



**ULA1235**

Preliminary

**LINEAR INTEGRATED CIRCUIT**

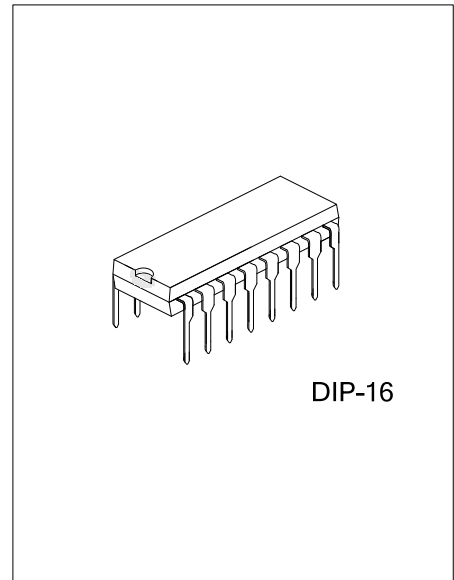
**FM IF SYSTEM APPLICATIONS**

■ **DESCRIPTION**

The UTC **ULA1235** is a high integrated IC developed for use in high S/N(S/N =88dB), low distortion (distortion factor=0.015%) FM IF system applications. And this IC has almost all functions required for FM tuner IF stage.

■ **FEATURES**

- \* IF amplifier, limiter.
- \* Tuning meter null circuit. functions
- \* AF preamplifier.
- \* Signal intensity muting drive output.
- \* Quadrature detection
- \* Detuning muting drive output.
- \* AF signal muting circuit.
- \* IF amplifier stop circuit.
- \* AFC, tuning meter drive output.
- \* Signal meter drive output.

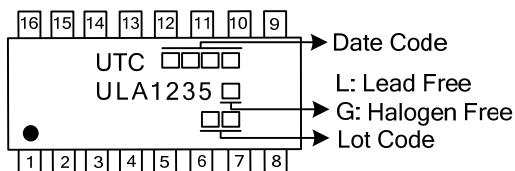


■ **ORDERING INFORMATION**

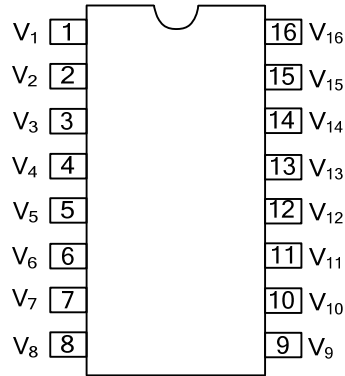
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULA1235L-D16-T	ULA1235G-D16-T	DIP-16	Tube

<p>ULA1235L-D16-T</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) T: Tube (2) D16: DIP-16 (3) L: Lead Free, G: Halogen Free and Lead Free</p>
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■ **MARKING**



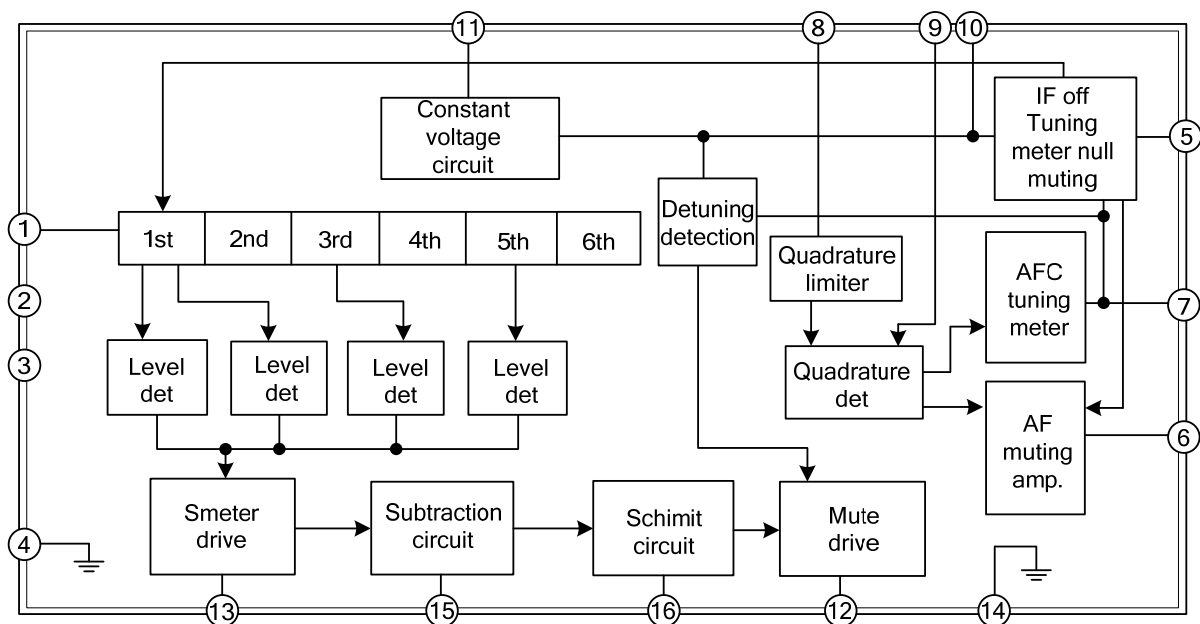
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V1	IF input
2	V2	IF input
3	V3	IF input
4	V4	GND
5	V5	Mute attenuation control
6	V6	AF output
7	V7	AFC output
8	V8	IF output
9	V9	Quadrature detection input
10	V10	Voltage regulator output
11	V11	Power supply
12	V12	Muting driving output
13	V13	Signal meter driving output
14	V14	GND
15	V15	muting sensitivity control
16	V16	muting hysteresis width control

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage (Pin 11)	$V_{CC}$	16	V
Input Voltage (Pin 1 to 2)	$V_{IN}$	$\pm 1$	V
Supply Current (Pin 11)	$I_{CC}$	40	mA
Flow-In Current (Pin 5)	$I_5$	3	mA
Flow-Out Current	Pin 10	$I_{10}$	2
		$I_{13}$	2
Allowable Power Dissipation	$P_D$	650	mW
Operating Temperature	$T_{OPR}$	-20~+70	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-40~+125	$^{\circ}\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.  
 Absolute maximum ratings are stress ratings only and functional device operation is not implied.

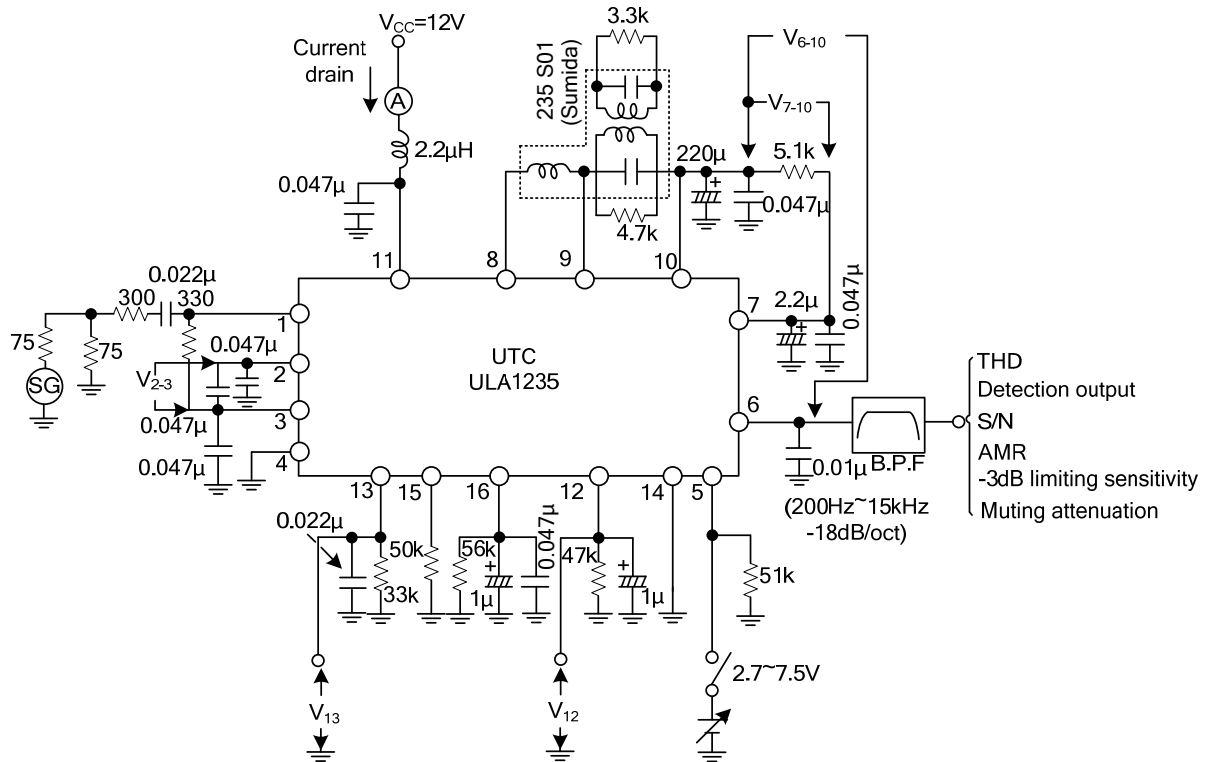
■ RECOMMENDED OPERATING CONDITIONS ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Recommended Supply Voltage	$V_{CC}$	10~14	V

■ ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$ ,  $V_{CC}=12\text{V}$ ,  $f=10.7\text{MHz}$ )

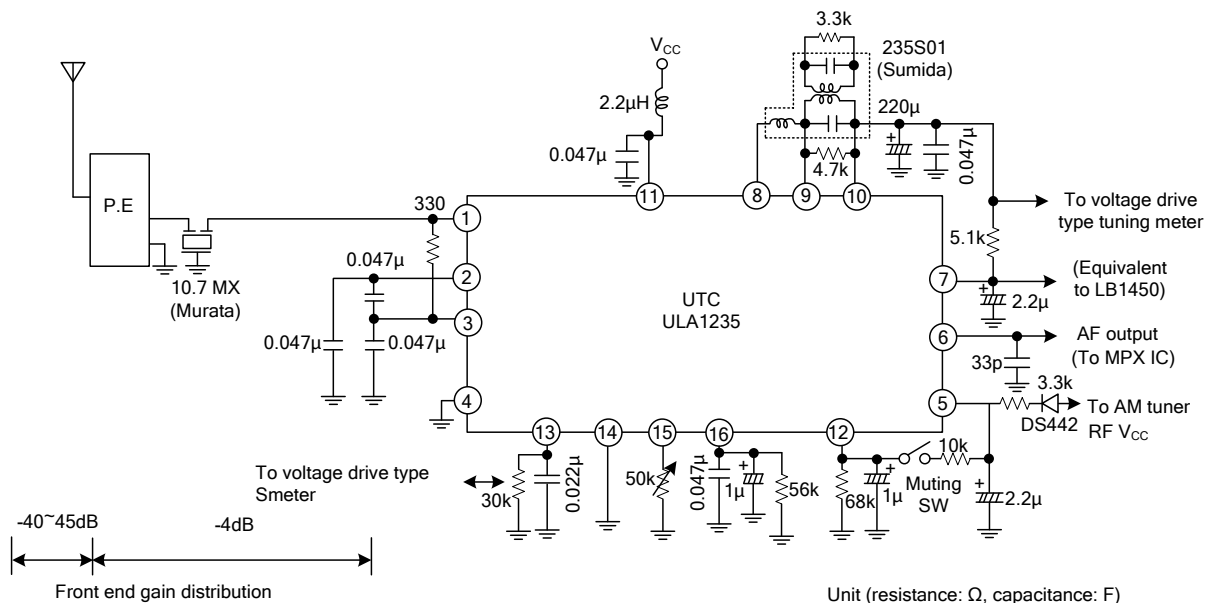
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent Current	$I_{CCO}$	Quiescent		21	30	mA
Current Drain	$I_{CC}$	$V_{IN}=100\text{dB}\mu$		22	31	mA
Detection Output	$V_O$	$V_{IN}=100\text{dB}\mu$ , 400Hz, 100% mod.	310	430	590	mVrms
S/N		$V_{IN}=100\text{dB}\mu$ , 400Hz, 100% mod.	82	88		dB
-3dB Limiting Sensitivity	$V_{IN(lim)}$	$V_O: -3\text{dB}$ , 400Hz, 100% mod.		25	31	dB $\mu$
Muting Sensitivity	$V_{IN(mute)}$	$V_{12}=5.6\text{V}$ , $R_{16}=56\text{k}\Omega$ , $R_{15}=50\text{k}\Omega$		40	50	dB $\mu$
Muting Attenuation	mute(att)	$V_{IN}=100\text{dB}\mu$ , 400Hz, 100% mod. $V_5=3.5\text{V}$	80	100		dB
Muting Bandwidth	BW(mute)	$V_{IN}=100\text{dB}\mu$ , $V_{12}=3\text{V}$	120	200	330	kHz
Muting Driving Output	$V_{12(1)}$	Quiescent	5.6	6.2	6.8	V
	$V_{12(2)}$	$V_{IN}=100\text{dB}\mu$		0	0.3	V
Total Harmonic Distortion	THD	$V_{IN}=100\text{dB}\mu$ , 400Hz, 100% mod.		0.015	0.05	%
AM Suppression Ratio	AMR	$V_{IN}=80\text{dB}\mu$ , FM=400Hz, 100% mod, AM=1kHz, 30% mod.	45	60		dB
Signal Meter Driving Output	$V_{13(1)}$	Quiescent		0	0.1	V
	$V_{13(2)}$	$V_{IN}=35\text{dB}\mu$		0.1	0.5	V
	$V_{13(3)}$	$V_{IN}=70\text{dB}\mu$	1.3	2.0	2.9	V
	$V_{13(4)}$	$V_{IN}=100\text{dB}\mu$	2.2	3.5	5.0	V
Offset Voltage	$V_{6-10}$	Quiescent, pin 6 to 10	-0.8	0	+0.8	V
	$V_{7-10}$	Quiescent, pin 7 to 10	-0.4	0	+0.4	V
Tuning Meter Null Voltage	$V_{7-10(null)}$	$V_5=7.5\text{V}$ , pin 7 to 10	-50	+5	+50	mV
IF-Off Voltage	$I_{15(IF\ off)}$	$V_{2-3}=1\text{V}$	5.6		7.5	V

### TEST CIRCUIT



Unit (resistance: Ω, capacitance: F)

### TYPICAL APPLICATION CIRCUIT



Unit (resistance: Ω, capacitance: F)

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