

FEATURES

- V.32 and V.34 Compatibility
- Supports Ring Detect and Wake On Ring
- On-hook Monitor Provides for Caller ID and Voice/Fax/Data Steer Functions
- On-hook Monitor Draws <1 mA
- Over Current and Thermal Limiting
- On-hook Line Voltage Measurement
- Line Current Sense
- 3 Volt (Modem Side) Operation
- Low Gain Drift
- 56 Kbps Compatible
- Universal Applications
- 100% Low Profile Surface Mount
- Compatible to FCC Part 68
- UL and CSA Registered

DESCRIPTION

The DAA2000 is a kit consisting of a DL207 Line-Side Integrated Circuit, a DM207 Modem-Side Integrated Circuit and two IL388 Linear Optocouplers. When configured along with the other specified components, the final circuit provides for a full featured Optical DAA that meets or exceeds all of the appropriate government regulations for such a device.

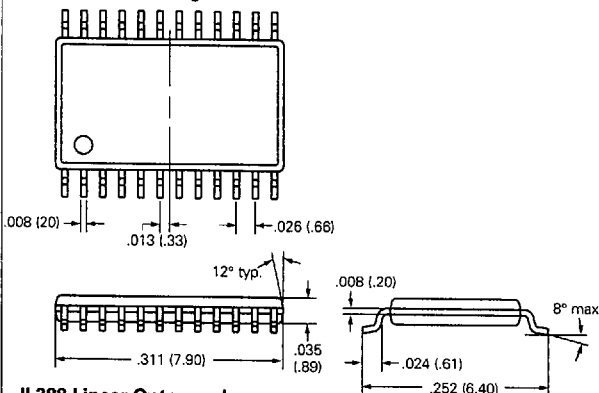
All of the components in the kit are packaged in easy to assemble surface mount format. The DL207 and DM207 have standard 24-pin TSSOP packages and the IL388, an 8-pin Siemens Slimline surface mount package. The user can easily assemble the DAA function directly onto a mother board along with all of the other SMD components, eliminating costly special or hand insert operations. With this kit the actual DAA function takes less than two square inches of board space.

The DAA2000 is a full featured Optical DAA that takes into consideration the needs of today's portable and multimedia equipment. Added features of the DAA2000 such as line current sense, snooping and line V/F make the circuit ideal for enhanced modems which support speaker phones, answering machines, simultaneous voice and fax, caller ID and voice/fax/data steering.

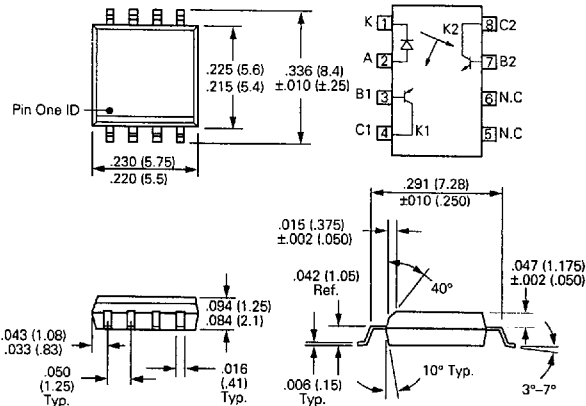
The DAA2000's unique "Wake on Ring" feature allows it to draw no current when idle except when ringing is detected. The DAA2000 circuit may be powered from an unregulated power source such as a battery up to 7 volts—allowing the designer to power up the computer switching power supply from the ring detect output (a high going signal).

Package Dimensions in Inches (mm)

DL207, DM207 Integrated Circuits



IL388 Linear Optocoupler



Maximum Ratings

Parameter	DL207	DM207
Supply voltage	10 V	7 V
Input current	10 mA	—
Tip and ring voltage	350 V	—
Package	Value	
Total package dissipation at 25° ambient	TBD	
Derate linearly from 25°C	TBD	
Storage temperature	-20°C to +85°C	
Operating temperature	-0°C to +70°C	
Soldering time at 260°C, 1/8" from body	5 sec.	

MAY 23, 1997

Pin Configurations

DL207			DM207		
Pin	Symbol	Function	Pin	Symbol	Function
1	HLDR	Connection for resistor which sets 800 Ω AC termination impedance	1	CIB	Capacitor connection (C1)
2	LEDCT	Receive linear optoisolator LED cathode connection	2	VREF	Internal 1.25 V precision band gap reference
3	HLDCAP	Holding circuit decoupling capacitor connection	3	C2	Capacitor connection (C2)
4	HKP	Positive hook switch driver output	4	RXCT	Receive photodiode return
5	HKN	Negative hook switch driver output	5	RXAN	Receive photodiode input
6	LINPWR	Diagnostics pin	6	SNPL	Negative assertion snoop mode control input
7	HLFVV	Shorting this pin to Vdd produces halfwave ring detect output	7	SNP	Positive assertion snoop mode control input
8	LR2	Line resistor connection	8	HIN	Diagnostics pin, do not connect
9	LR1	Line resistor connection	9	SRVAN	Transmit servo photodiode anode
10	END	Connection for resistor to CEN	10	SRVCT	Transmit servo photodiode cathode
11	CEN	Connection for resistor to C1A	11	TXAMP	Current input for transmit audio
12	CIA	Connection for capacitor (C1)	12	VDD	Power 3–7 V
13	CIB	Connection for capacitor (C1)	13	LEDCT	Transmit linear optoisolator LED cathode connection
14	BIASEN	Diagnostics pin	14	VSS	Ground return
15	C2	Connection for capacitor (C2)	15	AUD-OUT	Auxiliary audio amplifier output
16	TXCT	Transmit photodiode return	16	AUDIN	Inverting input for auxiliary audio amplifier
17	TXAN	Transmit photodiode input	17	TXBIAS	Connection for resistor which sets servo photocurrent DC bias
18	SNPCAP	Connection for Snoop RC	18	ACREF	Audio AC reference for input and output audio signals
19	VFCAP	Connection for V/F capacitor and resistor	19	RXOUT	Audio output
20	HIN	Diagnostics pin, do not connect	20	OFFHK	Positive assertion off-hook control input
21	SRVAN	Receive servo photodiode anode	21	OFFHKL	Negative assertion off-hook control input
22	SRVCT	Receive servo photodiode cathode	22	RNG	Ring detect output
23	VSS	Line-side return	23	LSTAT	Line status output
24	VDD	Line-side supply signal	24	CIA	Capacitor connection (C1)
IL388					
Pin	Symbol	Function	Pin	Symbol	Function
1	A	Cathode	5	N.C.	
2	K	Anode	6	N.C.	
3	B1	Base 1	7	B2	Base 2
4	C1	Collector 1	8	C2	Collector 2

Ring Detector Characteristics (25°C)

Parameter	Value	Unit	Condition
Threshold Adjustment	15 $\pm$ 30%	V _{RMS}	Option to set higher
Output Type	Full wave or half wave		

Distortion (25°C)

Parameter	Value	Unit	Condition
Transmit Total Harmonic Distortion	<–70	dB	Transmit and receive in-band below –3 dBm single frequency tone, 200 Hz to 3400 Hz
Receive Total Harmonic Distortion	<–75	dB	At receiver output below –3 dBm receive signal, 200 Hz to 3400 Hz
In-band Noise	<–80	dBm	3 kHz flat bandwidth

DC Characteristics (25°C)

Parameter	Min.	Typ.	Max.	Unit	Condition
Operating Voltage	3		7	V	Modem-side
Operating Current	4	6	10	mA	Modem-side
Current Limit Threshold	120		160	mA	Through Hook Switch
Over Current Protection	NA	NA	NA		No damage from 350 V across Tip and Ring while off-hook
Surge Rise Time	2000			V/ μ s	No damage when applied across Tip and Ring
Isolation Voltage	1500			V _{RMS}	Line-side to Modem-side
Isolation Voltage	2500			V _{SURGE}	Line-side to Modem-side
Operating Power			1	W	Off-hook
Surge Suppressor Break-over Voltage			350	V	25 A for 0.5 ms

On-hook Characteristics (25°C)

Parameter	Value	Unit	Condition
DC Resistance	10	M Ω	Tip to Ring
DC Resistance	>200	M Ω	Tip and Ring to GND
AC Impedance	≥ 150	K Ω	Tip to Ring at <10 V _{RMS} and 0–4000 Hz
Ringer Equivalence Number	<1	REN	

Off-hook Characteristics (25°C)

Parameter	Value	Unit	Condition
DC Resistance	330	Ω	Tip to Ring at 20 mA
Line Current Range	10 to 120	mA	
AC Impedance	600 $\pm$ 5%	Ω	Tip to Ring
Return Loss	>26	dB	Against 600 Ω , from 200 Hz to 4000 Hz

Transmission/Receiver Characteristics (25°C)

Parameter	Value	Unit	Condition
Frequency Response	100 to 5000	Hz	<3 dB down
Trans-hybrid Loss	32	dB	Against 600 Ω
Transmit Gain	0 $\pm$ 0.5	dB	1 KHz
Receiver Gain	-6 $\pm$ 0.5	dB	1 KHz
Maximum Transmit Level	>3	dBm	Single tone sine wave
Maximum Receive Level	>3	dBm	Single tone sine wave
Maximum Receive Output	5	mA	Sink and source
Maximum Aux Audio Output	5	mA	Sink and source

Figure 1. DAA2000 functional block diagram

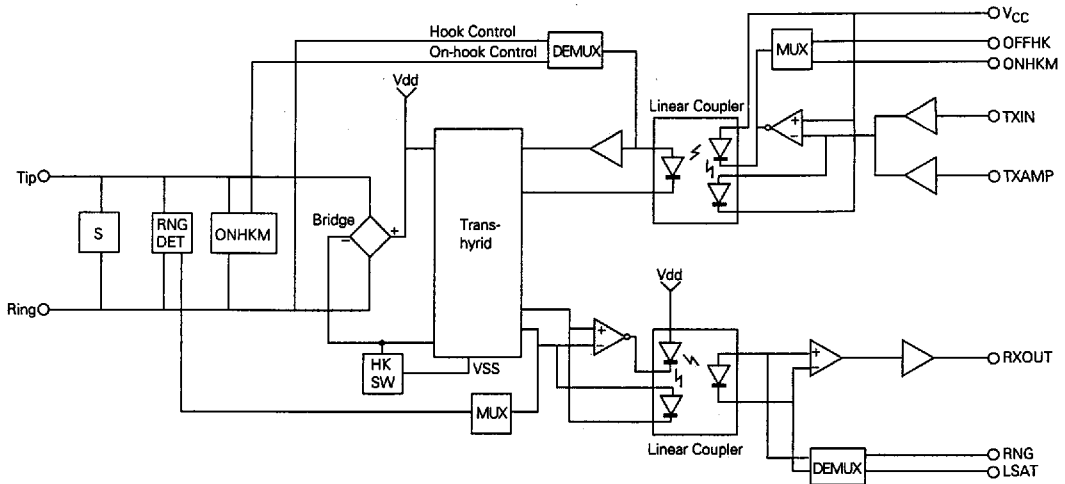


Figure 2. DAA2000 reference schematic (North American and Japanese version)

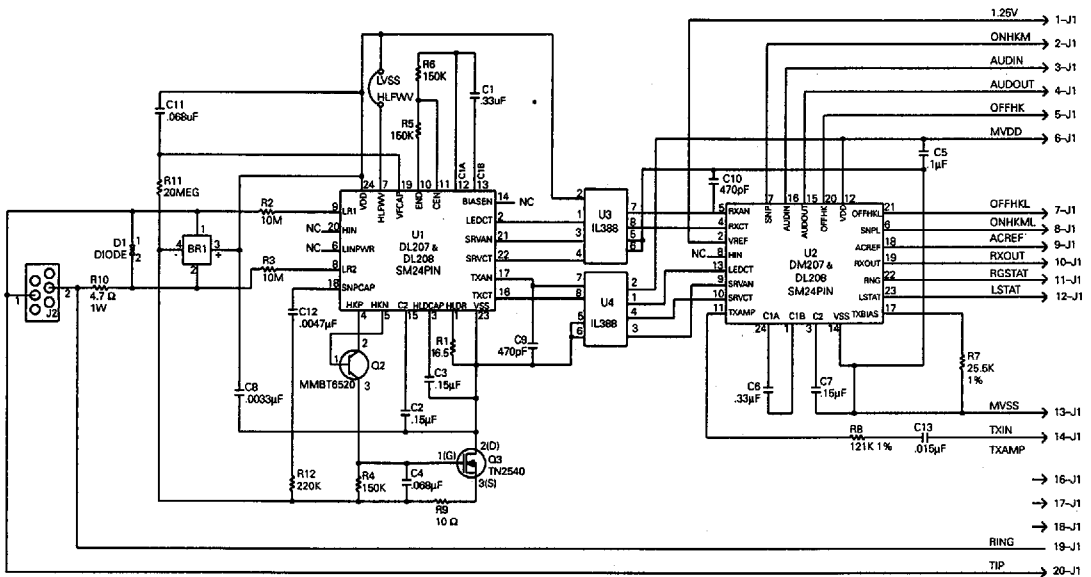


Figure 1. 6-pin DIP

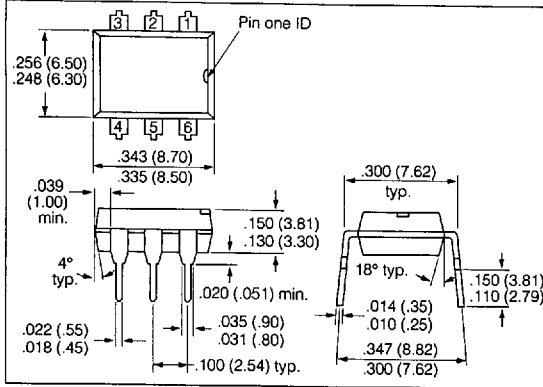


Figure 2. 6-pin, SMD

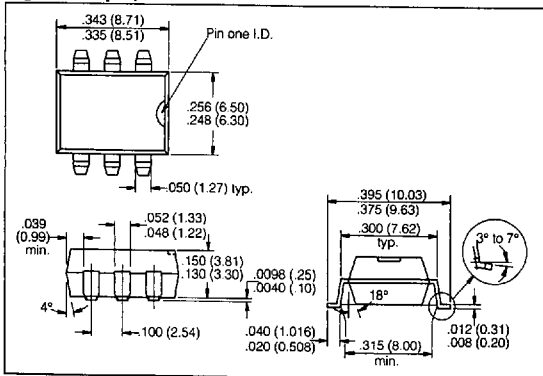


Figure 3. 8-pin DIP

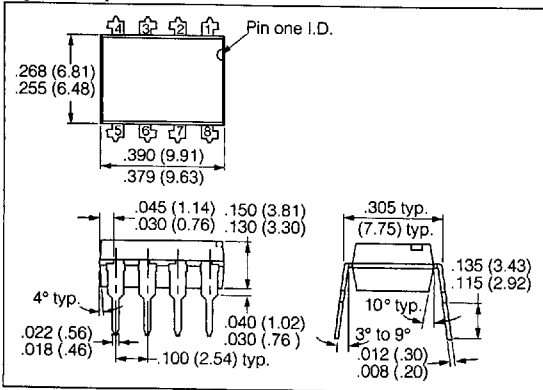


Figure 4. 8-pin, SMD

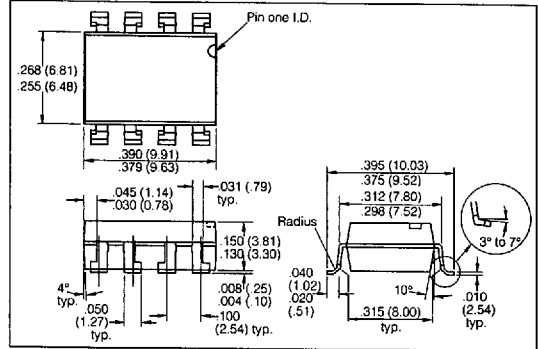


Figure 5. 8-pin SOP (PCMCIA)

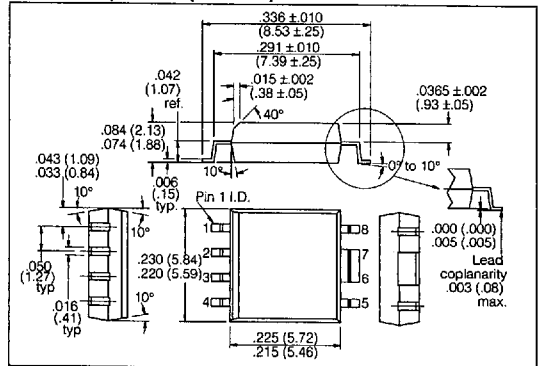


Figure 6. 18-pin SOP (PCMCIA)

