SGS-THOMSON MICROELECTRONICS

GS1T70-D540/1

ISDN DC-DC CONVERTER

Type	V_i	V_o	I_o
GS1T70-D540/1	25 to 115 V	5 V	90 mA
		40 V	10,5 mA

FEATURES

- Wide operating line termination voltage
- Peak input overvoltage withstand: 1kV for 1.2/50µs
- Peak overvoltage withstand on Output 2 (40V): 250V for 10/700µs
- Positive or negative input voltage polarity
- Input and output filtering
- Short-circuit protection on both outputs
- Input power during shortcircuit within specification
- Minimum current drain during stand-by condition: 10µA for Vi<18V
- Input-output isolation voltage: 2000V_{RMS} for 60 seconds
- Output1-output2 isolation voltage: 2000V_{RMS} for 60 seconds
- Mechanical dimensions (L x W x H): 50.8 mm x 50.8 mm x 18 mm (2" x 2" x 0.71")

DESCRIPTION

The GS1T70-D540/1 converter has been designed for the "U" interface of an ISDN-NTBA (Network Termination Basic Access) system with either 4B3T or 2B1Q standard trasmission.

It meets the requirements of the following specifications:

EN 60950

CCITT I.430

CCITT G.960

CCITT G.961

ETS 300 002

ETS 300 012

ETS 300 047 (ISDN BASIC ACCESS, Safety and Protection)

Two isolated outputs, 5V/90mA and 40V/10.5mA are supplied. The converter offers short-circuit protection (short-circuit on 40V output doesn't affect 5V output and the input power never exceeds the limit of the specification), input either voltage polarity, 80% minimum efficiency at maximum load, input and output filtering to meet very stringent noise requirements.

The input and the output 2 (40V) stages are protected against differential overvoltage up to 1kV (1.2/50µs) and 250V (10/700µs) respectively.

When the input voltage is below 18V, the converter offers a very high input impedance and a maximum quiescent current of 10µA.

These features allow the converter to operate directly connected to the telephone line without any external components.

In addition, the wide operating input voltage range allows it to operate within the whole range of LT (Line Termination) battery voltage and its relevant line resistance.

2000V_{RMS} isolation voltage for 60 second is provided between input to outputs and between output 1 and output 2.

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C unless otherwise specified)

Std. Conditions:

Line Termination voltage: 47 to 71V
87 to 99V

Line Resistance (Rs): 10 to 560 Ω
550 to 1400 Ω

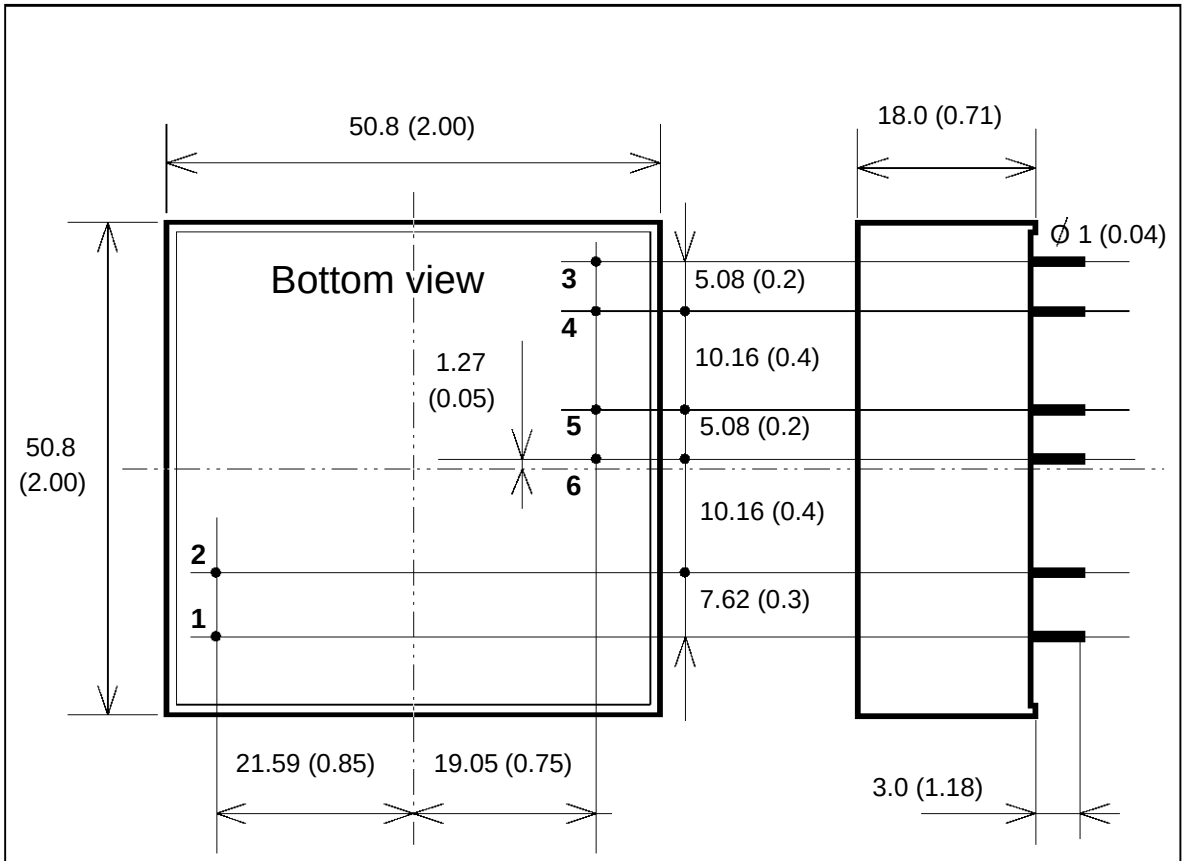
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_i	Input Voltage	Std. Conditions	25		115	V
V_{ipk}	Input Transient Overvoltage	t = 1.2/50µs (pulse)			1	kV
V_{ist}	Start Up Input Voltage	See fig. 2	28		44	V
V_{o1}	Output Voltage 1	Std. Conditions	4.75	5	5.25	V
V_{o2}	Output Voltage 2	Std. Conditions	34	40	42	V
V_{or1}	Output Ripple Voltage 1	Std. Conditions BW = 0 to 20MHz		5	20	mVpp
V_{or2}	Output Ripple Voltage 2	Std. Conditions BW = 0 to 20MHz		10	30	mVpp
eN	Input Noise Voltage	Std. Conditions BW = 0 to 20MHz		10	30	mVpp
I_{o1}	Output Current 1	Std. Conditions I_{o2} = 0 to 10.5 mA V_{o1} = 5V	2		90	mA
I_{o1l}	Output Current 1 Limit Initiation	Std. Conditions V_{o1} = 4.75 to 5.25V	110		130	mA
I_{o2}	Output Current 2	Std. Conditions I_{o1} = 2 to 90 mA V_{o2} = 40V	0		10.5	mA
I_{osc2}	Output 2 Short Circuit Current	Std. Conditions Output Shorted (Indefinite time)	9		14	mA
V_{is}	Isolation Voltage (pulse)	Input to Output 1 Input to Output 2 Output 1 to Output 2	2000			VRMS
T_{op}	Operating Ambient Temperature Range		0		+80	°C
T_{stg}	Storage Temperature Range		– 40		+85	°C

OUTPUT POWER CHARACTERISTICS

LT (Line Termination Voltage) = **47V to 71V** **Rs** (Line Resistance) = 10 to 560 Ω				**LT** (Line Termination Voltage) = **87V to 99V** **Rs** (Line Resistance) = 550 to 1400 Ω			
Max Input Power (mW)	**NT Status**	**Min Output Power 1 (5V)[mW]**	**Min Output Power 2 (40V)[mW]**	**Max Input Power (mW)**	**NT Status**	**Min Output Power 1 (5V)[mW]**	**Min Output Power 2 (40V)[mW]**
450	Activated	320	0	450	Activated	320	0
950	Activated Emergency	330	410	950	Activated Emergency	330	410
90	Deactivated	25	0	90	Deactived	25	0
180	Deactivated Emergency	25	45	180	Deactivated Emergency	25	45
950	Activated with 40 V Short circuit	330	Short circuit	950	Activated with 40V Short circuit	330	Short circuit

CONNECTION DIAGRAM AND MECHANICAL DATA

Figure 1.



Package V. Dimensions in mm (inches).

PIN DESCRIPTION

Pin	Description
1	Input (either polarity).
2	Input (either polarity).
3	+5V Output.
4	Return for +5V Output.
5	+40V Output.
6	Return for +40V Output.

VOLTAGE SUPPLY OPERATING AREA

Figure 2 shows the Voltage Supply Operating area during a switching OFF-ON sequence.

The start-up voltage is 44V maximum. When the input voltage is below 18V the maximum quiescent current is lower than 10µA.

Figure 2.