



# LA1225M

## FM IF Detector IC

### Functions

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

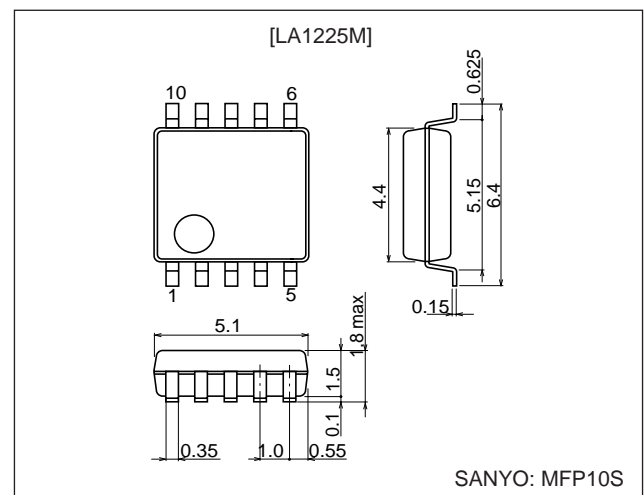
### Features

- 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	$V_{CC \text{ max}}$		9.0	V
Allowable power dissipation	$P_{d \text{ max}}$	$T_a \leq 80^\circ\text{C}$	100	mW
Operating temperature	$T_{opr}$		-20 to +80	°C
Storage temperature	$T_{stg}$		-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	$V_{CC \text{ op}}$		1.8 to 8.0	V

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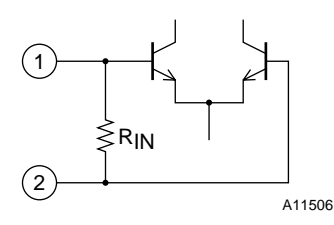
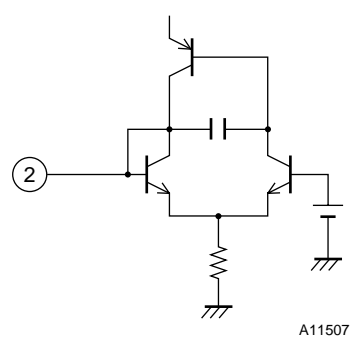
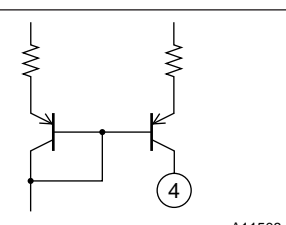
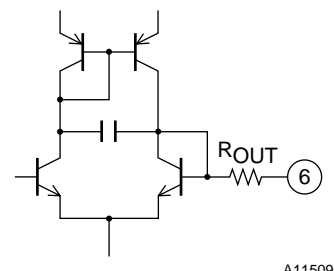
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

## 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	$V_O$	100 dB $\mu$ , 100% mod., $f_m = 1\text{ kHz}$	70	150	220	mV
Total harmonic distortion	THD	100 dB $\mu$ , 100% mod., $f_m = 1\text{ kHz}$		0.5	0.8	%
Signal-to-noise ratio	S/N	100 dB $\mu$ , 100% mod., $f_m = 1\text{ kHz}$	65	73		dB
3 dB sensitivity	-3 dBLS	100 dB $\mu$ , 100% mod., $f_m = 1\text{ kHz}$ output reference, when the input is -3 dB	19	28	37	dB $\mu$
SD sensitivity	SDON	0% mod.	35	50	65	dB $\mu$
IF counter buffer output	$V_{IFBuff}$	100 dB $\mu$	90	130	170	mV

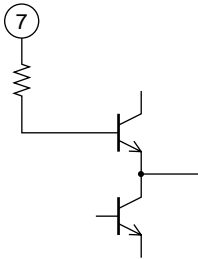
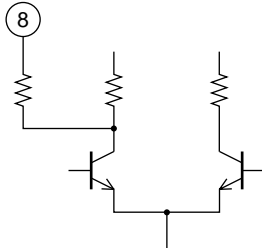
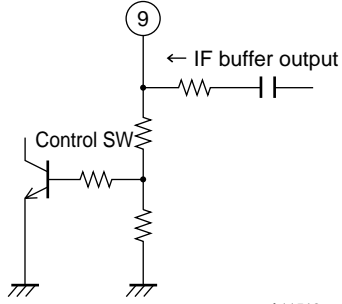
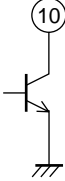
### Pin Functions and No-Signal Voltage at $V_{CC} = 3.0\text{ V}$

Pin No.	Function	Notes	No-signal voltage (V)	Equivalent circuit
1	IF input	Input impedance $R_{IN} = 330\ \Omega$	1.2	 <p style="text-align: right;">A11506</p>
2	Reg	$V_{reg} = 1.2\text{ V}$	1.2	 <p style="text-align: right;">A11507</p>
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	 <p style="text-align: right;">A11508</p>
5	$V_{CC}$		3.0	
6	Demodulated output	Output impedance $R_{OUT} = 3\text{ k}\Omega$	1.5	 <p style="text-align: right;">A11509</p>

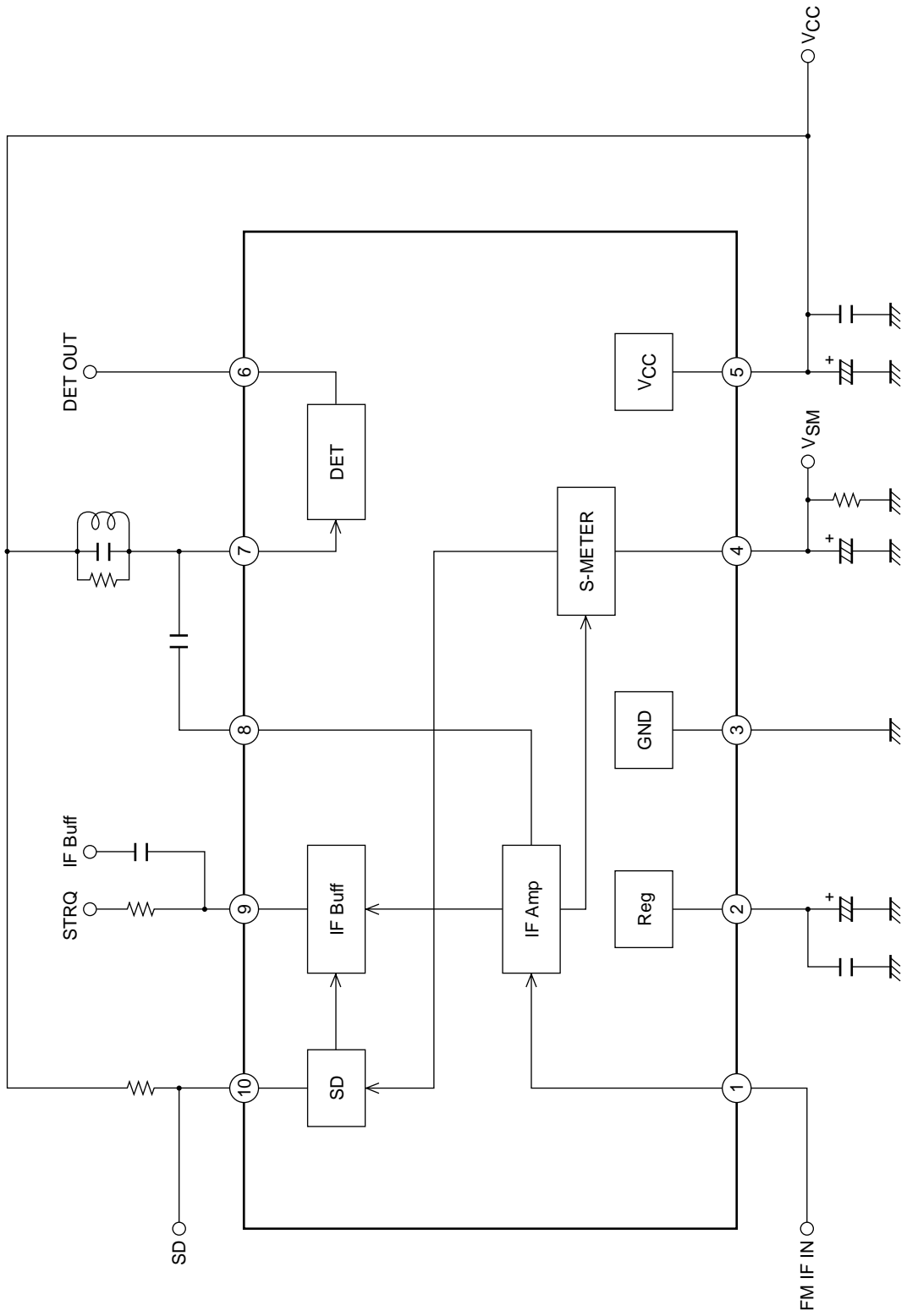
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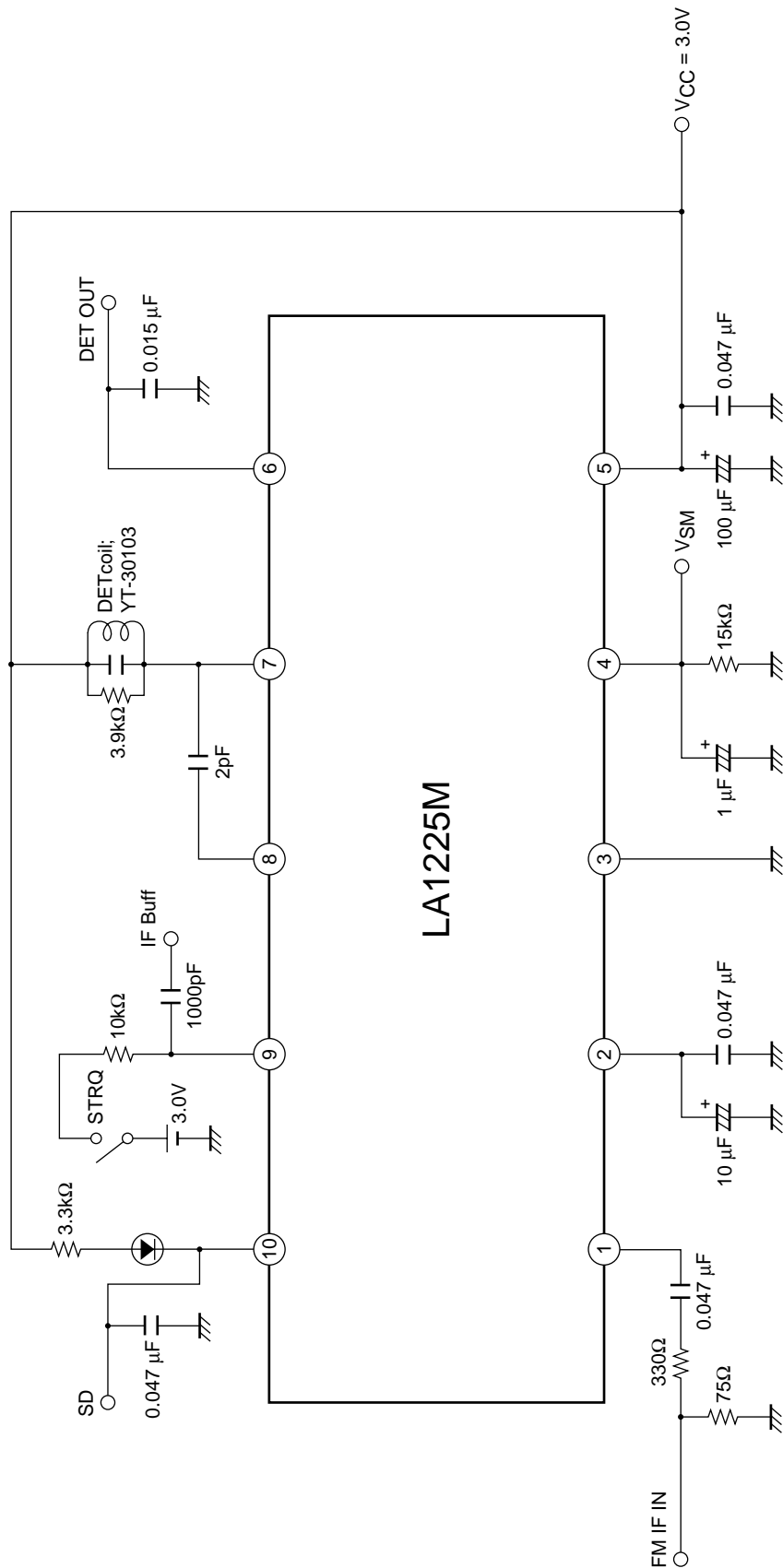
Pin No.	Function	Notes	No-signal voltage (V)	Equivalent circuit
7	DET	The detector coil is inserted between pin 7 and pin 5 ( $V_{CC}$ ).	3.0	 <p style="text-align: right;">A11510</p>
8	Limiter amplifier output	Pin 8 and pin 7 (DET) are connected through a capacitor.	2.8	 <p style="text-align: right;">A11511</p>
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	 <p style="text-align: right;">A11512</p>
10	SD	This is an active-low output. This is an open-collector output and can directly drive an LED. ( $I_{Cmax} = 20 \text{ mA}$ )	1.6	 <p style="text-align: right;">A11513</p>

Block Diagram

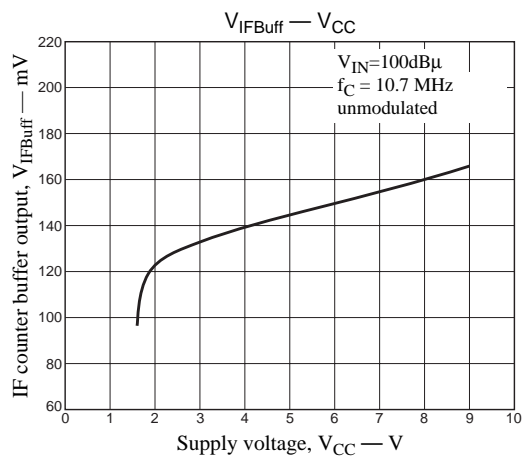
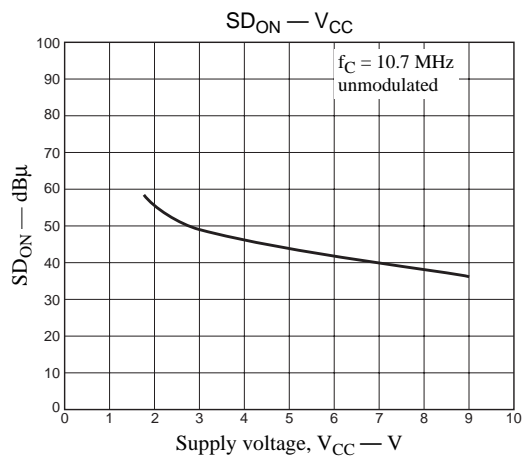
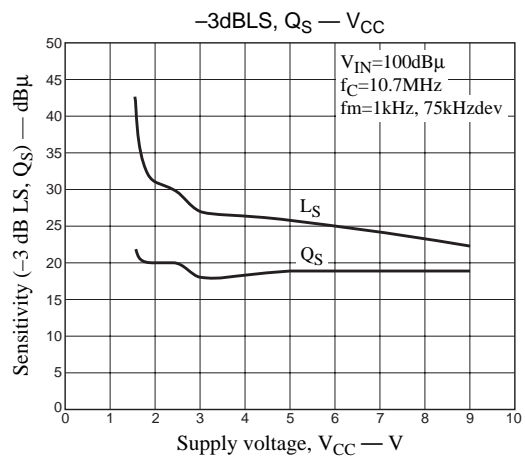
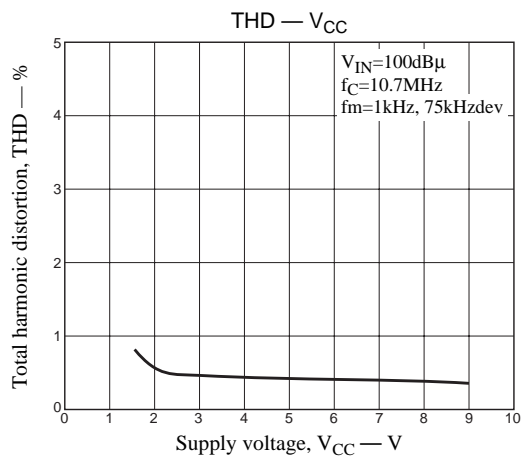
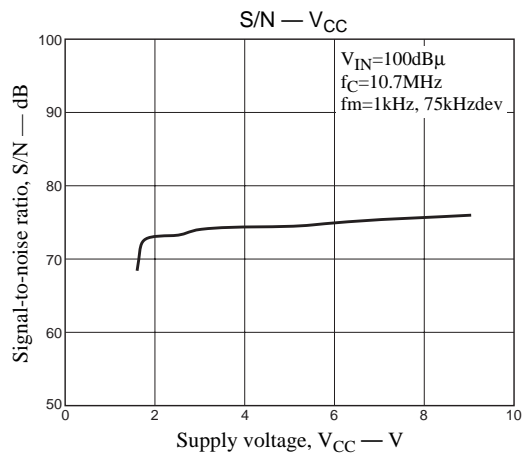
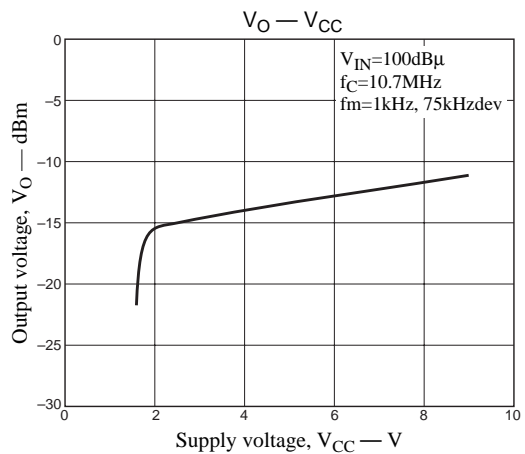
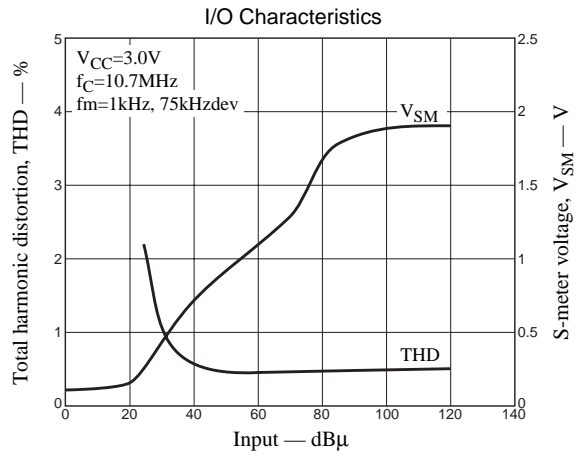
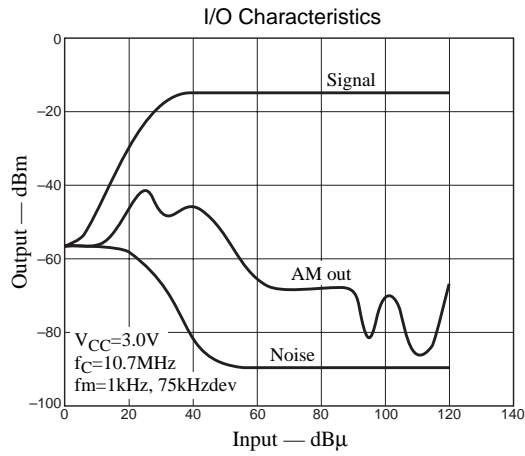


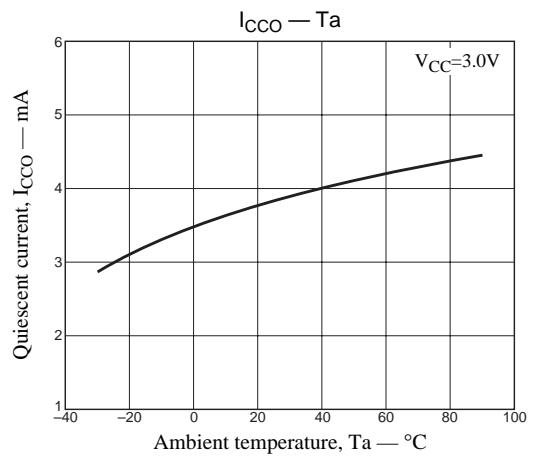
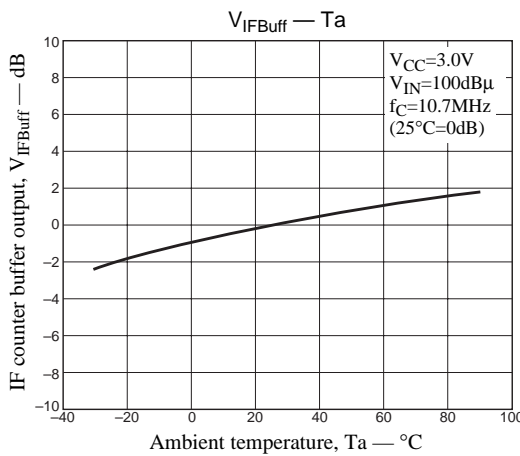
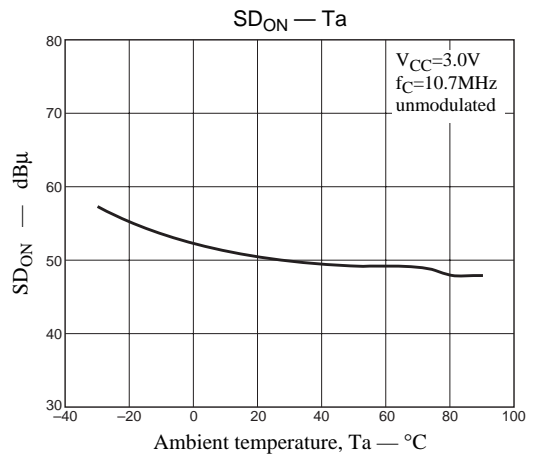
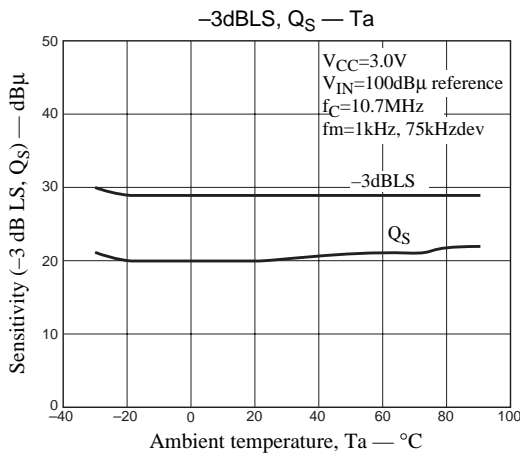
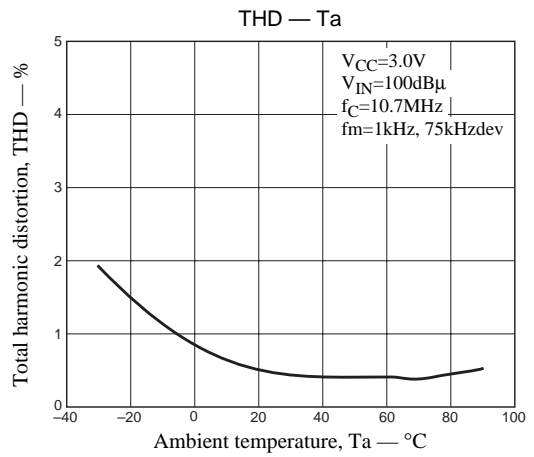
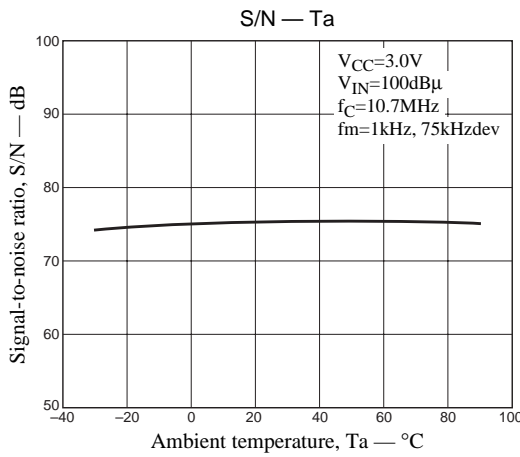
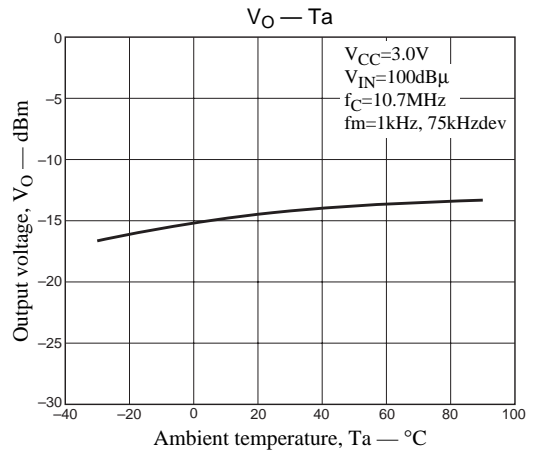
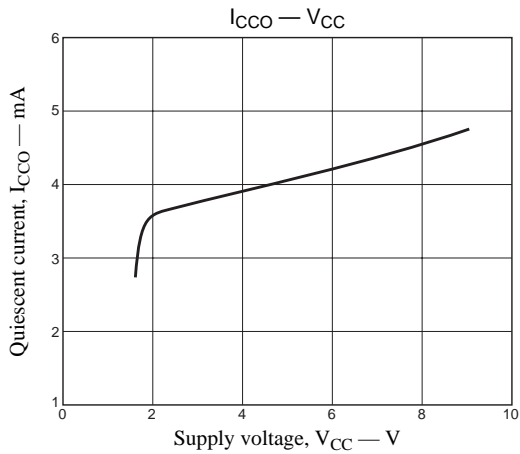
A11514

Sample Application Circuit



A11515





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