



SANYO Semiconductors

DATA SHEET

LA1225M — Monolithic Linear IC FM IF Detector IC

Overview

The LA1225M 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: MFP-10S

Functions

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

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V _{CC} max		9.0	V
Allowable power dissipation	Pd max	Ta ≤ 85°C	100	mW
Operating temperature	Topr		-20 to +85	°C
Storage temperature	Tstg		-55 to +150	°C

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V _{CC}		3.0	V
Operating supply voltage range	V _{CC} op		1.8 to 8.0	V

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LA1225M

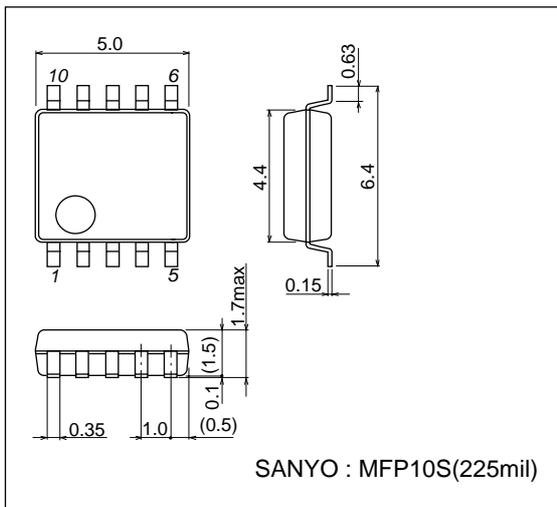
Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 3.0\text{V}$, $f_C = 10.7\text{MHz}$

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

Package Dimensions

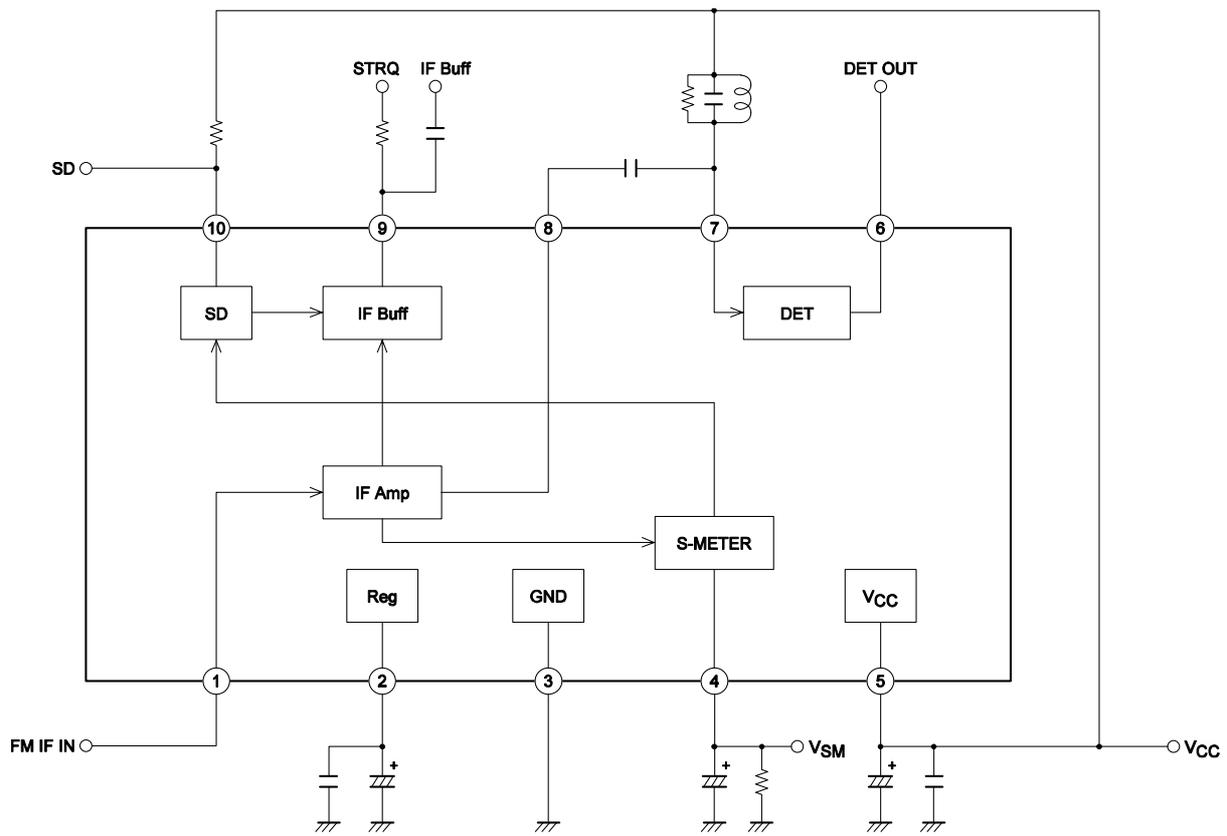
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3086B



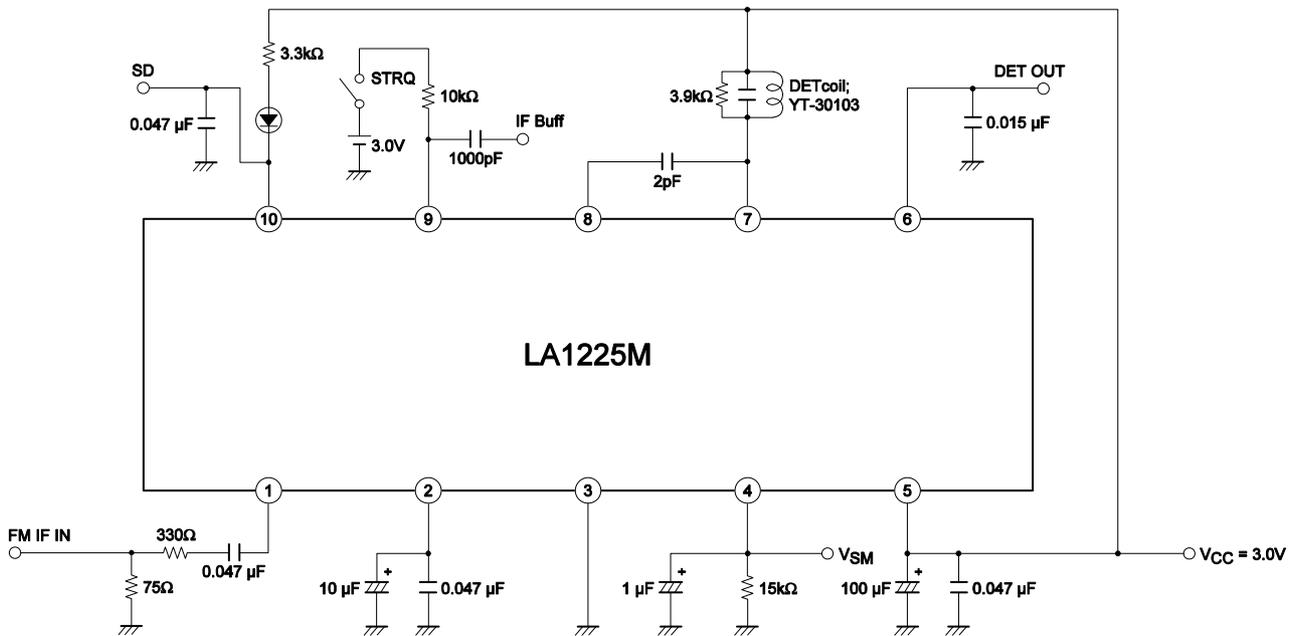
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Block Diagram and Test Circuit



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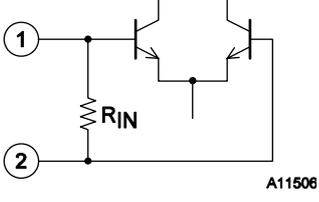
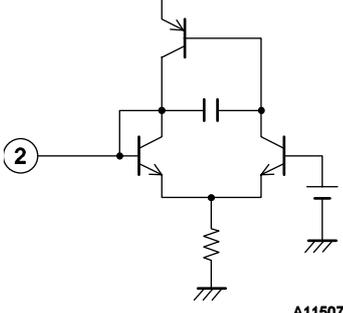
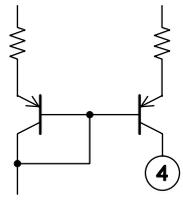
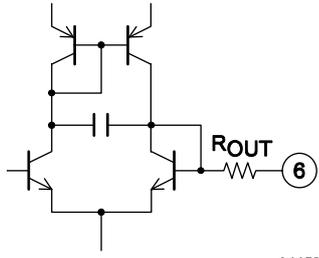
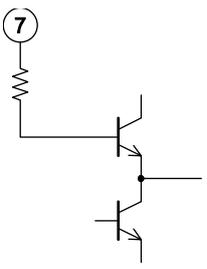
Sample Application Circuit



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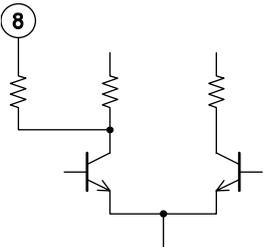
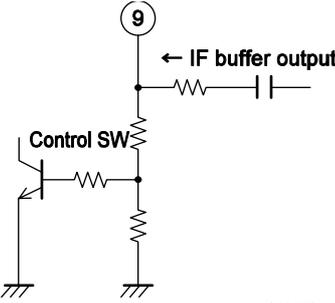
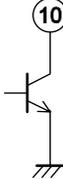
Pin Functions No-Signal Voltage at V_{CC} = 3.0V

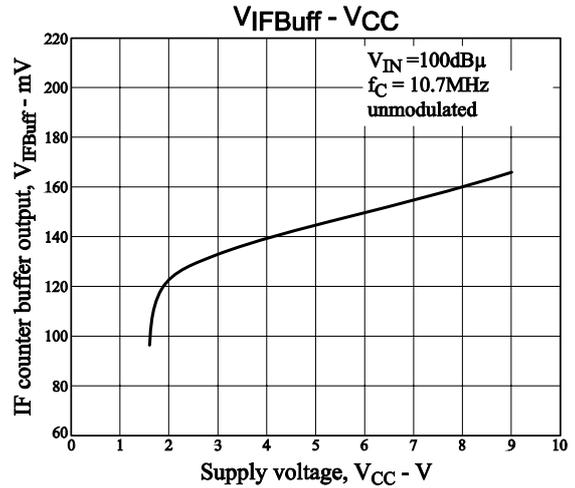
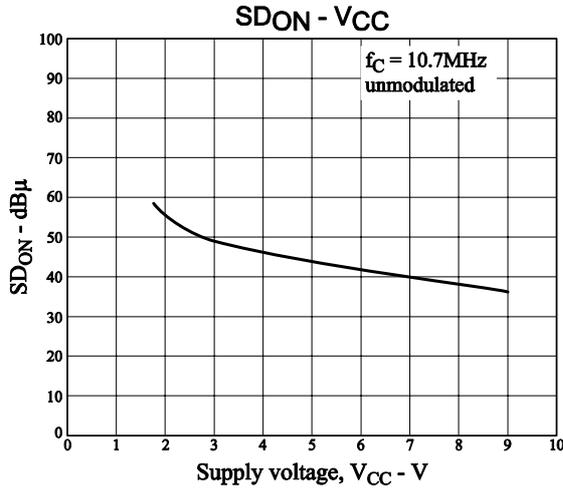
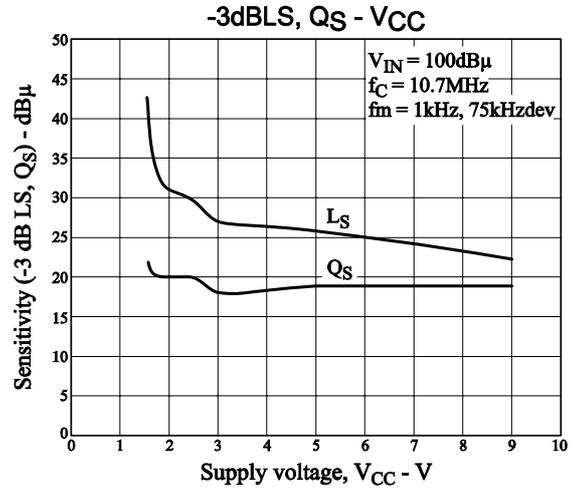
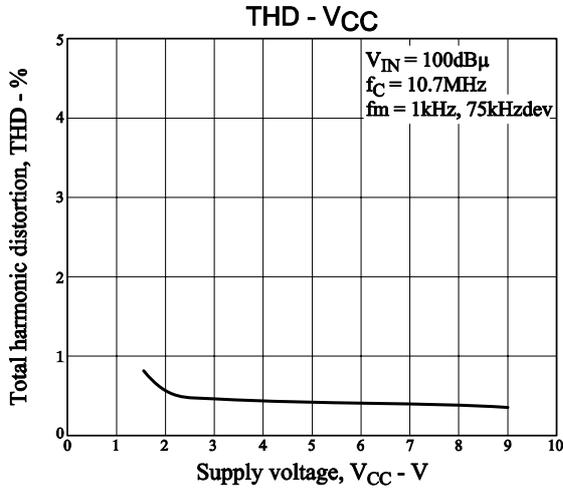
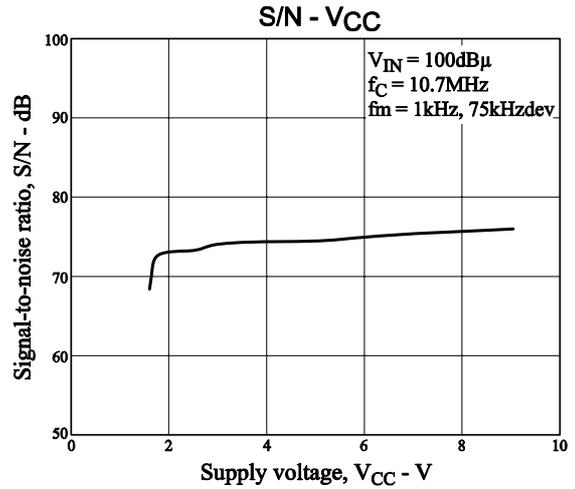
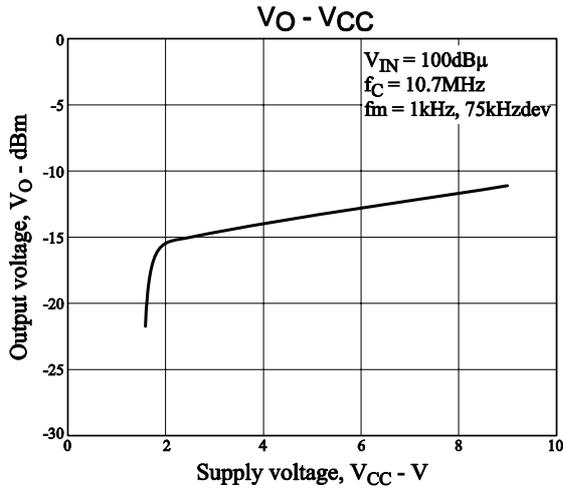
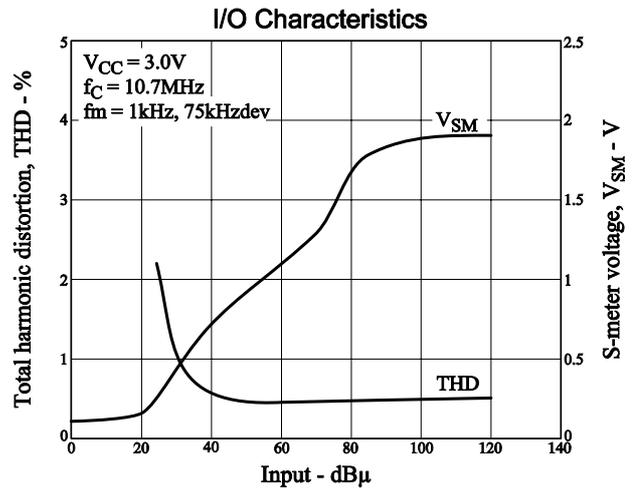
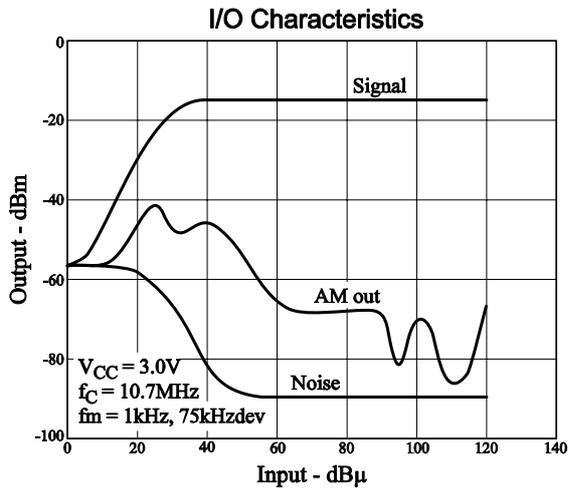
Pin No.	Function	No-signal voltage (V)	Equivalent circuit	Notes
1	IF input	1.2	 <p style="text-align: right;">A11506</p>	Input impedance $R_{IN} = 330\Omega$
2	Reg	1.2	 <p style="text-align: right;">A11507</p>	$V_{reg} = 1.2V$
3	GND	0		
4	S-meter output	0.1	 <p style="text-align: right;">A11508</p>	Open 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	 <p style="text-align: right;">A11509</p>	Output impedance $R_{OUT} = 3k\Omega$
7	DET	3.0	 <p style="text-align: right;">A11510</p>	The detector coil is inserted between pin 7 and pin 5 (V _{CC}).

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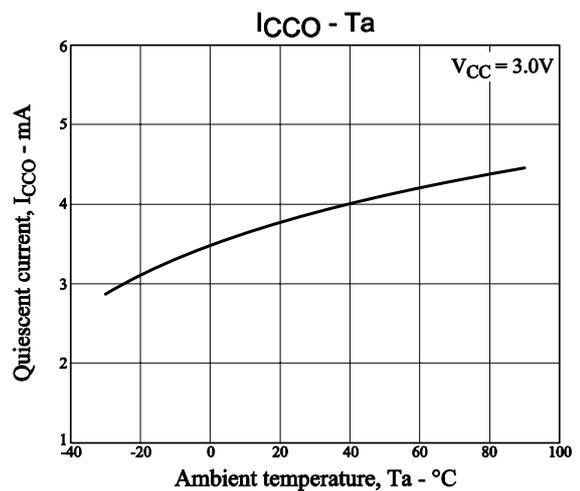
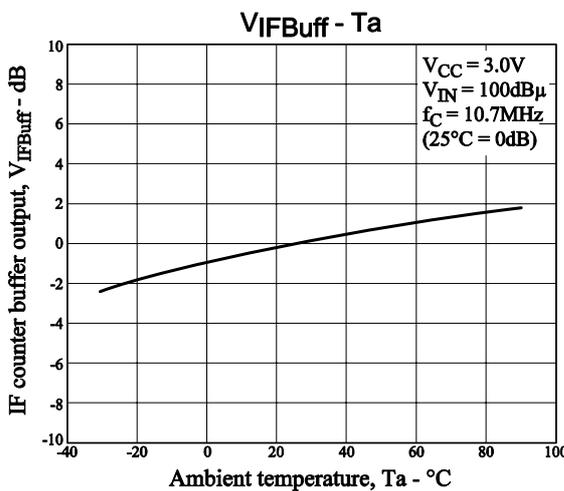
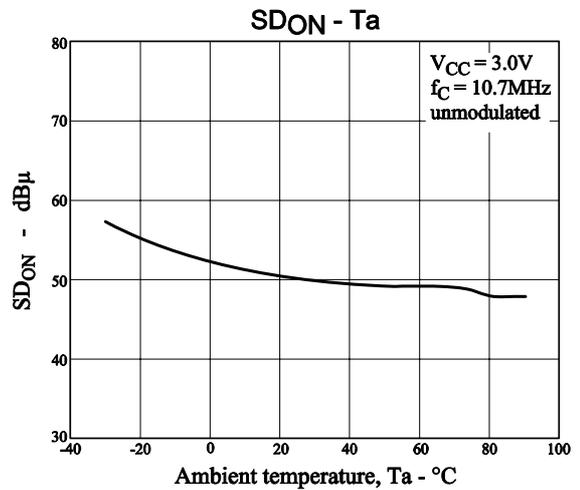
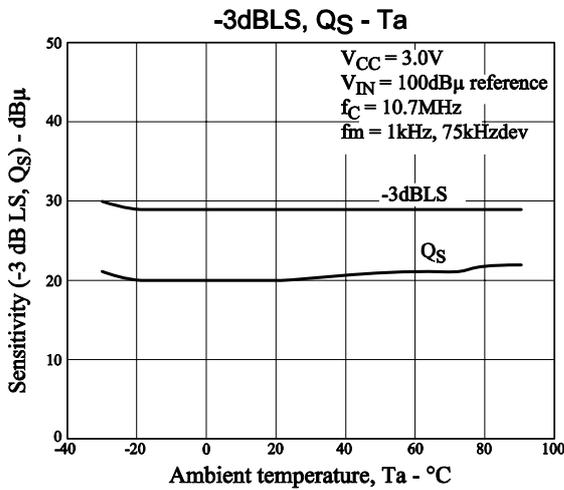
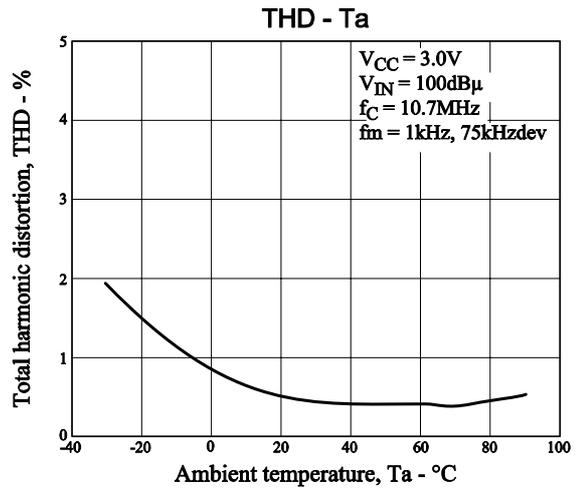
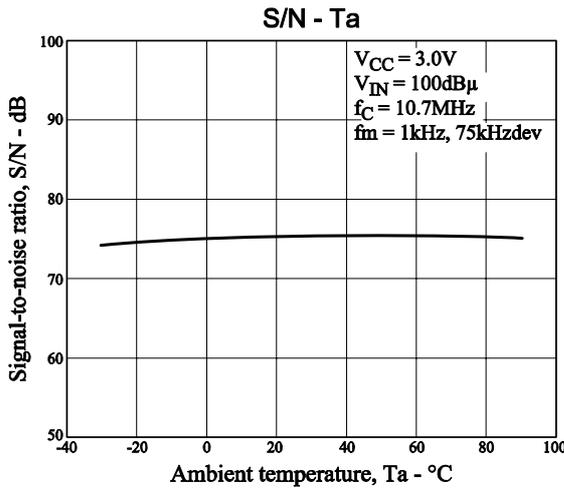
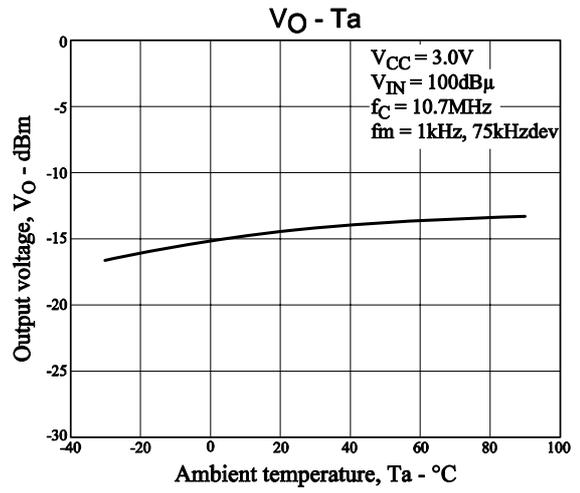
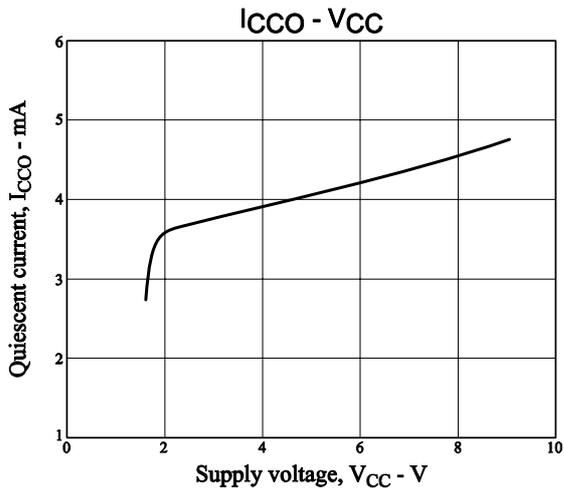
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Pin No.	Function	No-signal voltage (V)	Equivalent circuit	Notes
8	Limiter amplifier output	2.8	 <p style="text-align: right;">A11511</p>	Pin 8 and pin 7 (DET) are connected through a capacitor.
9	IF buffer (Also used for control SW)	0	 <p style="text-align: right;">A11512</p>	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	 <p style="text-align: right;">A11513</p>	This is an active-low output. This is an open-collector output and can directly drive an LED. ($I_{Cmax} = 20mA$)



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