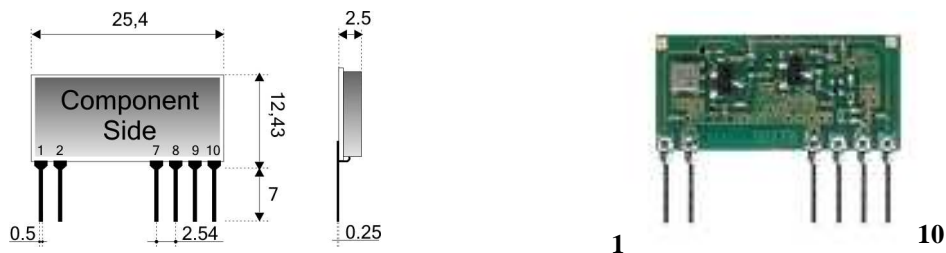


### TX SAW MID 3V/CS TRANSMITTER

SAW Transmitter module with external antenna, for utilisations with ON-OFF modulation of a RF carrier with digital data. Buffer stage for enhanced power and low harmonics on output allowing high immunity against disadjustments.

#### PIN-OUT



#### CONNECTIONS

<b>Pin 1</b>	<b>TX Dati</b>	Data input with minimum 50 kΩ input resistance.
<b>Pin 2-7-9</b>	<b>Ground</b>	GND Connections. To be externally connected to a single ground plate.
<b>Pin 8</b>	<b>RF output</b>	RF output with a characteristic impedance of 50Ω
<b>Pin 10</b>	<b>+V</b>	Connection to the positive pole of the 3V supply

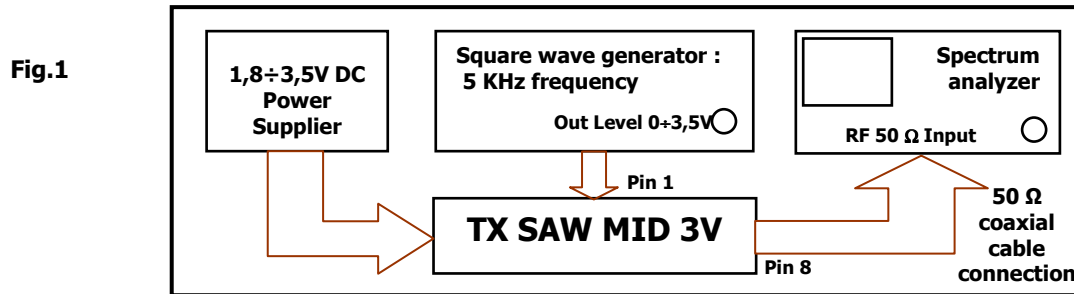
#### Technical features TX SAW MID 3V

	Min	Typic	Max	Unit	Remarks
<b>Working frequency centre</b>	433.82	433.92	434.02	MHz	See notes 2 and 3
<b>Voltage supply (Vs)</b>	1,8	3	3,5	V	
<b>Absorbed current</b>	2,4	5,5	7	mA	See note 4
<b>RF output power (E.R.P.)</b>	3	10	11	dBm	See note 2
<b>Output impedance pin 8</b>		50		Ω	
<b>RF spurious emissions</b>		-40		dBm	See note 2
<b>Modulation frequency</b>		5	10	KHz	
<b>Input high logic level</b>	1,8	3	3,5	V	See note 1
<b>Input low logic level</b>	0V		0,2	V	
<b>Working temperature</b>	-20		+80	°C	
<b>Dimensions</b>	25,4 x 12,43 x 2,5 mm				

Technical features are subject to change without notice. AUREL S.p.A does not feel responsible for any damage caused by the device's misuse.

- NOTE 1:** It is opportune that the max voltage applied to data input pin is equal to voltage supply.
- NOTE 2:** Values have been obtained by applying the test system shown in Fig. 1 and maximum 3,5 V power supply.
- NOTE 3:** The minimum and maximum showed values are determined by the device's construction tolerance.
- NOTE 4:** Values are determined by means of an input signal with duty cycle 50%.

The declared technical features have been obtained by applying the following testing system:



## Device usage

In order to obtain the performances described in the technical specifications and to comply with the operating conditions, which characterize the Certification, the transmitter has to be mounted on a printed circuit, and keep into consideration what follows:

### 3V dc supply :

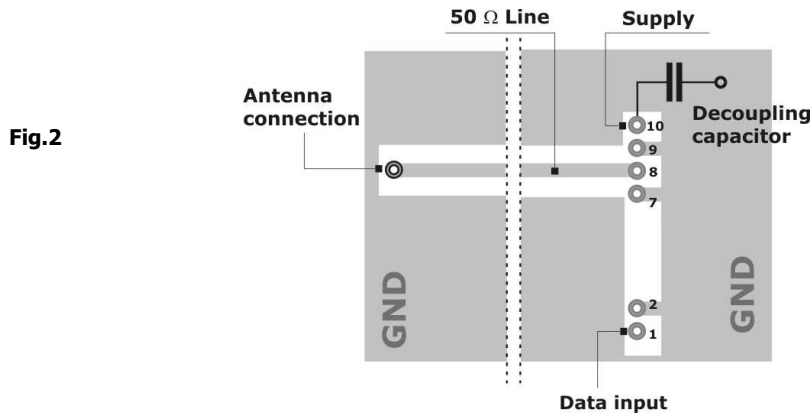
1. The transmitter must be supplied by a very low voltage source, safely protected against short circuits. Maximum voltage variations allowed: 1,8÷3,5V.
2. De-coupling, next to the transmitter, by means of a minimum 100.000 pF ceramic capacitor.

### Ground:

It must surround at the best the welding area of the transmitter. The circuit must be double layer, with throughout vias to the ground planes, approximately each 15 mm.

It must be properly dimensioned, especially in the antenna connection area, in case a radiating whip antenna is fitted in it (an area of approximately 50 mm radius is suggested).

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### 50 Ohm line:

1. It must be the shortest as possible.
2. 1,8 mm wide for 1 mm thick FR4 printed circuits and 2,9 mm wide for 1,6 mm thick FR4 printed circuits. It must be kept 3 mm away from the ground circuit on the same side.
3. On the opposite side a ground circuit area must be present.

### Antenna connection:

1. It may be utilized as the direct connection point for the radiating whip antenna.
2. It can bear the connection of the central wire of a 50 Ω coaxial cable. Be sure that the braid is welded to the ground in a close point.

### Antenna

1. A **whip** antenna, 16,5 mm long and approximately 1 mm dia, brass or copper wire made, must be connected to the RF output of the transmitter (pin 8), (see fig. 2).
2. The antenna body must be kept straight as much as possible and it must be free from other circuits or metal parts (5 cm minimum suggested distance.)
3. It can be utilized either vertically or horizontally, provided that a good ground plane surrounds the connection point between antenna and transmitter output.

**N.B:** As an alternative to the a.m. antenna it is possible to fit the whip model manufactured by **AUR°EL** (see related Data Sheet and Application Notes).  
By fitting whips too different from the described ones, the EEC Certification is not assured.

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## Other components:

1. Keep the transmitter separate from all other components of the circuit (more than 5 mm).
2. Keep particularly far away and shielded all microprocessors and their clock circuits.
3. Do not fit components around the 50 Ohm line. Keep them at least at 5 mm distance.
4. If the Antenna Connection is directly used for a radiating whip connection, keep at least 5 cm radius free area. In case a 50  $\Omega$  impedance coaxial cable is connected, then 5 mm radius will suffice.

## Reference Rules

The TX SAW MID 3V transmitter complies with the EU Rules EN 300-220 and EN 301-489, with a 3,5V max. supply. The equipment has been tested according to rule EN 60950 and it can be utilized inside a special insulated housing that assures its compliance with the above mentioned rule. The transmitter must be supplied by a very low voltage source, safely protected against short circuits.

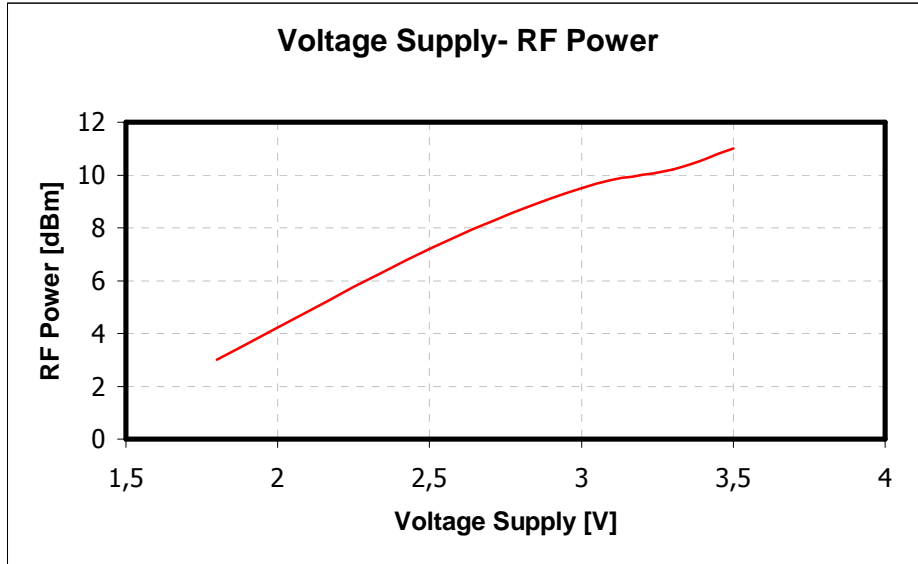
The use of the transmitter module is foreseen inside housings that assure the overcoming of the rules EN 61000 not directly applicable to the module itself. In particular, it is left at the User's care, the insulation of the external antenna connection, and of the antenna itself, since the RF output of the transmitter is not built to directly bear the electrostatic charges foreseen by the EN 61000-4-2 rules.

## CEPT 70-03 Recommendation

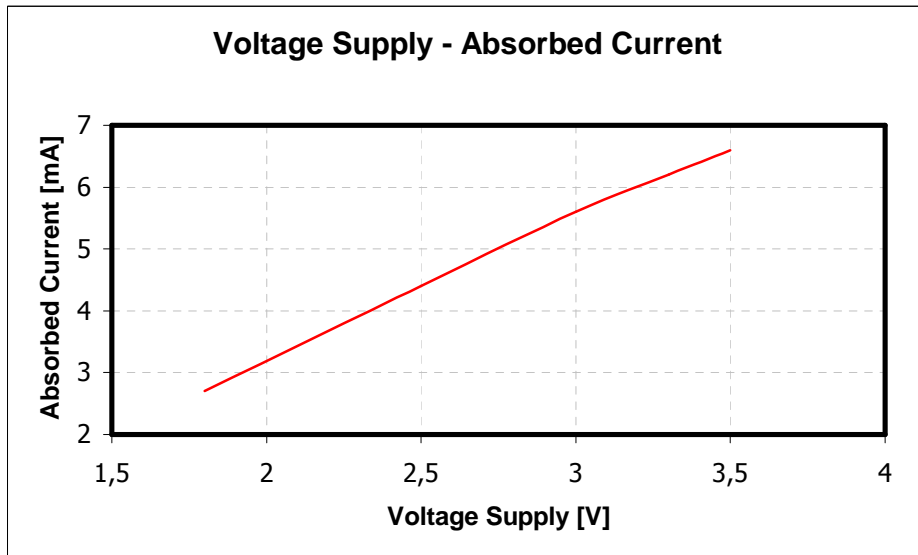
In order to comply with such rule, the device must be used only for a 10% of an hourly duty-cycle, (that means 6 minutes of utilisation over 60). The device utilisation inside the italian territory is governed by the *Codice Postale* and *Telecomunicazioni* rules in force (art. no. 334 and subsequents).

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**Reference curves**



**Fig. 3** RF Power Vs Voltage Supply

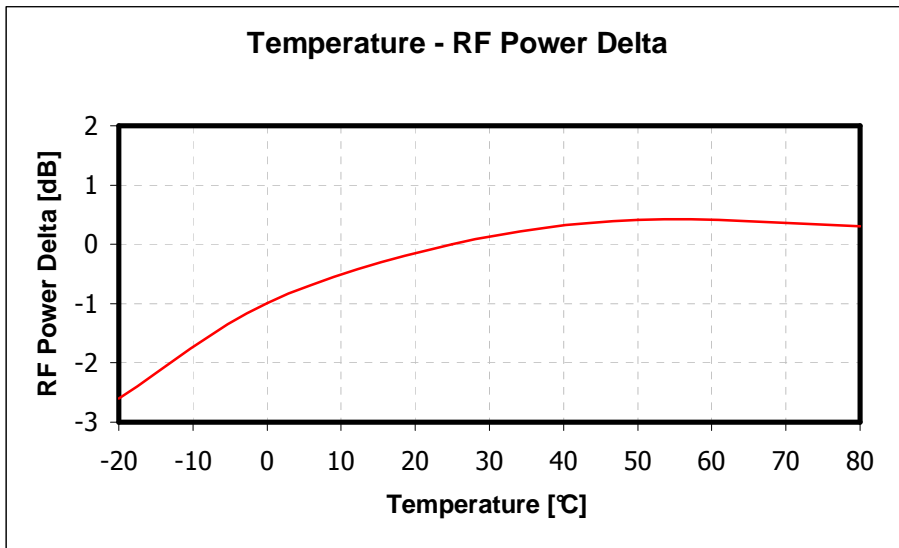


**Fig. 4** Absorbed Current Vs Voltage Supply

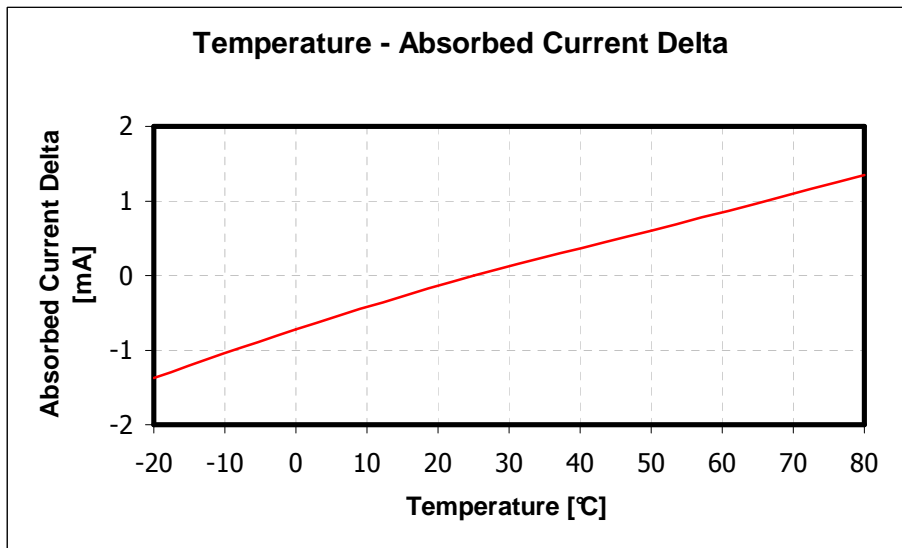
*Technical features are subject to change without notice. AUR°EL S.p.A does not feel responsible for any damage caused by the device's misuse.*

## Reference thermal curves

The thermal curves have been obtained by the testing system shown in Fig.1

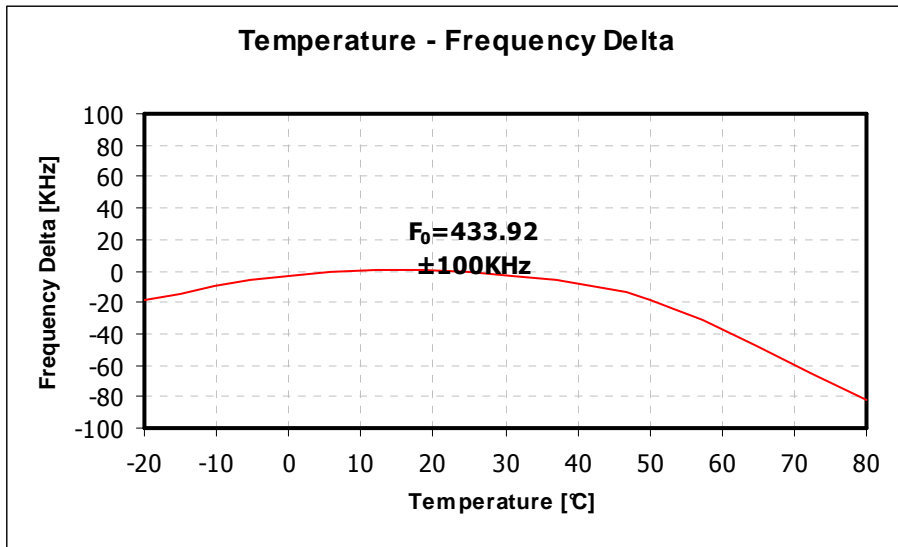


**Fig. 5** RF Power Delta Vs Temperature



**Fig. 6** Absorbed current Delta Vs Temperature

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**Fig. 7** Frequency Delta Vs Temperature

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