

EXHIBIT 3
CIRCUIT DESCRIPTION
2.1033(b)(4)



Retlif Testing Laboratories

Test Report Number R-7864-2

General Introduction

The transponder L34000 0000 is a compact transponder intended for installation on sites with a maximum speed of 250km/h . The transponder can work as a fixed telegram or as a controlled telegram transponder . It can be mounted either transversal or longitudinal with respect to the travel direction , witch can be useful where protection rails etc are mounted .

The transponder have a rigid construction in order to withstand heavy mechanical stress , it is not intended to be dismounted in the case of reconditioning of the ballast etc.

To the environment harmful materials has been avoided in the design of the plate .

The capacity of the internal default memory is 180 bits of information , smaller amount of information can also be possible , as the 12 bit system etc .This is only depending of the programming SW used .

The transponder can be controlled by an external encoder via a 2 wire cable up to 3km. When the transponder not get any information from the encoder (if it is a fixed transponder or in the case of failure in incomming encoder data) the transponder will send the programmed default information .

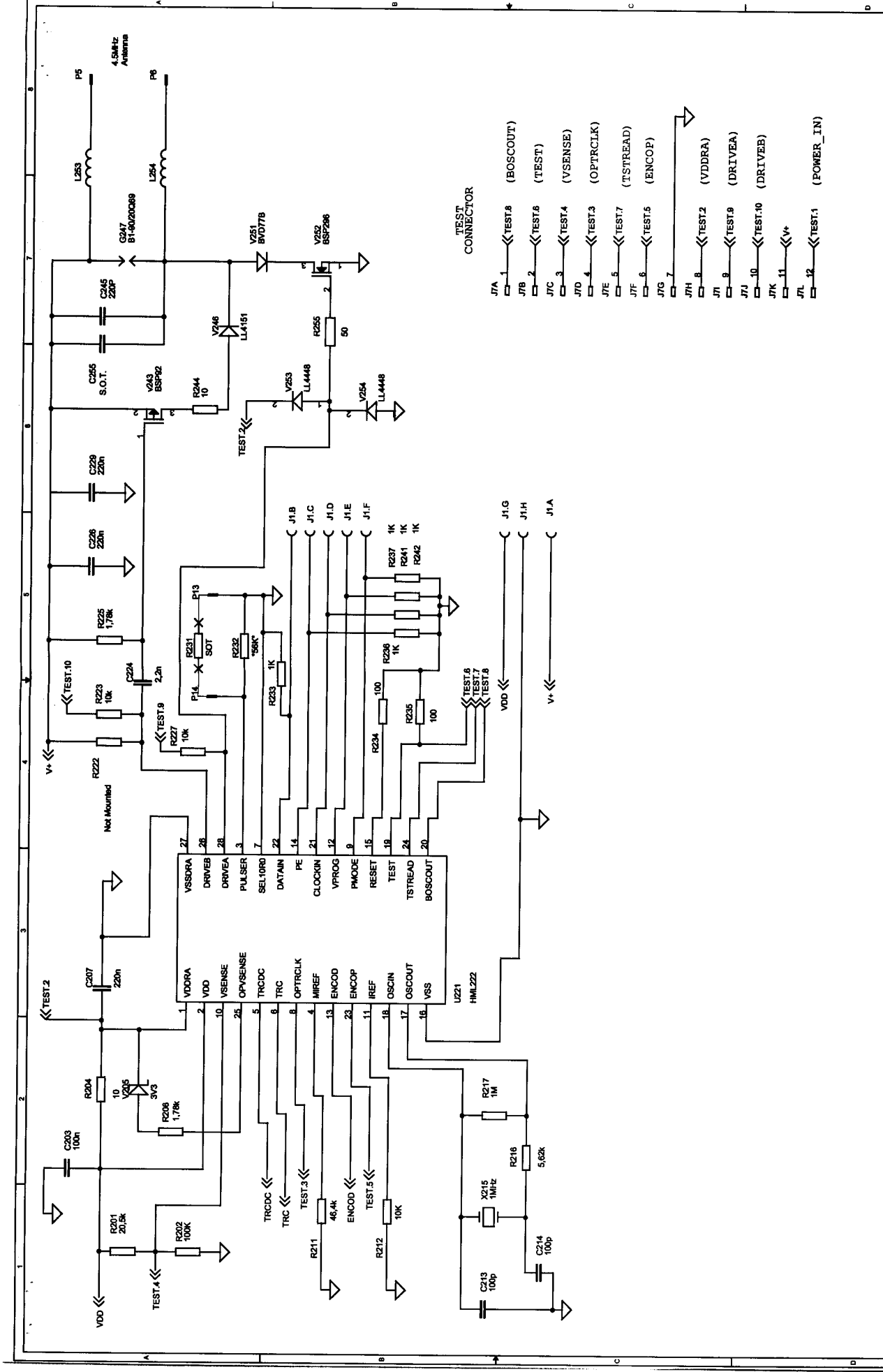
Programming of the transponder is made with a special tool and can be done in field . The transponder can also be tested and reprogrammed with the same tool , the transponder tester .

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SIGNATURES							
ED	DATE-NO	Ed1	940111	Ed2	981030		
SIGNATURES		SHd		SHd			
ATSS		Product spec. Mini transponder			Produktspec. Minibalis		
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Specification

Max. speed :	250km/h Worst case ; independent of mounting direction (transversal or longitudinal) and reduced antenna (L32044 0000)
Dinmensions :	Length 425 mm Width 250 mm Height 40 mm
Weight :	5,6 Kg
Hardware :	Fibre glass reinforced polyester .
Environment :	Temperature range -40 - +70 °C Humidity 0 - 100 % Water Water proof up to 400mm of water. Chock 50g 3*2000 bumps raisetime 2ms (2000 bumps in each direction , X,Y,Z) Debries : Water >100 mm Oil >1 mm Ballast , gravel >100 mm Exposure to ultra violet light >20 years Electrical stress 25 kVac (wire on top of unit) Surge protection IEC 571
MTBF :	>1E-06 hours
Programming:	ATSS programmer L34100 0000 or eqv. (See L34000 1160T) Reprogrammable 500 times (within safety) .
Maintenance :	No maintenance , units shall not be repaired . (See L34000 1160T)
Mounting :	Horizontal on sleeper , either direction . (Details se L34000 1150T) Two boults and washers into Sleeper. (M12 recommended)
General :	Compatible with ABB EBICAB900 and EBICAB700 system .

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TEST CONNECTOR

J7A	1	TEST.8	(BOSCOUT)
J7B	2	TEST.8	(TEST)
J7C	3	TEST.4	(VSENSE)
J7D	4	TEST.3	(OPTCLK)
J7E	5	TEST.7	(TSTREAD)
J7F	6	TEST.5	(ENCOP)
J7G	7		
J7H	8	TEST.2	(VDDRA)
J7I	9	TEST.9	(DRIVEA)
J7J	10	TEST.10	(DRIVEB)
J7K	11	V+	
J7L	12	TEST.1	(POWER_IN)

AT Signal System AB
180 bit Serial Beacon
Thermistor Module

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