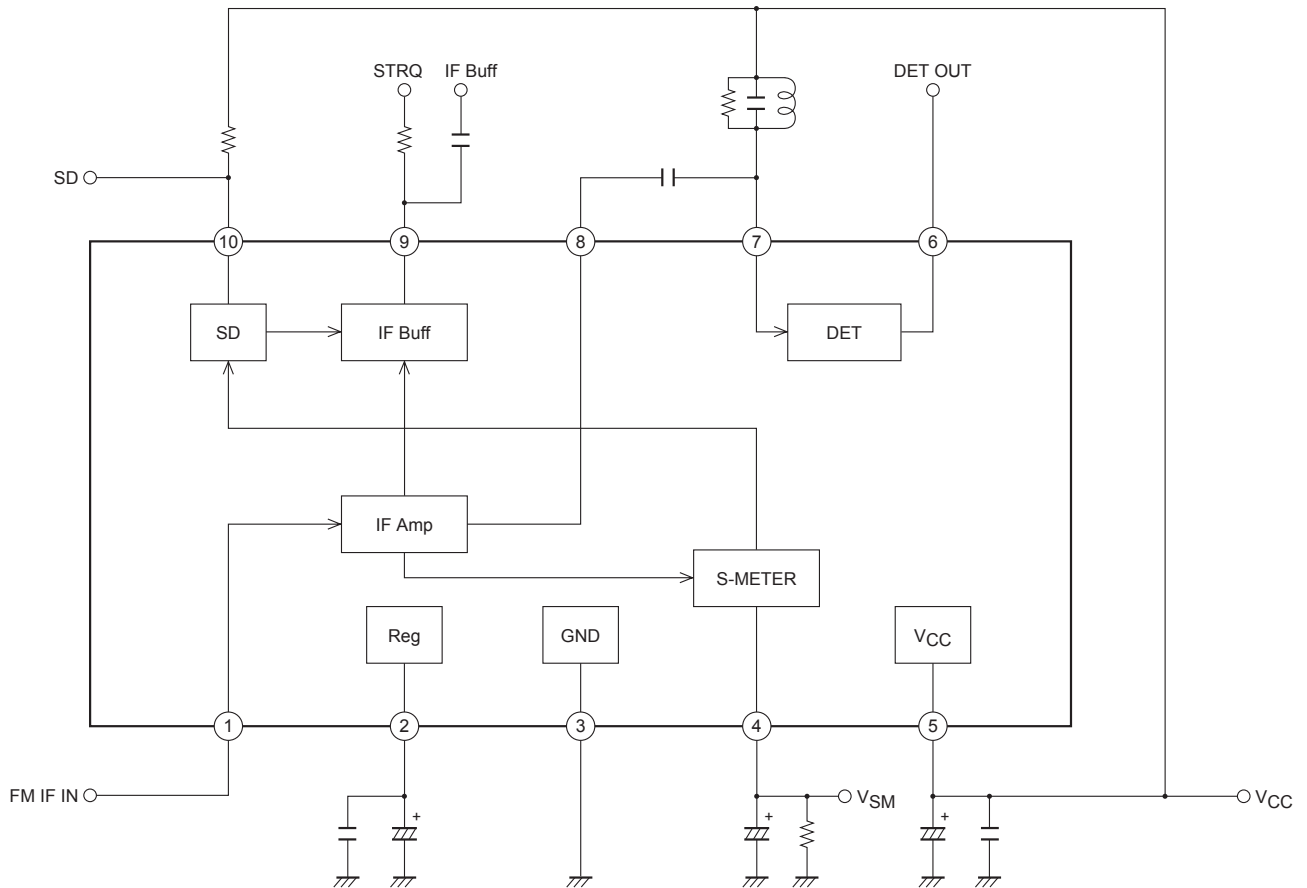
Unit : mm

3426

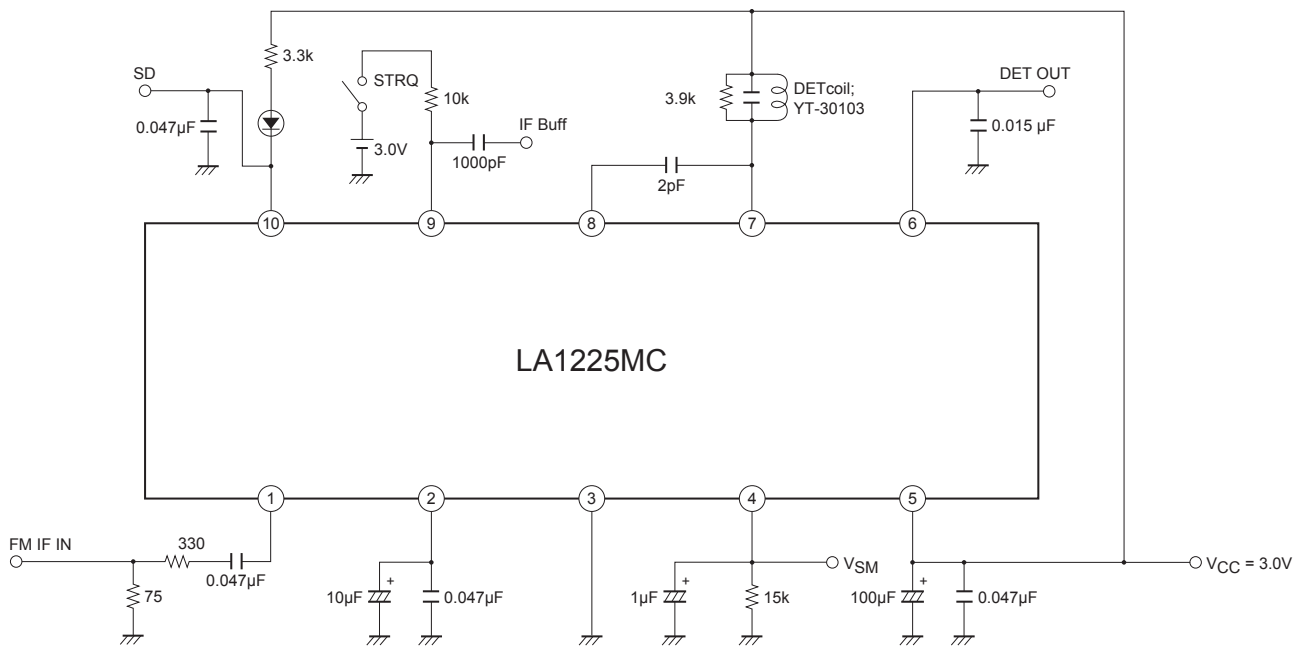


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Block Diagram and Test Circuit

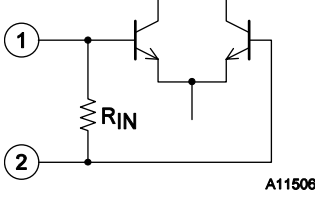
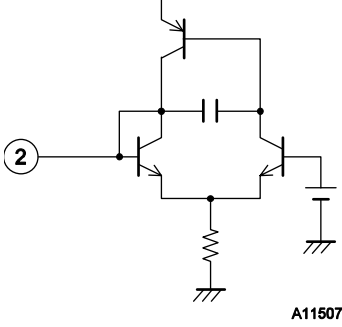
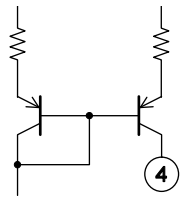
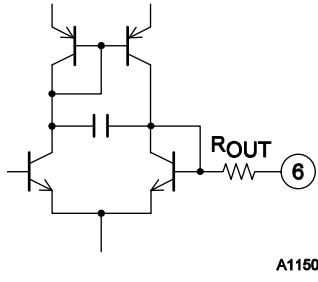
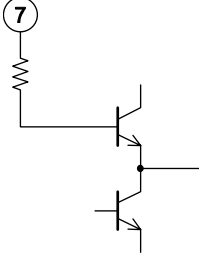


Sample Application Circuit



LA1225MC

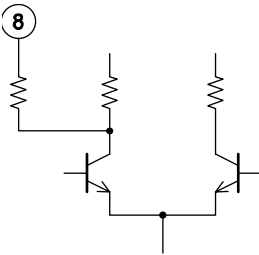
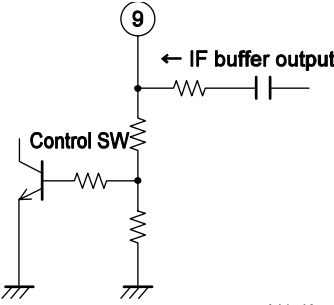
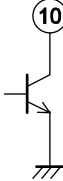
Pin Functions No-Signal Voltage at $V_{CC} = 3.0V$

Pin No.	Function	No-signal voltage (V)	Equivalent circuit	Notes
1	IF input	1.2		Input impedance $R_{IN} = 330\Omega$
2	Reg	1.2		$V_{reg} = 1.2V$
3	GND	0		
4	S-meter output	0.1		Open collector output. The SD sensitivity can be adjusted with an external resistor connected to this pin.
5	V_{CC}	3.0		
6	Demodulated output	1.5		Output impedance $R_{OUT} = 3k\Omega$
7	DET	3.0		The detector coil is inserted between pin 7 and pin 5 (V_{CC}).

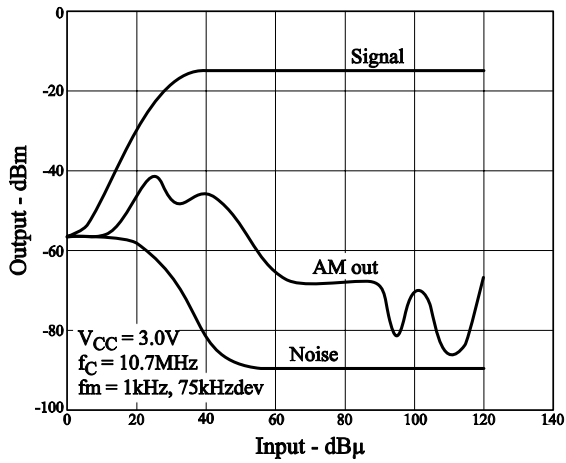
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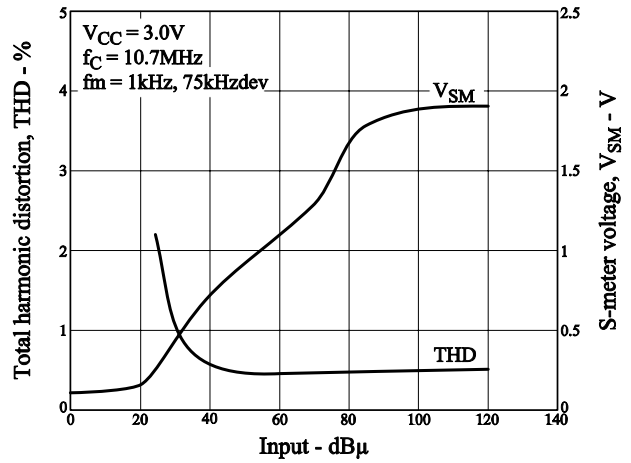
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Pin No.	Function	No-signal voltage (V)	Equivalent circuit	Notes
8	Limiter amplifier output	2.8	 A11511	Pin 8 and pin 7 (DET) are connected through a capacitor.
9	IF buffer (Also used for control SW)	0	 A11512	The IF buffer output is turned on when the voltage applied to the pin is the recommended 1.5V or higher.
10	SD	1.6	 A11513	This is an active-low output. This is an open-collector output and can directly drive an LED. ($I_{Cmax} = 20mA$)

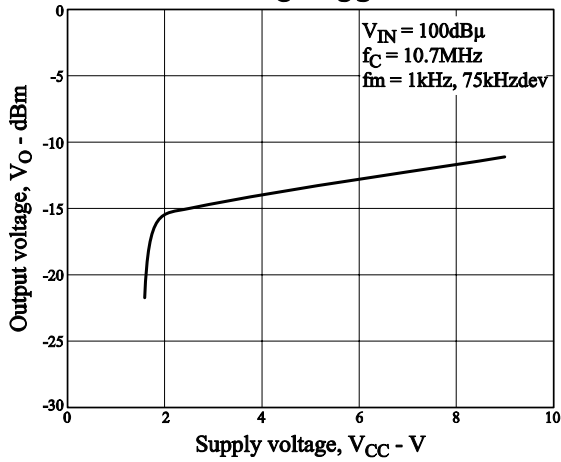
I/O Characteristics



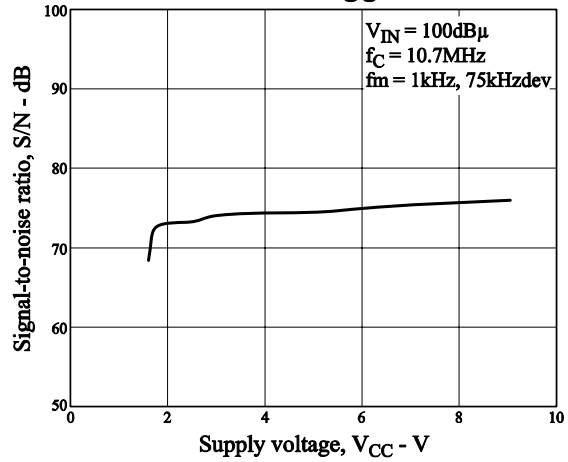
I/O Characteristics



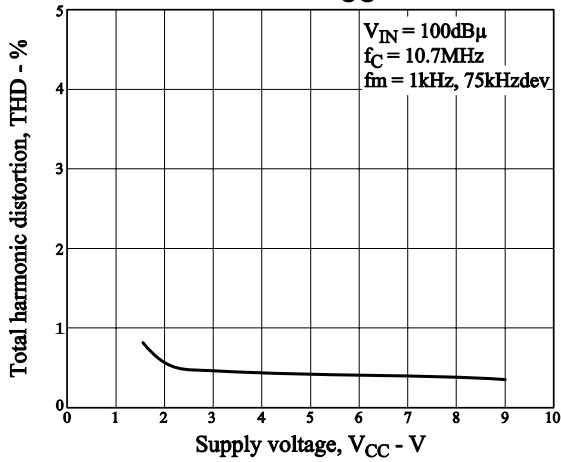
$V_O - V_{CC}$



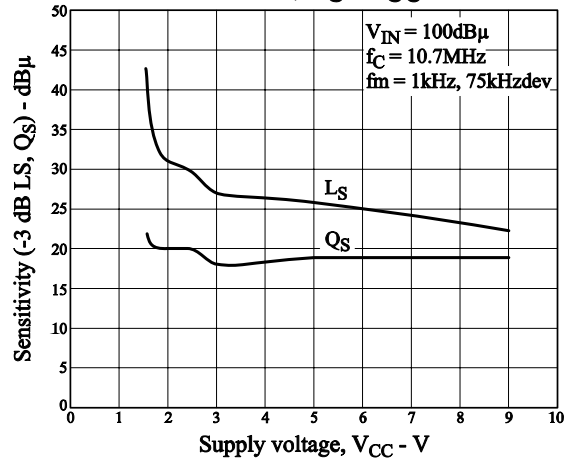
S/N - V_{CC}



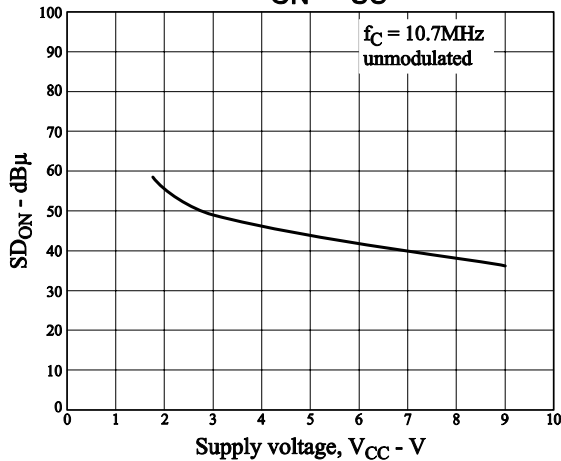
THD - V_{CC}



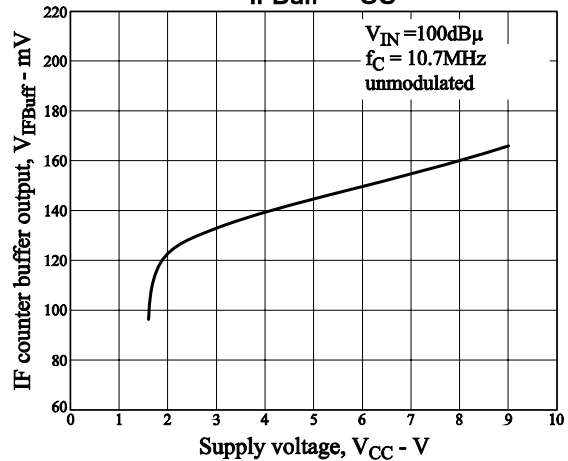
-3dBLS, $Q_S - V_{CC}$

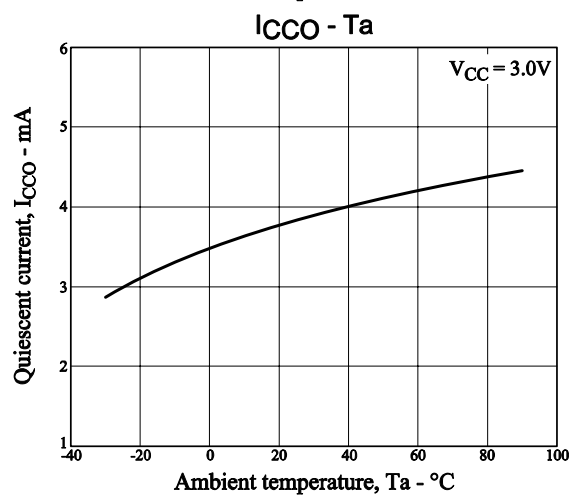
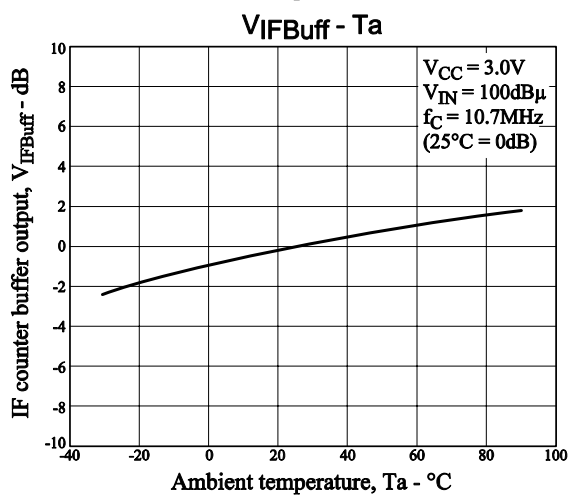
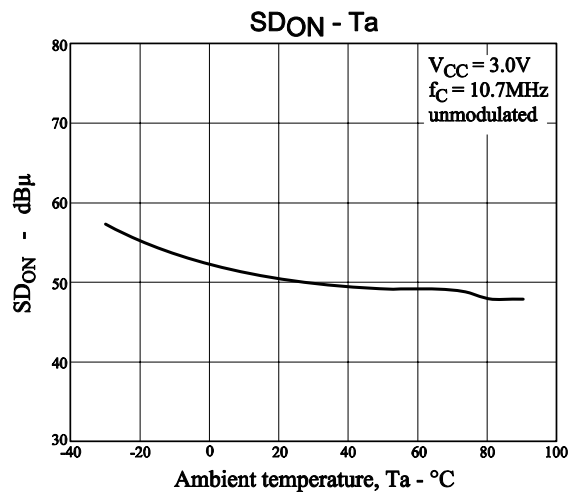
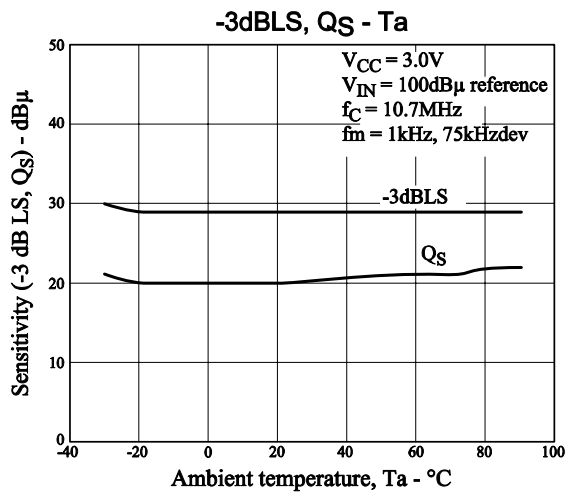
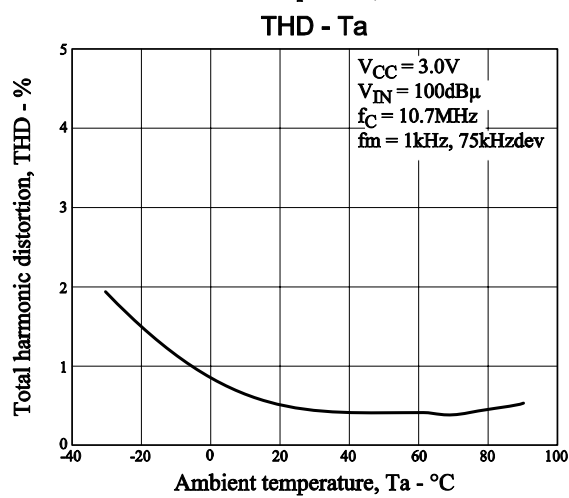
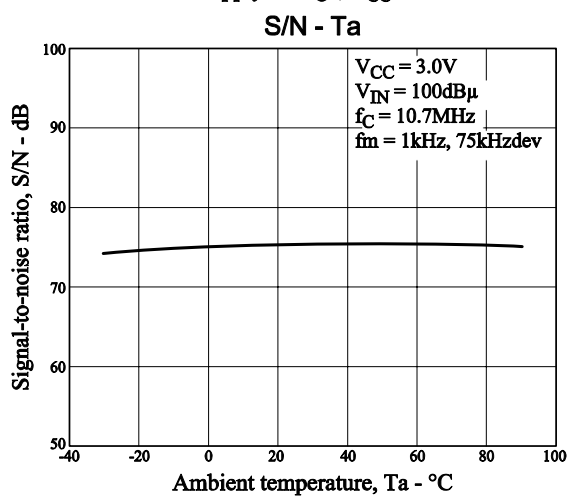
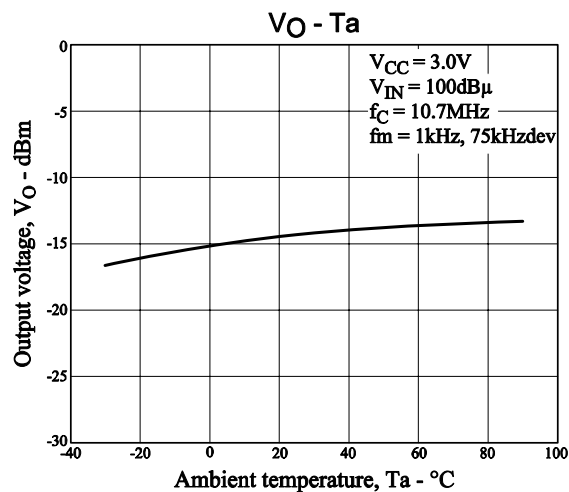
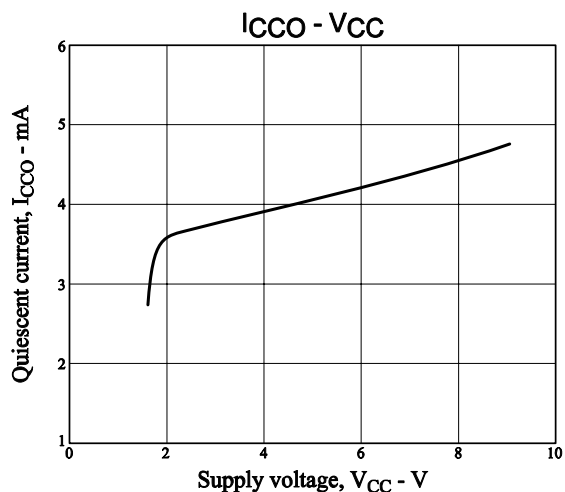


$SD_{ON} - V_{CC}$



$V_{IFBuff} - V_{CC}$





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