Ordering number : ENN6017

Monolithic Linear IC

LA1225M

FM IF Detector IC

Functions

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

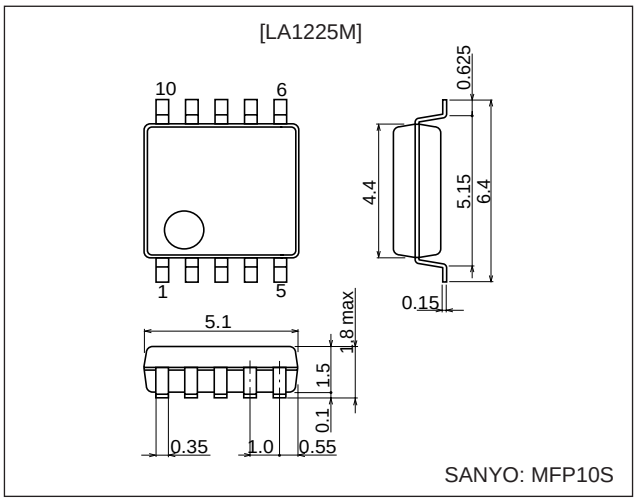
Features

- Low-voltage operation (1.8 V 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

Package Dimensions

unit: mm

3086A-MFP10S



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 ≤ 80°C	100	mW
Operating temperature	Topr		–20 to +80	°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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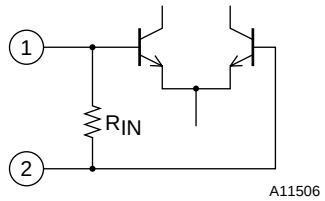
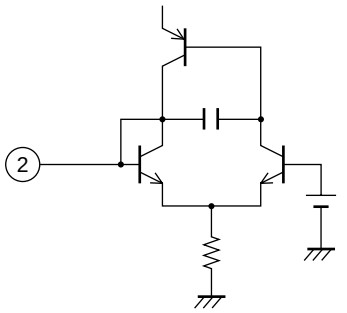
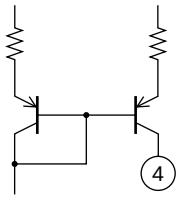
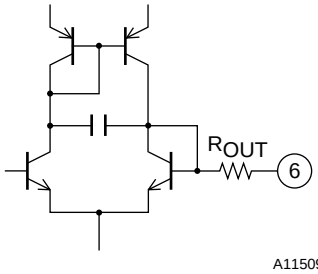
Operating Characteristics at Ta = 25°C, V_{CC} = 3.0 V, fc = 10.7 MHz

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	100 dBμ, 100% mod., fm = 1 kHz	70	150	220	mV
Total harmonic distortion	THD	100 dBμ, 100% mod., fm = 1 kHz		0.5	0.8	%
Signal-to-noise ratio	S/N	100 dBμ, 100% mod., fm = 1 kHz	65	73		dB
3 dB sensitivity	–3 dBL.S	100 dBμ, 100% mod., fm = 1 kHz output reference, when the input is –3 dB	19	28	37	dBμ
SD sensitivity	SD_{ON}	0% mod.	35	50	65	dBμ
IF counter buffer output	V_{IFBuff}	100 dBμ	90	130	170	mV

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

Pin No.	Function	Notes	No-signal voltage (V)	Equivalent circuit
1	IF input	Input impedance R_{IN} = 330 Ω	1.2	
2	Reg	Vreg = 1.2 V	1.2	
3	GND		0	
4	S-meter output	Open collector output The SD sensitivity can be adjusted with an external resistor connected to this pin.	0.1	
5	V_{CC}		3.0	
6	Demodulated output	Output impedance R_{OUT} = 3 kΩ	1.5	

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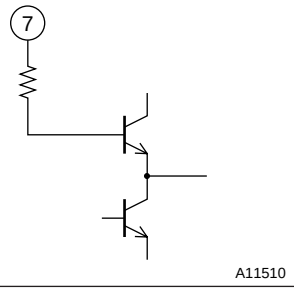
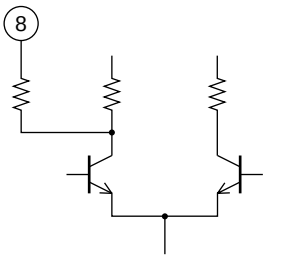
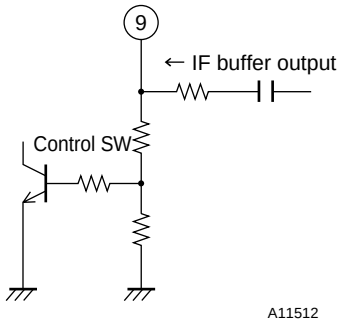
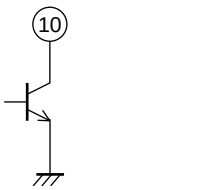
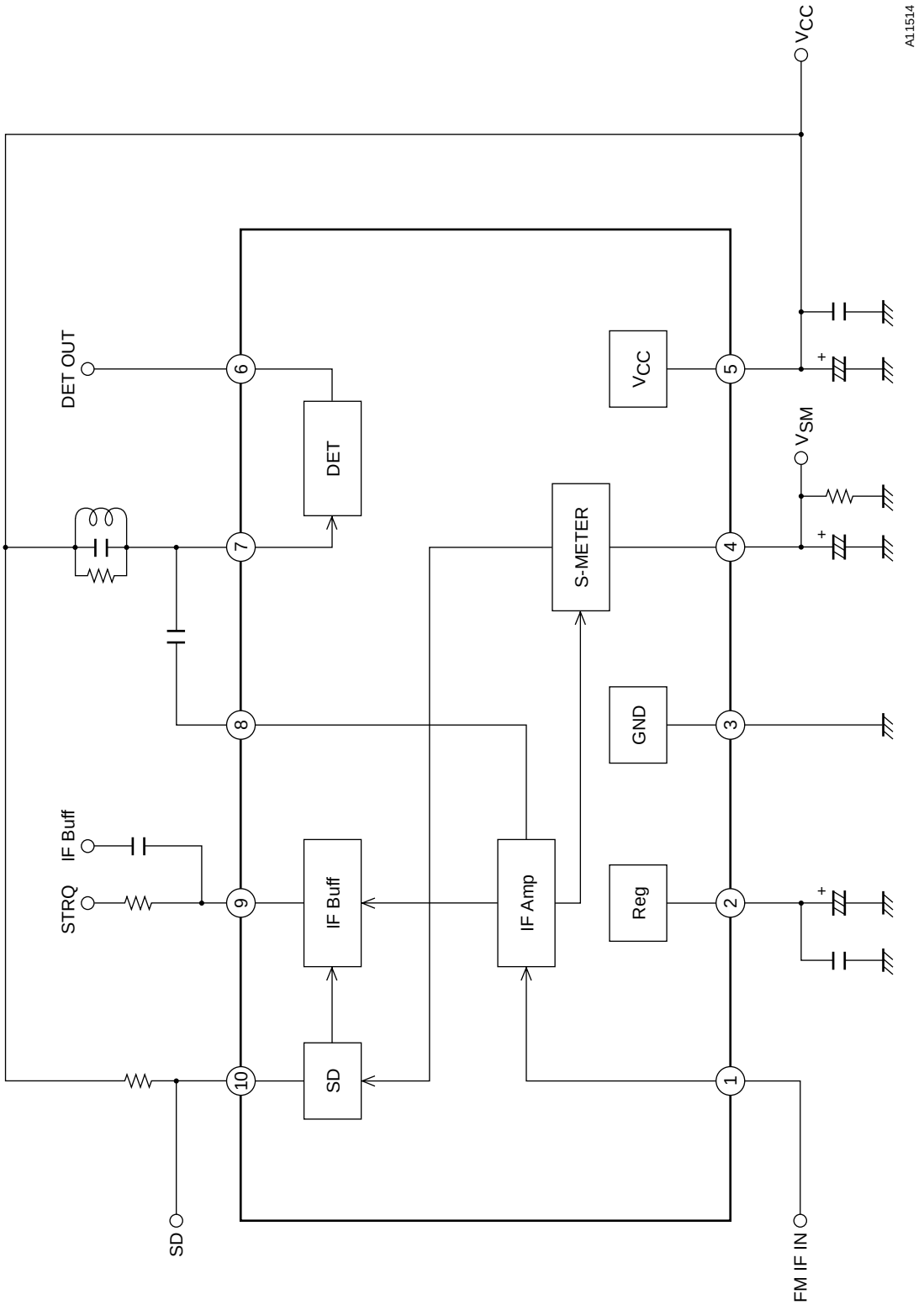
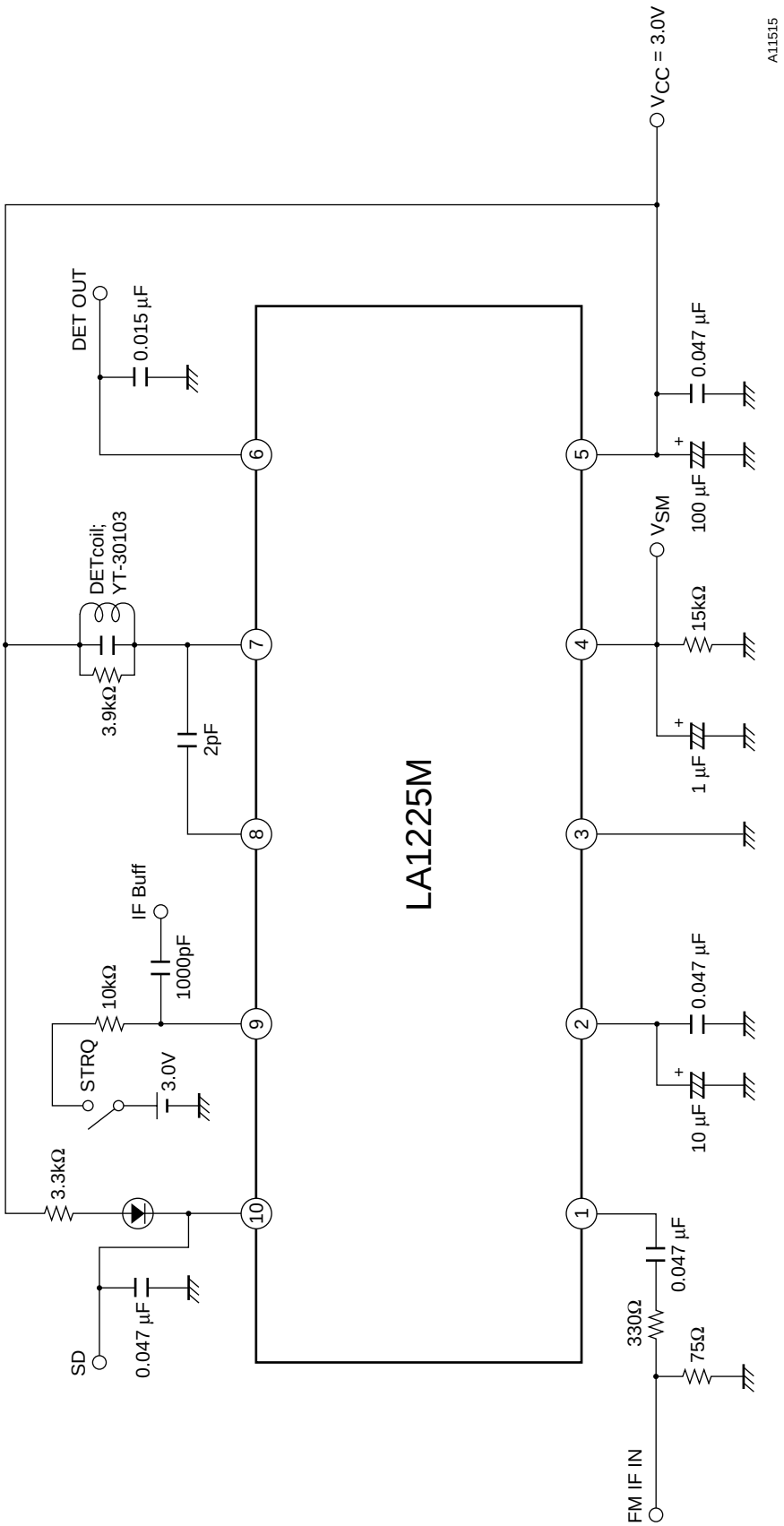
Pin No.	Function	Notes	No-signal voltage (V)	Equivalent circuit
7	DET	The detector coil is inserted between pin 7 and pin 5 (V_{CC}).	3.0	
8	Limiter amplifier output	Pin 8 and pin 7 (DET) are connected through a capacitor.	2.8	
9	IF buffer (Also used for control SW)	The IF buffer output is turned on when the voltage applied to the pin is the recommended 1.5 V or higher.	0	
10	SD	This is an active-low output. This is an open-collector output and can directly drive an LED. ($I_C$max = 20 mA)	1.6	

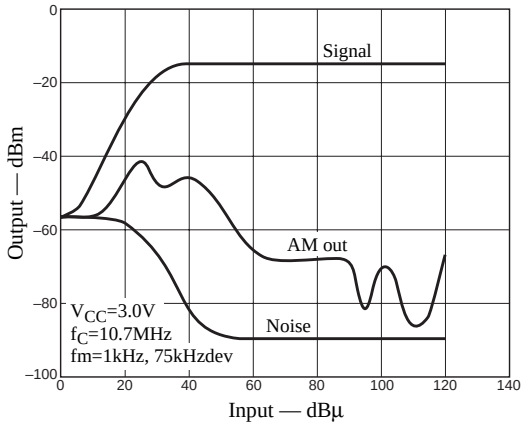
Block Diagram



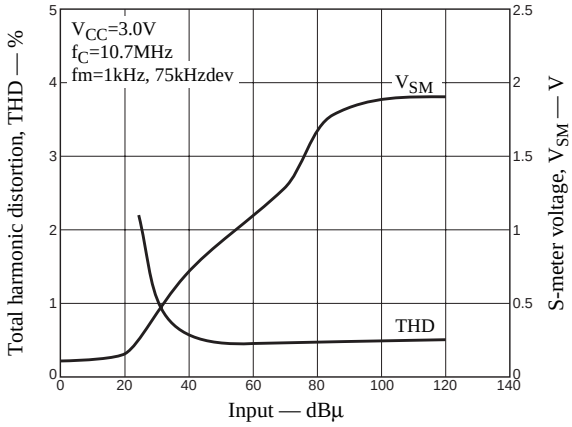
Sample Application Circuit



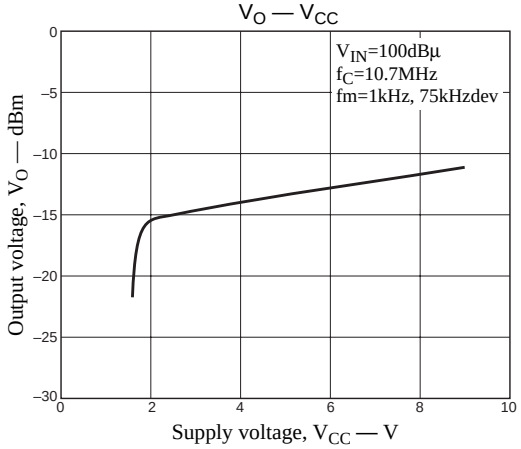
I/O Characteristics



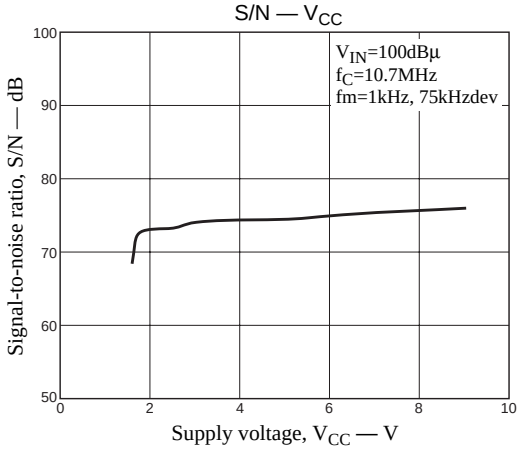
I/O Characteristics



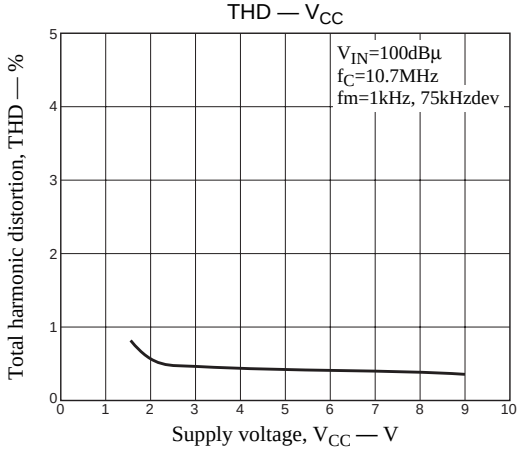
V_O — V_{CC}



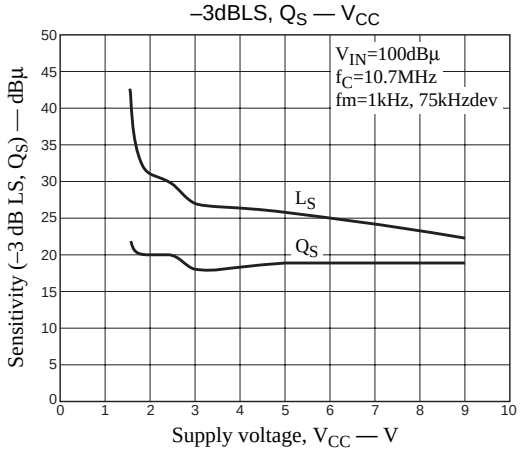
S/N — V_{CC}



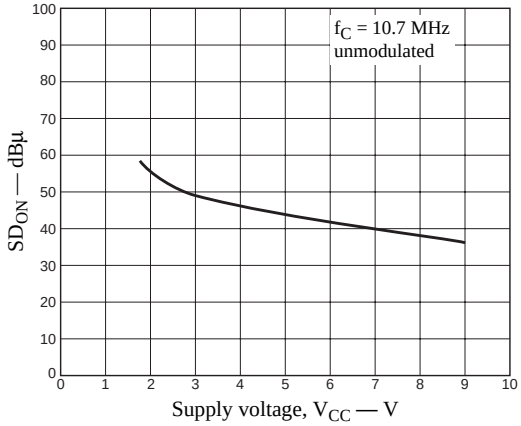
THD — V_{CC}



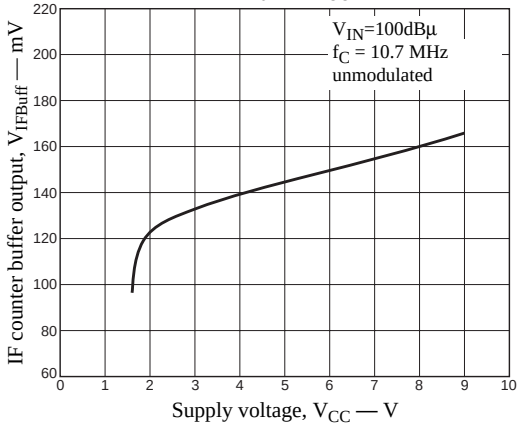
–3dBLS, Q_S — V_{CC}



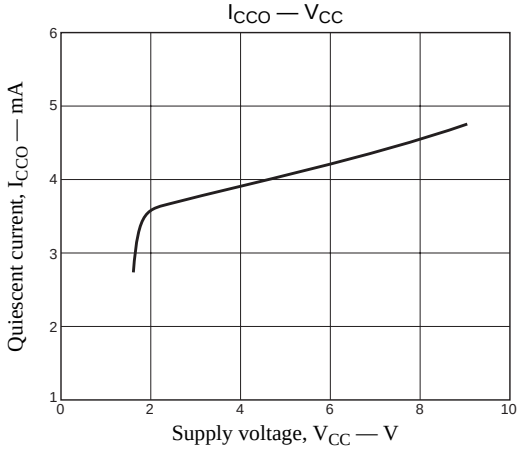
SD_{ON} — V_{CC}



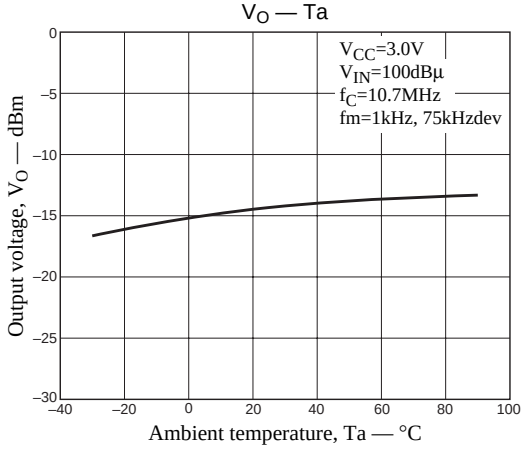
V_{IFBuff} — V_{CC}



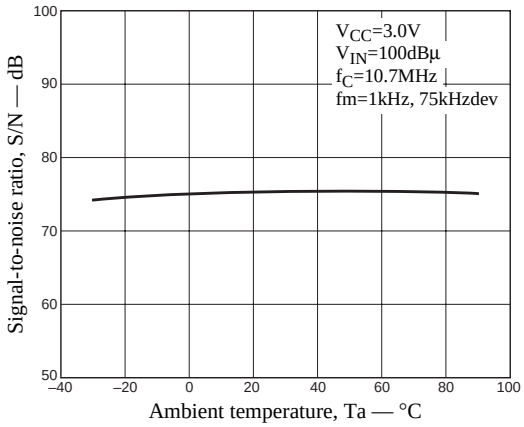
I_{CCO} — V_{CC}



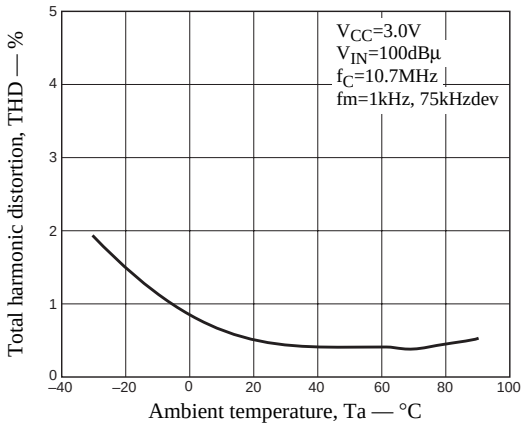
V_O — Ta



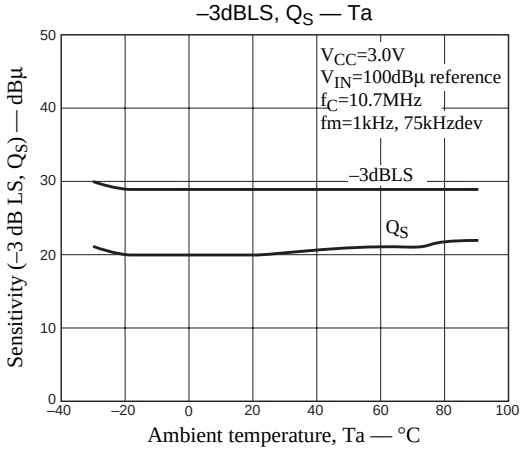
S/N — Ta



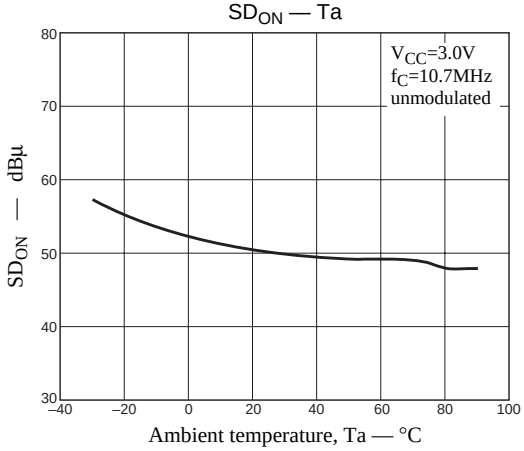
THD — Ta



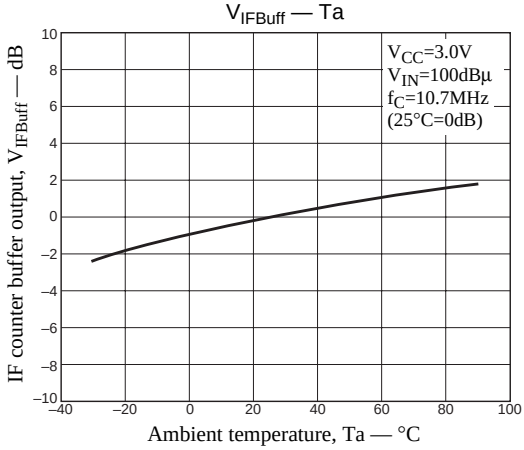
–3dBLS, Q_S — Ta



SD_{ON} — Ta



V_{IFBuff} — Ta



I_{CCO} — Ta