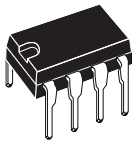
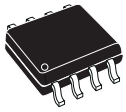
SGS-THOMSON MICROELECTRONICS

L3845

TRUNK INTERFACE

- 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





Minidip **SO8**

ORDERING NUMBERS:

L3845B L3845D

DESCRIPTION

The circuit provides DC loop termination for analog trunk lines.

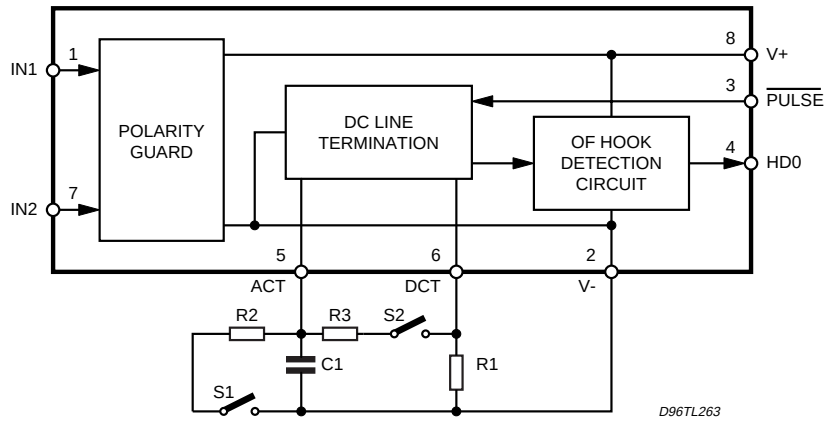
The V-I characteristics is equivalent to a fixed voltage drop (zener like characteristic) in series with an external resistance that determines the slope of the DC characteristic.

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 typic 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 $\overline{\text{PULSE}}$ 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.

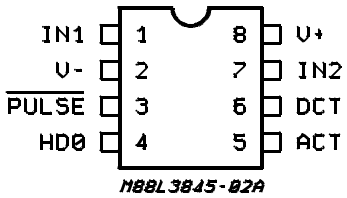
BLOCK DIAGRAM



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 Tamb = 70 °C	800	mW
T_{op}	Operating Temperature	– 40 to + 70	°C
T_{srg}, T_j	Storage and Junction Temperature	– 55 to + 150	°C

PIN CONNECTION (Top view)



THERMAL DATA

Symbol	Parameter		Minidip	SO8	Unit
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient (*)	Max.	80	140 to 180	°C/W

(*) Mounted on FR4 Boards

DC ELECTRICAL CHARACTERISTICS (I_L = 10 mA to 100 mA, R_1 = 56 Ω, S_1 = Open, T_{amb} = + 25 °C, unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_L	Line Voltage (normal mode)	PULSE = Open IL = 10 mA I_L = 20 mA I_L = 100 mA			 5 6 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_{hf}	OFF/ON-Hook Line Current Detection Threshold		5		9.2	mA
I_{OUT}	OFF-Hook Output Drive Current at Pin HDO	IL = 10 mA $I_L \geq$ 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)	IL = 100 mA Pulse = V^-			20	µA
I_{NM}	Imput Current at Pin Pulse (normal mode)				3	µA

AC ELECTRICAL CHARACTERISTICS (I_L = 10mA to 100mA, R_1 = 56Ω, R_2 = 470KΩ, R_3 = 130 KΩ, T_{amb} = + 25 °C, unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Z_L	AC Line Impedance	S_1 = Open, S_2 = Open C_1 = 2.2mF f = 1KHz		20		KΩ
	Sending/Receiving Distortion	S_1 = Open, S_2 = Open f = 1KHz V_{AC-L} = 775mVrms I_L = 15 to 100mA			2	%
	Sending/Receiving Distortion	S_1 = Closed; S_2 = Open V_{AC-L} = 1.3Vrms		2		%
	Sending/Receiving Distortion	S_1 = Open; S_2 = Closed V_{AC-L} = 1.9Vrms		2(*)		%

(*) Not tested, guaranteed only by design.

APPLICATION INFORMATION

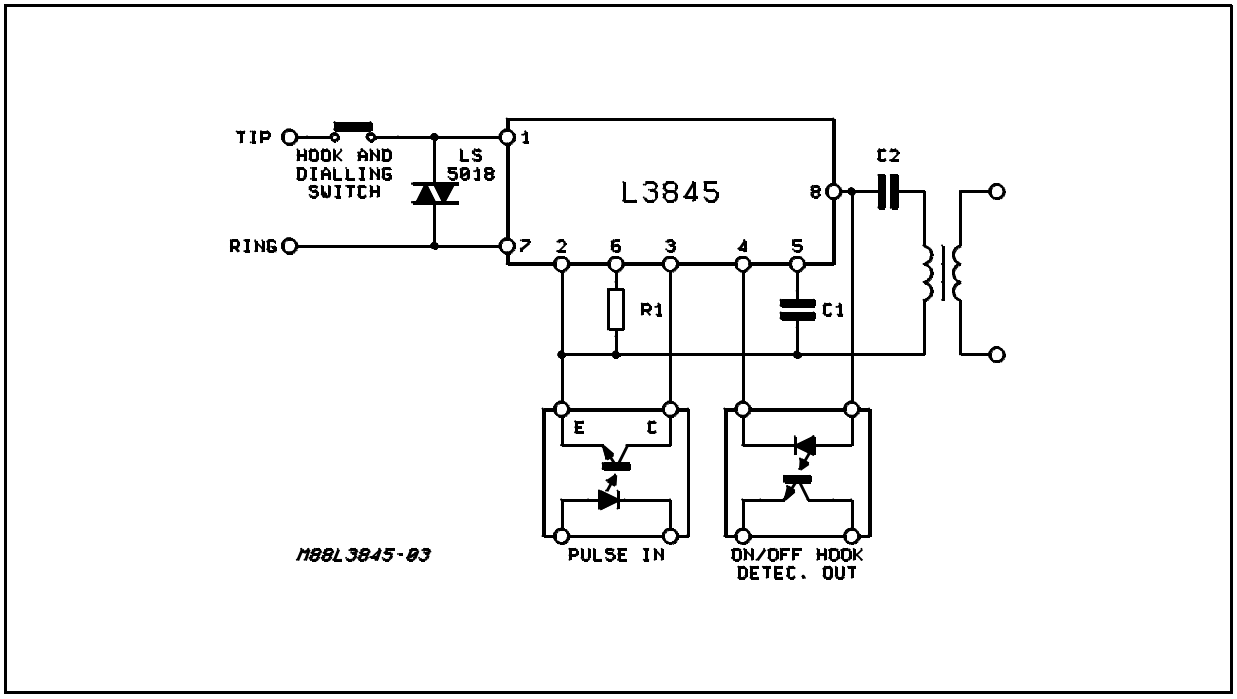
With the use of this circuit it is possible to terminate an analog trunk so that all the DC current component is flowing in the TRUNK TERMINATION CIRCUIT while the AC component is decoupled with a low voltage capacitor and can be used with a small and low cost audio coupler transformer to provide the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

Therefore it is usefull 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.

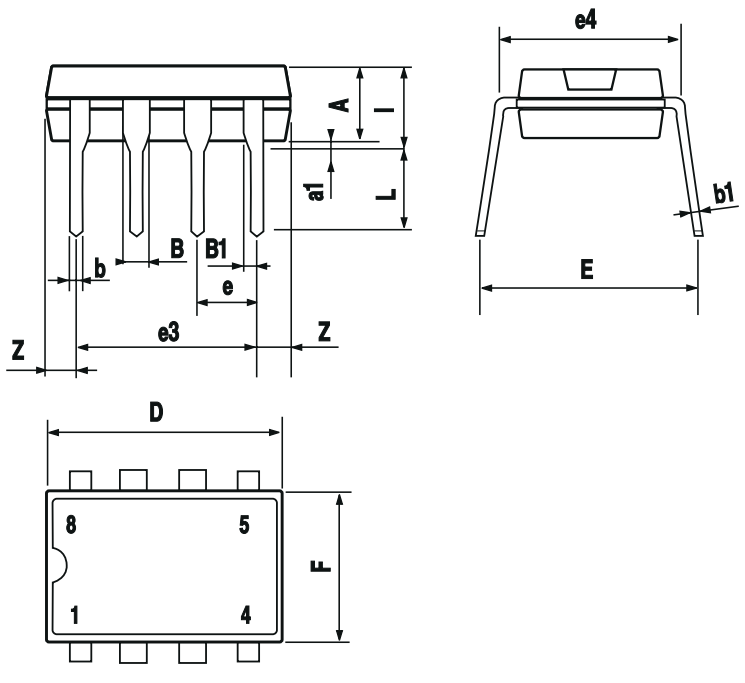
The $\overline{\text{PULSE}}$ input when connected to V- allows the device to reduce the Line Voltage and to show a resistive impedance equal to R1 to the line. When $\overline{\text{PULSE}}$ input is left open, this function is disable.

Figure 1: Typical Application.



MINIDIP PACKAGE MECHANICAL DATA

DIM	mm			inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		3.32			0.131	
a1	0.51			0.020		
B	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
E	7.95		9.75	0.313		0.384
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0260
i			5.08			0.200
L	3.18		3.81	0.125		0.150
Z			1.52			0.060



SO8 PACKAGE MECHANICAL DATA

DIM	mm			inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
a3	0.65		0.85	0.026		0.033
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.020
c1	45° (typ.)					
D	4.8		5.0	0.189		0.197
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.150		0.157
L	0.4		1.27	0.016		0.050
M			0.6			0.024
S	8° (max.)