



aptek technologies

AMS 3103/3104-LV
Central Office Quality Receiver

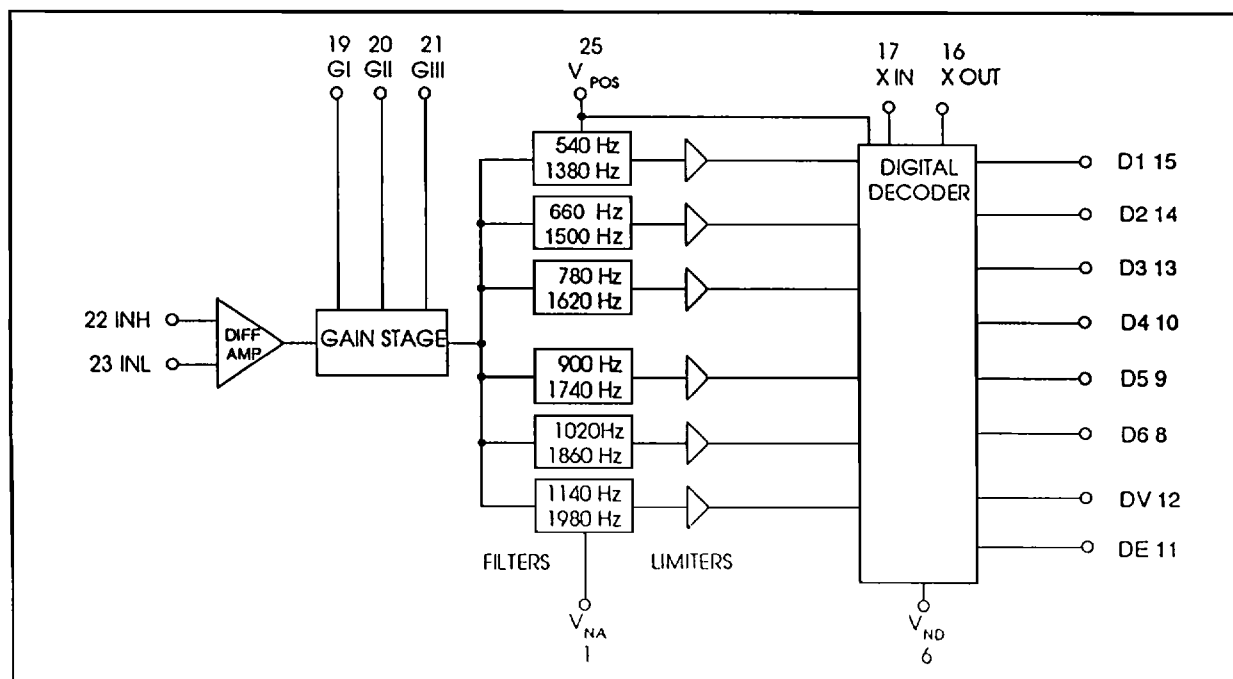
DESCRIPTION

The AMS 3103-LV and 3104-LV are complete Multi-Frequency (MF) Receivers for use with - respectively - CCITT R2B (backward) and R2F (forward) signalling formats. Each consists of six internal bandpass filters and limiters combined with a proprietary monolithic decoder. Eight outputs are provided. Six indicate the individual tones received. One indicates valid 2 of 6 code, and another indicates that an improper tone combination (single tone or more than two tones) has been received. Each receiver requires only a single 2.976 MHz crystal for proper operation. Since this crystal determines the frequency offset tolerance and the timing for detection, the receivers are unaffected by wide voltage and temperature variations.

Separate supplies are provided for the analog and digital portions of the receivers. This enables optimum interfacing with output logic and with the analog circuitry at the input.

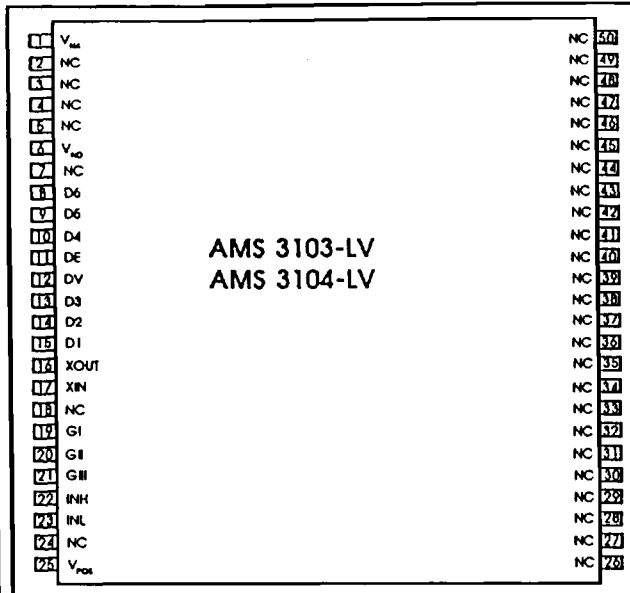
FEATURES

- Meets CCITT R2F & R2B Specifications
- Provides 2 of 6 Detection
- Error Signal for Improper Codes
- Low Power
- Adjustable Gain
- Requires only 2.976 MHz Crystal
- Flexible Power Supply and Interfacing Requirements



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PINOUT DRAWING



MFR2 FREQUENCIES

	MFR2 BKWD	MFR2 FWD
	AMS3103-LV	AMS3104-LV
D1	540	1380
D2	660	1500
D3	780	1620
D4	900	1740
D5	1020	1860
D6	1140	1980

PIN DESCRIPTION

PIN	NAME	DESCRIPTION
22	INH	Input Signal High
23	INL	Input Signal Low
19	GI	Gain Adjust, Resistor from GI to GII Increases Sensitivity,
20	GII	Resistor from GII to GIII Decreases Sensitivity,
21	GIII	GIII is Buffered Output of Signal from INH to INL
25	V _{POS}	Most Positive Power Supply Input
1	V _{NA}	Negative Power Supply Input for Analog Selection
6	V _{ND}	Negative Power Supply Input for Digital Section Digital Output Swing from V _{POS} to V _{ND} . See Page 4 Note 1.
15	D1	540/1380 Hz Data Output
14	D2	660/1500 Hz Data Output
13	D3	780/1620 Hz Data Output
10	D4	900/1740 Hz Data Output
9	D5	1020/1860 Hz Data Output
8	D6	1140/1980 Hz Data Output
12	DV	Data Valid Output. Indicates Valid Tone Pair has been present for minimum detection time.
11	DE	Data Error Output. Indicates presence of Invalid Tone Combination for longer than evaluation period.
17 16	XIN XOUT	Crystal Oscillator Input Crystal Oscillator Output. A 2.976 MHz Parallel Resonant Crystal must be connected between XIN and XOUT for proper operation.
	NC	All other pins must not be connected.

ELECTRICAL CHARACTERISTICS

ABSOLUTE MAXIMUM RATINGS

(all voltages referred to V_{NA} or V_{ND}) Operation above absolute maximum ratings may permanently damage device.

Supply Voltage ($V_{POS} - V_{NA}$) ($V_{POS} - V_{ND}$)	+18 +7
Operating Temperature	0°C to 70°C ambient
Storage Temperature	-65°C to 150°C
Power Dissipation at $T_A = 25^\circ\text{C}$ derate above $T_A = 25^\circ\text{C}$ at	750 mW 10 mW/°C
Lead Temperature (soldering, 10sec)	300°C

DC CHARACTERISTICS

$0^\circ \leq T_A \leq 70^\circ\text{C}$; $V_{POS} = 5\text{V}$; $V_{ND} = 0\text{V}$; $V_{NA} = -5\text{V}$

PARAMETERS	CONDITIONS	MINIMUM	MAXIMUM	UNITS
Digital Supply Voltage	$V_{POS} - V_{ND}$	4.5	6.0	Volts
Analog Supply Voltage	$V_{POS} - V_{NA}$	9	18	Volts
Supply Current			30	mA
Digital Output Drive	'0' Level, 1mA Load	V_{ND}	$V_{ND} + 0.5$	Volts
	'1' Level, 1 mA Load	$V_{POS} - 0.5$	V_{POS}	Volts

AC CHARACTERISTICS

$0^\circ \leq T_A \leq 70^\circ\text{C}$; $V_{POS} = 5\text{V}$; $V_{ND} = 0\text{V}$; $V_{NA} = -5\text{V}$

PARAMETER	CONDITIONS	MINIMUM	MAXIMUM	UNITS
Must Operate Frequency Offset		± 15		Hz
Operational Twist Adjacent Tones		7		dB
Operational Twist Non Adjacent Tones		9		dB
Must Reject Twist		20		dB
Operating Level (See page 4 Note 2)		-35	-5	dBm
Non-Operate Level (See page 4 Note 2)			-42	dBm
Must Detect Tone Burst		35		ms
Must Not Detect Tone Burst			7	ms
Must Detect Pause Length		30		ms
Must Not Detect Pause Length			7	ms
Acceptable White Noise Level	Band Limited Gaussian Noise 300 - 3,400 Hz		-45	dBm

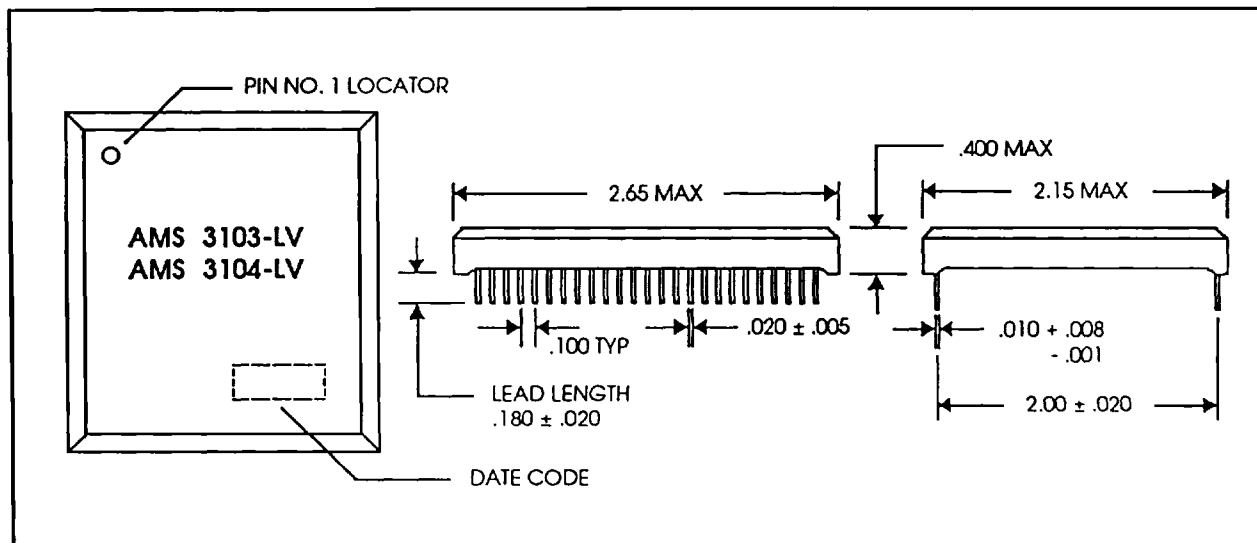
NOTES

- Note 1: V_{ND} must not be more negative than V_{NA}
- Note 2: Detection threshold is directly proportional to analog supply voltage $V_{POS-VNA}$. Other characteristics are independent of supply.
- Note 3: **Cautionary Notice:** This product is supplied in a non-hermetic plastic shell package. Aqueous PCB cleaning is therefore not recommended. Please be guided accordingly.

Ordering Information

AMS 3103-LV R2 Backward
AMS 3104-LV R2 Forward

PACKAGE DESCRIPTION



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