

TRUNK INTERFACE

PRELIMINARY DATA

- ON CHIP POLARITY GUARD
- MEETS DC LINE CHARACTERISTICS OF EITHER CCITT AND EIA RS 464 SPECS
- PULSE FUNCTION
- HIGH AC IMPEDANCE
- OFF HOOK-STATUS DETECTION OUTPUT
- LOW EXTERNAL COMPONENT COUNT



DESCRIPTION

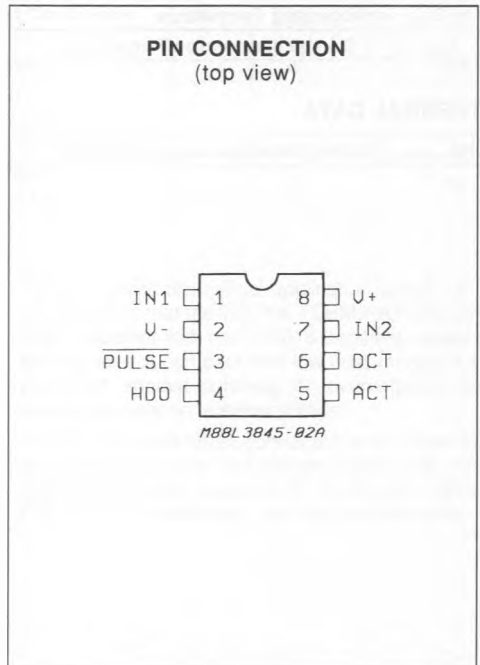
The circuit provides DC loop termination for analog trunk lines.

The V-I characteristics is equivalent to a fixed voltage drop (zener like characteristic) in series with an external resistance that determines the slope of the DC characteristic.

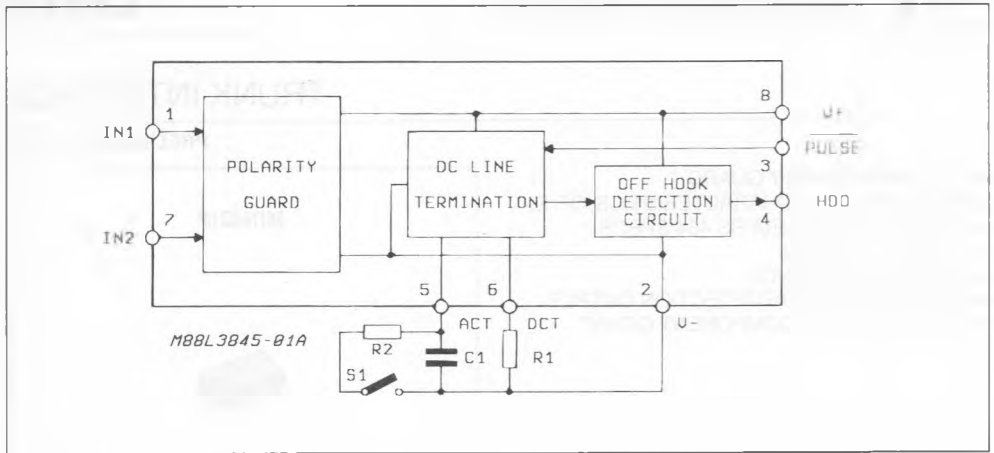
An external low voltage electrolytic capacitor causes the circuit to exhibit a very high impedance to all AC signal above a minimum frequency that is determined by the capacitor itself and by a 20 K nominal resistor integrated on the chip.

The Off-Hook status is detected all the time a typical of 8 mA is flowing into the circuit. In this condition a constant current generator is activated to supply an external device (typically an optocoupler) without affecting the AC characteristic of the circuit.

When Pulse Dialing is required the PULSE input (pin 3) connected to V- causes the device to reduce the fixed DC voltage drop and to exhibit a pure resistive impedance equal to the external resistor.



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_L	Max Line Voltage (pulse duration 10 ms max)	20	V
I_L	Max Line Current	150	mA
P_{Tot}	Total Power Dissipation at $T_{amb} = 70\text{ }^\circ\text{C}$	800	mW
T_{op}	Operating Temperature	- 40 to + 70	$^\circ\text{C}$
T_{srg}, T_j	Storage and Junction Temperature	- 55 to + 150	$^\circ\text{C}$

THERMAL DATA

$R_{th(j-amb)}$	Thermal Resistance Junction-ambient	Max	120	$^\circ\text{C}$
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DC ELECTRICAL CHARACTERISTICS(I_L = 10 mA to 100 mA, R₁ = 56 Ω, R₂ = 150 KΩ, S₁ = Open, T_{amb} = + 25 °C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V _L	Line Voltage (normal mode)	PULSE = Open I _L = 10 mA I _L = 20 mA I _L = 100 mA			5 5.5 12	V V V
V _{LP}	Line Voltage (pulse mode)	PULSE = V ⁻ I _L = 20 mA I _L = 35 mA I _L = 80 mA			4 5.5 9.5	V V V
I _{hn}	ON/OFF-Hook Line Current Detection Threshold		6.5		9.5	mA
I _{ht}	OFF/ON-Hook Line Current Detection Threshold		5		8	mA
I _{OUT}	OFF-Hook Output Drive Current at Pin HDO	I _L = 10 mA I _L ≥ 20 mA	1.5 2			mA mA
V _{PM}	Pulse Input Low Voltage				0.8	V
I _{PM}	Pull-up Input Current at Pin PULSE (pulse mode)	I _L = 100 mA Pulse = V ⁻			20	μA
I _{NM}	Input Current at Pin Pulse (normal mode)				3	μA

AC ELECTRICAL CHARACTERISTICS(I_L = 10 mA to 100 mA, R₁ = 56 Ω, R₂ = 470 KΩ, S₁ = Open, T_{amb} = + 25 °C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Z _L	AC Line Impedance	C ₁ = 2.2 μF F = 1 KHz		20		KΩ
	Sending/Receiving Distortion	F = 1 KHz V _S = 775 mV _{RMS} I _L = 15 to 100 mA			2	%
	Sending/Receiving Distortion	S ₁ = Closed ; V _S = 1.3 V _{RMS}		2		%

APPLICATION INFORMATION

With the use of this circuit it is possible to terminate an analog trunk so that all the DC current component is flowing in the TRUNK TERMINATION CIRCUIT while the AC component is decoupled with a low voltage capacitor and can be used with a small and low cost audio coupler transformer to provide the AC balancing termination and two to four wire conversion.

Therefore it is useful both for MODEM and PABX systems.

Figure 1 gives the typical application circuit ; it is worth to note that the TRUNK TERMINATION CIRCUIT, together with the LS5018 transient suppressor provides a compact and low cost module fully protected against lightning or overvoltages frequently present on telephone lines.

The PULSE input when connected to V⁻ allows the device to reduce the Line Voltage and to show a resistive impedance equal to R₁ to the line. When PULSE input is left open, this function is disable.

