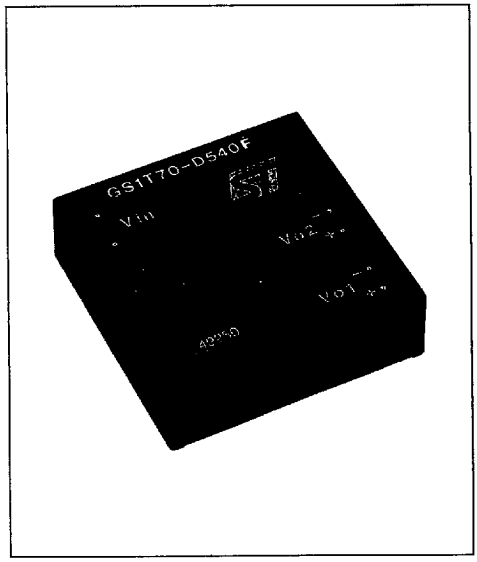
SGS-THOMSON MICROELECTRONICS

GS1T70-D540F

ISDN DC-DC CONVERTER (FRENCH VERSION)

Type	V_I	V_o	I_o
GS1T70-D540F	25 to 115 V	5 V	90 mA
		40 V	10,5 mA



FEATURES

- Wide operating line termination battery 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
- Undervoltage lock out at 10V
- Input-output isolation voltage: 10 kV pulse 1,2/50 µseconds
- Output1-output2 isolation voltage: 2000V_{RMS} for 60 seconds
- Mechanical dimensions (L x W x H): 56 mm x 56 mm x 18 mm (2.2" x 2.2" x 0.71")

DESCRIPTION

The GS1T70-D540F 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: 90 to 110V
105 to 115V

Line Resistance (Rs): 50 to 1400 Ω
500 to 1900 Ω

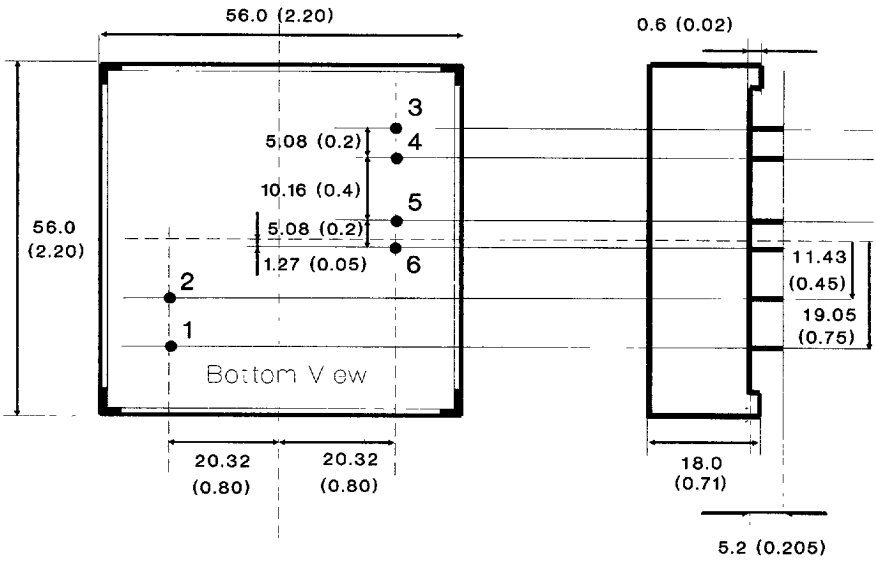
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_i	Input Voltage	Std. Conditions	25		115	V
Vipk	Input Transient Overvoltage	t = 1.2/250µs (pulse)			1	kV
Vist	Start Up Input Voltage	See fig. 2	28		44	V
Viuv	Input Undervoltage Lockout		10			V
V_{o1}	Output Voltage 1	Std. Conditions	4.75	5	5.25	V
V_{o2}	Output Voltage 2	Std. Conditions	34	40	42	V
Vor1	Output Ripple Voltage 1	Std. Conditions BW = 0 to 20MHz		5	20	mVpp
Vor2	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
Io1l	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
Iosc2	Output 2 Short Circuit Current	Std. Conditions Output Shorted (Indefinite time)	9		14	mA
Vis	Isolation Voltage (pulse)	Input to Output 1 t = 1.2/50 µs Input to Output 2 t = 1.2/50 µs Output 1 to Output 2 t = 1.2/50 µs	10000 10000 4000			VRMS
Top	Operating Ambient Temperature Range		0		+75	°C
Tstg	Storage Temperature Range		– 40		+85	°C

OUTPUT POWER CHARACTERISTICS

LT (Line Termination Voltage) = **90V to 110V** **Rs** (Line Resistance) = 50 to 1400 Ω				**LT** (Line Termination Voltage) = **105V to 115V** **Rs** (Line Resistance) = 500 to 1900 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]**
600	Activated	420	0	600	Activated	420	0
1150	Activated Emergency	450	420	1150	Activated Emergency	450	420
200	Deactivated	110	0	200	Deactivated	110	0
270	Deactivated Emergency	110	60	270	Deactivated Emergency	110	60
1150	Activated with 40 V Short circuit	450	Short circuit	1150	Activated with 40V Short circuit	450	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 the switch ON-OFF and OFF-ON sequence.

- Switch ON-OFF sequence:

For an Input Voltage Vi > 25V, the circuit operates correctly, because it lies in the Voltage Supply Operating Area.
The converter goes in High Input Impedance mode (I_q < 10µA) when the V_i is lower than 10V. If V_i remains between 0 -10V range for almost for almost 100 ms, the converter is in OFF condition.

- Switch OFF-ON sequence:

The quiescent current Iq remains below 10µA if Vi is lower than 18V.
The start-up voltage is between 34 to 44V. After 1 ms in this condition, the converter is in Voltage Supply Operating Area (V_{in} = 25 to 115V).

Figure 2.