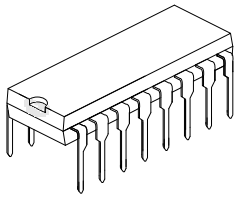
ULA1235

Preliminary ***LINEAR INTEGRATED CIRCUIT***

FM IF SYSTEM APPLICATIONS



DIP-16

■ 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

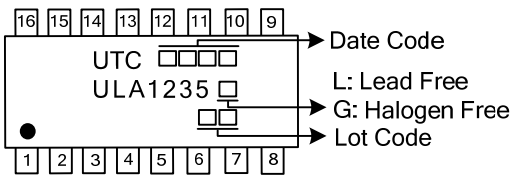
* IF amplifier, limiter.
* Tuning meter null circuit. functions
* AF preamplifier.
* Signal intensity muting drive output.
* Quadrature detection
* Detuning muting drive output.
* AF signal muting circuit.
* IF amplifier stop circuit.
* AFC, tuning meter drive output.
* Signal meter drive output.

■ ORDERING INFORMATION

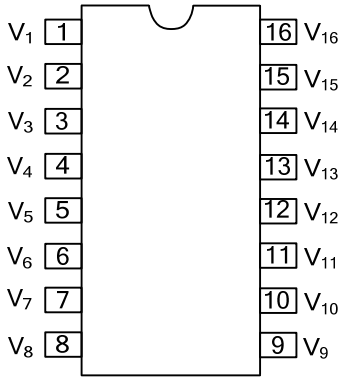
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULA1235L-D16-T	ULA1235G-D16-T	DIP-16	Tube

ULA1235L-D16-T (1) Packing Type (2) Package Type (3) Green Package	(1) T: Tube (2) D16: DIP-16 (3) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING



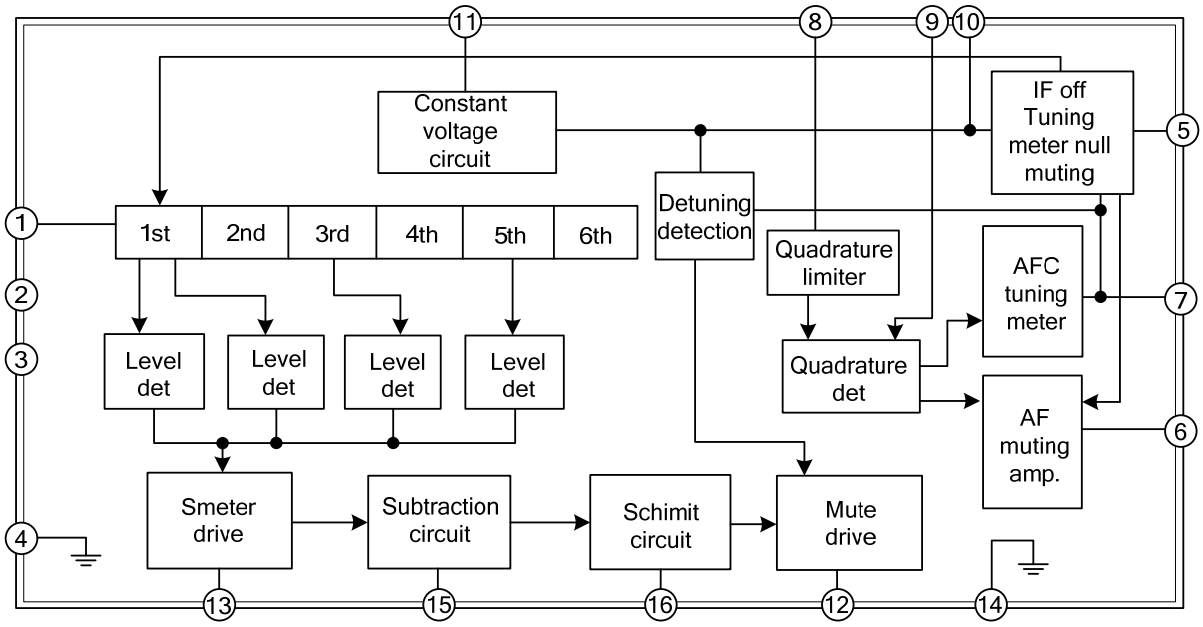
■ PIN CONFIGURATION



■ 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°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage (Pin 11)		V_{CC}	16	V
Input Voltage (Pin 1 to 2)		V_{IN}	±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	mA
		I_{13}	2	mA
Allowable Power Dissipation		P_D	650	mW
Operating Temperature		T_{OPR}	-20~+70	°C
Storage Temperature		T_{STG}	-40~+125	°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.

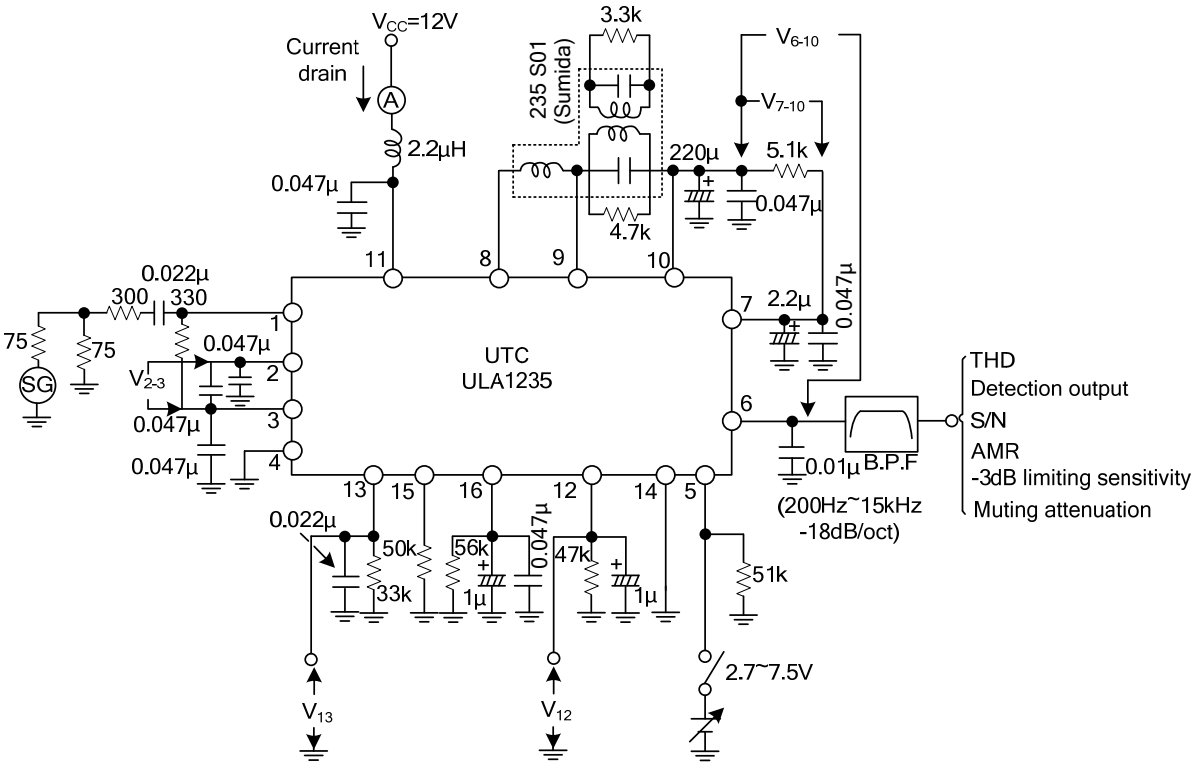
■ RECOMMENDED OPERATING CONDITIONS (T_A=25°C, unless otherwise specified)

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

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, V_{CC}=12V, f=10.7MHz)

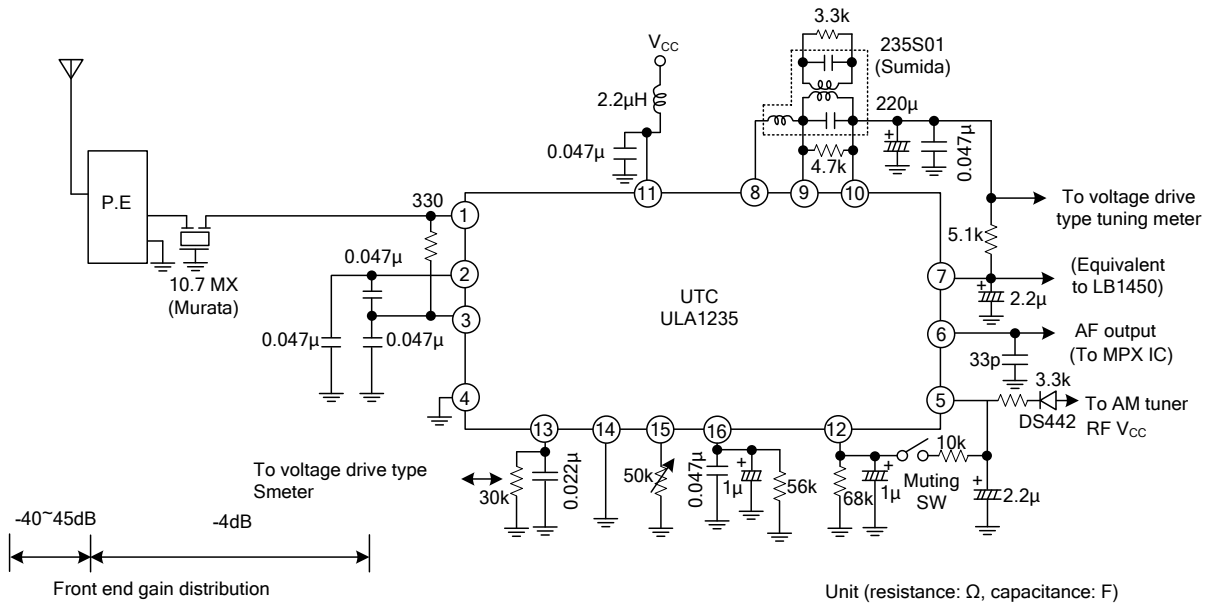
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent Current	I_{CCO}	Quiescent		21	30	mA
Current Drain	I_{CC}	V_{IN}=100dBμ		22	31	mA
Detection Output	V_O	V_{IN}=100dBμ, 400Hz, 100% mod.	310	430	590	mVrms
S/N		V_{IN}=100dBμ, 400Hz, 100% mod.	82	88		dB
-3dB Limiting Sensitivity	$V_{IN(lim)}$	V_O: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

■ TEST CIRCUIT



Unit (resistance: Ω, capacitance: F)

■ TYPICAL APPLICATION CIRCUIT



Unit (resistance: Ω, capacitance: F)