

MX801

+3.3V ~ +5.0V Low Power Ringing SLIC

1. Features

- Single supply voltage: +3.3V to +5.0V.
- Integral high efficiency DC/DC converter.
- Transformerless 2-wire to 4-wire conversion
- Integral ringing generator
- Constant current feed
- Tip/Ring Polarity reversal
- On-hook transmission
- Off-hook detection
- Easy to use, Low external component count
- Simplified protection in “on-premise” applications.

2. Applications

- Voice Over Internet Protocol (VoIP)
- Cable Modems
- Key Telephone System
- IP Gateway system
- Wireless Desktop Phone
- Set-top Box System
- Voice Over DSL (VoDSL)
- Short Loop Access Platforms
- Remote Subscriber Units
- Other Terminal Adapters

3. Product Selector

Part Number	Supply Voltage (V)	Loop Current (mA)	Supply Current (off-hook)	Supply Current (ringing)	Ringing Voltage (Vp-p)	Supply Current (on-hook @48V)	Supply Current (on-hook @24V)
MX801-A	3.1~5.5	24~31	280~330mA	280~320mA	125~145	60~90mA	30~45mA
MX801-B	3.3~5.5	20~25	220~260mA	210~260mA	115~140	60~90mA	30~45mA
MX801-C	4.5~5.5	20~23	180~190mA	160~190mA	110~135	60~90mA	30~45mA

Table 1: Ordering Information

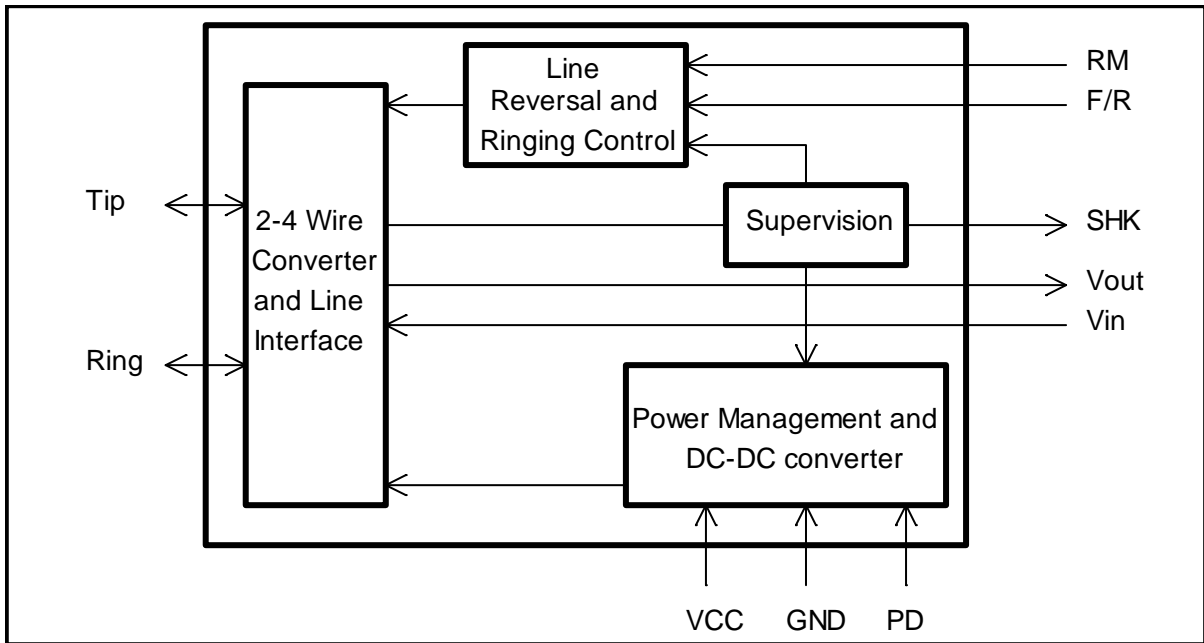


Figure : Functional Block Diagram

4. Pin Description

Pin #	Name	Description
1	RING	2 wire port; RING wire (I _b is the current sunk into this pin).
2	TIP	2 wire port; TIP wire (I _a is the current sourced from this pin).
3	F/R	A logic (L) will reverse the Tip and Ring voltage polarities. F/R is toggled to produce the ringing output.
4	RM	Ringing Mode. Sets bias conditions during ringing. Must be set to logic (H) during ringing. Logic (L) for other modes.
5	SHK	Indicates an off-hook condition when at logic (H).
6	NC	No Connection.
7	NC	No Connection.
8	NC	No Connection.
9	V _{IN}	Audio In.
10	V _{OUT}	Audio Out.
11	NC	No Connection.
12	GND	Ground input for the DC/DC converter.
13	VCC	Positive voltage power supply, usually +3.3V ~ +5V.
14	PD	Power Down input.

5. Electrical Characteristics

5.1. Absolute Maximum Ratings

	Parameter	Symbol	Min	Max	Unit
1	DC Supply Voltage	V _{CC}	-0.3	7.0	V
2	Maximum Power Dissipation, Off Hook @ 25 °C	P _{SLIC}		1.2	W

5.2. Recommended Operating Conditions

Ver.	Parameter	Symbol	Min	Typ	Max	Unit
A	DC Supply Voltage	V_{CC}	3.1		5.5	V
B	DC Supply Voltage	V_{CC}	3.3		5.5	V
C	DC Supply Voltage	V_{CC}	4.0	5.0	5.5	V
	Operating Temperature	T_{OP}	0	25	70	$^{\circ}C$

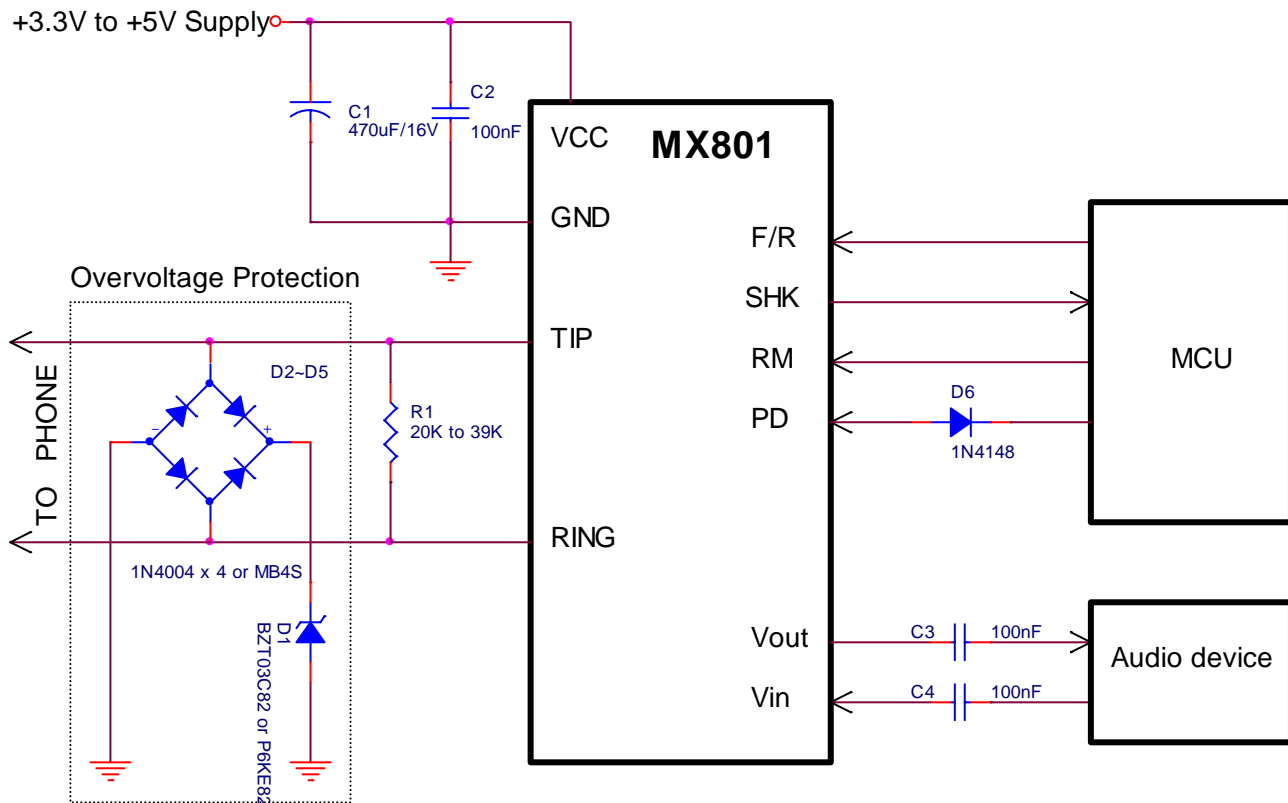
5.3. DC Electrical Characteristics

	Ver.	Parameter	Symbol	Min	Typ	Max	Unit	Test Comments
1		Supply Current, on-hook @ 5.0V @ 3.3V	I_{vpwr}		60 70	90 105	mA mA	
2	A	Supply current ringing @ 5.0V @ 3.3V	$I_{RINGING}$		330 350		mA mA	$R_{LOOP} = 0R$ Load = 1 REN
2	B	Supply current ringing @ 5.0V @ 3.3V	$I_{RINGING}$		240 220		mA mA	$R_{LOOP} = 0R$ Load = 1 REN
2	C	Supply current ringing @ 4.0V~5.5V	$I_{RINGING}$		170		mA	$R_{LOOP} = 0R$ Load = 1 REN
3	A	Supply current, off-hook @ 5.0V @ 3.3V	I_{ACTIVE}		290 360		mA mA	Load = 600R
3	B	Supply current, off-hook @ 5.0V @ 3.3V	I_{ACTIVE}		230 250		mA mA	Load = 600R
3	C	Supply current, off-hook @ 4.0~5.5V	I_{ACTIVE}		180		mA	Load = 600R
4		Supply current in power down	I_{PD}		7 5		mA mA	@ 5.0V @ 3.3V
5	A	Constant current feed to line @ 5.0V @ 3.3V	I_{LOOP}		31 26		mA mA	Load = 600R
5	B	Constant current feed to line @ 5.0V @ 3.3V	I_{LOOP}		24.5 20.5		mA mA	Load = 600R
5	C	Constant current feed to line @ 4.0V~5.0V	I_{LOOP}	18	23		mA	Load = 600R

5.4. AC Electrical Characteristics

Ver	Parameter	Symbol	Min	Typ	Max	Units	Test Comments
1	Impedance			600		ohm	
2	Input Impedance at V_{IN}			60		kohm	
3	Output impedance at V_{OUT}				10	ohm	
5 A	Ringing voltage		125		145	Vp-p	
5 B	Ringing voltage		115		140	Vp-p	
5 C	Ringing voltage		110		135	Vp-p	
6	Transmit gai(2 Wire to V_{OUT}	G24	-0.75	0	0.75	dB	Off-Hook
7	Receive gain(V_{IN} to 2 Wire	G42	-0.75	0	0.75	dB	Off-Hook
8	Relative Gain. Referenced to 1kHz.		-0.5		0.5	dB	Over frequency range 300 to 3400 Hz
9	Return Loss	RL	16 18			dB	300 - 500 Hz 500Hz - 3400Hz
10	Transhybrid Loss	THL	12 21 16			dB dB dB	300-500Hz 500-2500Hz 2500-3400Hz

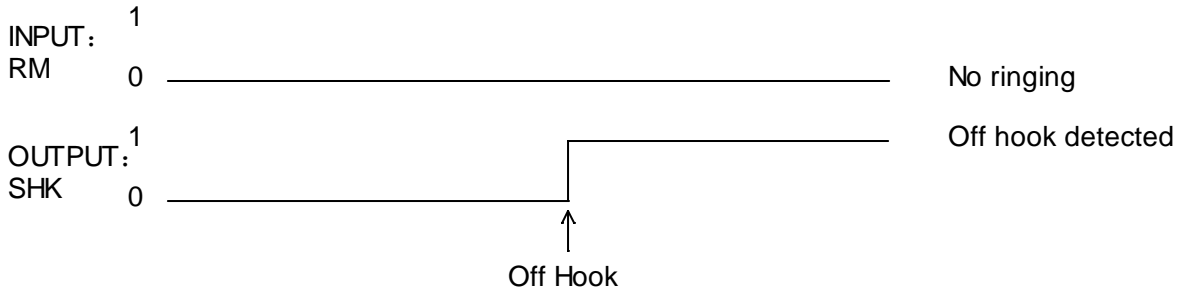
6. Typical Connection Diagram



R1 = External DC bias resistor (required for CLI) typically 20K to 39K

7. Functional Description

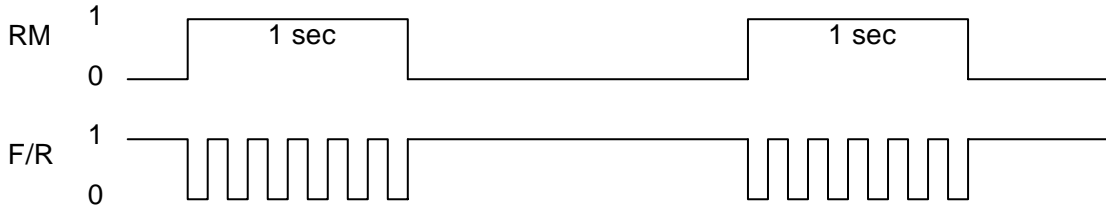
7.1 Switch Hook Detection



7.2 Tip & Ring Polarity Reversal

The MX801 can reverse the battery voltage polarity at Tip and Ring via the F/R pin. If F/R is held at logic (H) (Forward) the d.c. voltage at Ring is negative with respect to Tip. If F/R is taken to logic (L) (Reverse) the voltage at Ring is positive with respect to Tip.

7.3 Ringing Signal Waveforms



8. Package:

