REYAX
TECHNOLOGY CORPORATION, LTD

09-MAR-2020 56312E39

RYLR890

868/915MHz LoRa
Low Power Long Range
Transceiver Module

Datasheet



13mm*11mm*2.2mm

Represented by:

first FC components

FIRST Components srl Via Cavour 69, 21020 Buguggiate (VA)

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PRODUCT DESCRIPTION

The RYLR890 transceiver module feature the LoRa long range modem that provides ultra-long range spread spectrum communication and high interference immunity whilst minimising current consumption.

FEATURES

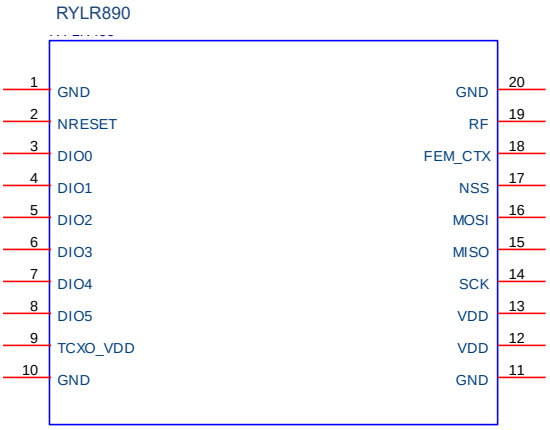
- Semtech SX1276 Engine
- High efficiency Power Amplifier
- Excellent blocking immunity
- Low Receive current
- High sensitivity
- 127 dB Dynamic Range RSSI

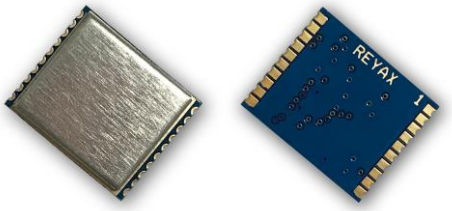
APPLICATIONS

- IoT Applications
- Mobile Equipment
- Home Security
- Industrial Monitoring and Control Equipment
- Car Alarm

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PIN DESCRIPTION

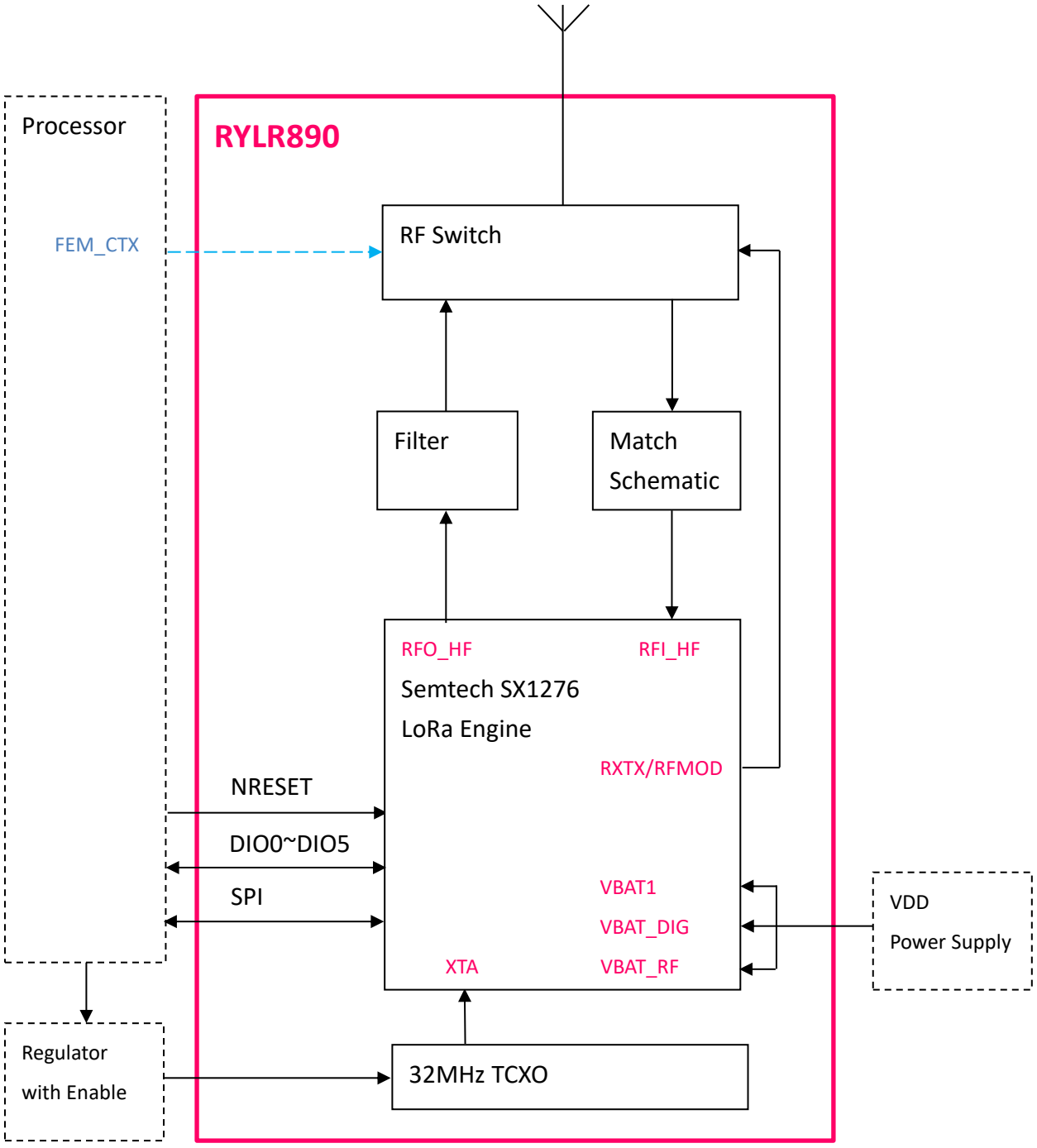




Pin	Name	I/O	Condition
1	GND	-	Ground
2	NRESET	I/O	Reset trigger input
3	DIO0	I/O	Digital I/O, software configured
4	DIO1	I/O	Digital I/O, software configured
5	DIO2	I/O	Digital I/O, software configured
6	DIO3	I/O	Digital I/O, software configured
7	DIO4	I/O	Digital I/O, software configured
8	DIO5	I/O	Digital I/O, software configured
9	TCXO_VDD	I	TCXO Power Supply
10	GND	-	Ground
11	GND	-	Ground
12	VDD	I	Power Supply
13	VDD	I	Power Supply
14	SCK	I	SPI Clock input
15	MISO	O	SPI Data output
16	MOSI	I	SPI Data input
17	NSS	I	SPI Chip select input
18	FEM_CTX	I	Optional RF Switch control Leave Unconnected.
19	RF	I/O	RF Input/Output
20	GND	-	Ground

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BLOCK DIAGRAM



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SPECIFICATION

Item	Min.	Typical	Max.	Unit	Condition
VDD Power Supply	1.8	3.3	3.6	V	
TCXO Power Supply	1.7		3.3	V	
TCXO Accuracy		±2		ppm	
TCXO Long-term Frequency Stability		±1		ppm /Year	
TCXO Rise time		3		ms	
RF Output Power Range	-4		15	dBm	
Filter insertion loss	1	2	3	dB	
Harmonic			-36	dBm	
RF sensitivity	-148			dBm	
RF Input Level			10	dBm	
Frequency Range	862	868/915	1020	MHz	
SX1276 Transmit Current		29		mA	RFOP = +13 dBm
SX1276 Receive Current		11.5		mA	LNA Boost On
Sleep Current		0.2		uA	
RF Switch Current		10		uA	
TCXO Current		2.5		mA	
Communication Range		4		KM	Open Space 125KHz
Digital input level high	0.8		VDD	V	VIH
Digital input level low			0.2	V	VIL
Digital output level high	0.9			V	VOH Imax = 1 mA
Digital output level low			0.1	V	VOL Imax = -1 mA
Operating Temperature	-40	25	+85	˚C	
Dimensions					13mm*11mm*2.2mm
Weight		1		g	

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REFLOW SOLDERING

Consider the "IPC-7530 Guidelines for temperature profiling for mass soldering (reflow and wave) processes, published 2001.

Preheat phase

Initial heating of component leads and balls. Residual humidity will be dried out. Please note that this preheat phase will not replace prior baking procedures.

- Temperature rise rate: max. 3 °C/s If the temperature rise is too rapid in the preheat phase it may cause excessive slumping.
- Time: 60 - 120 s If the preheat is insufficient, rather large solder balls tend to be generated. Conversely, if performed excessively, fine balls and large balls will be generated in clusters.
- End Temperature: 150 - 200 °C If the temperature is too low, non-melting tends to be caused in areas containing large heat capacity.

Heating/ Reflow phase

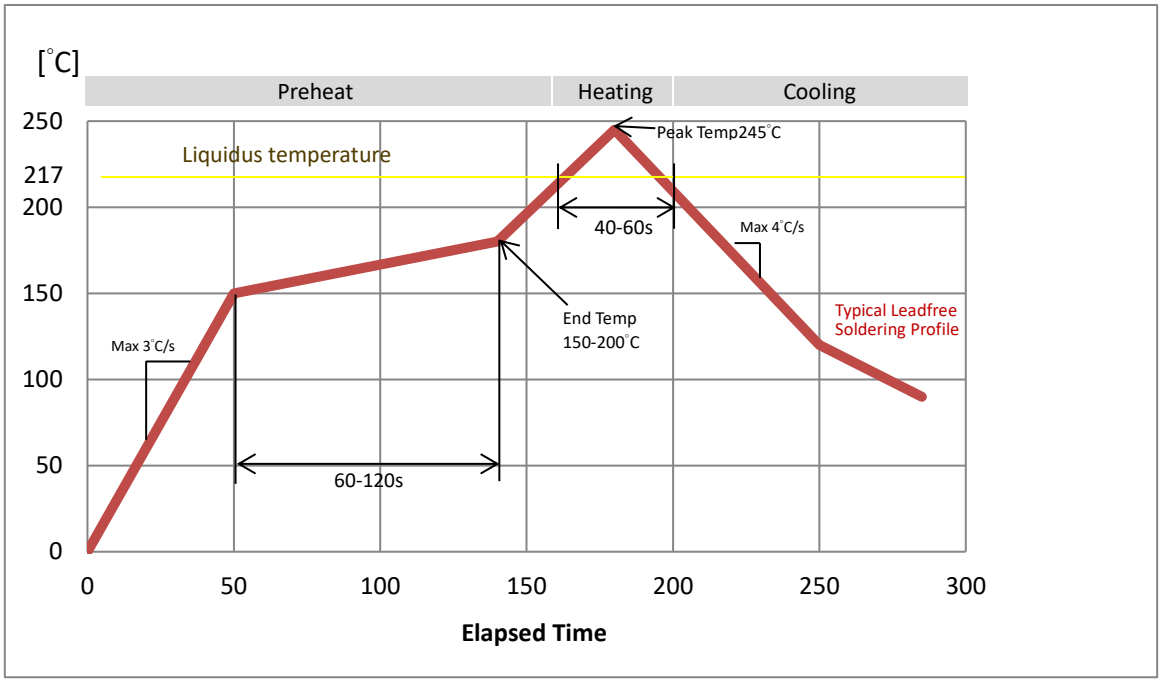
The temperature rises above the liquidus temperature of 217°C. Avoid a sudden rise in temperature as the slump of the paste could become worse.

- Limit time above 217 °C liquidus temperature: 40 - 60 s
- Peak reflow temperature: 245 °C

Cooling phase

A controlled cooling avoids negative metallurgical effects (solder becomes more brittle) of the solder and possible mechanical tensions in the products. Controlled cooling helps to achieve bright solder fillets with a good shape and low contact angle.

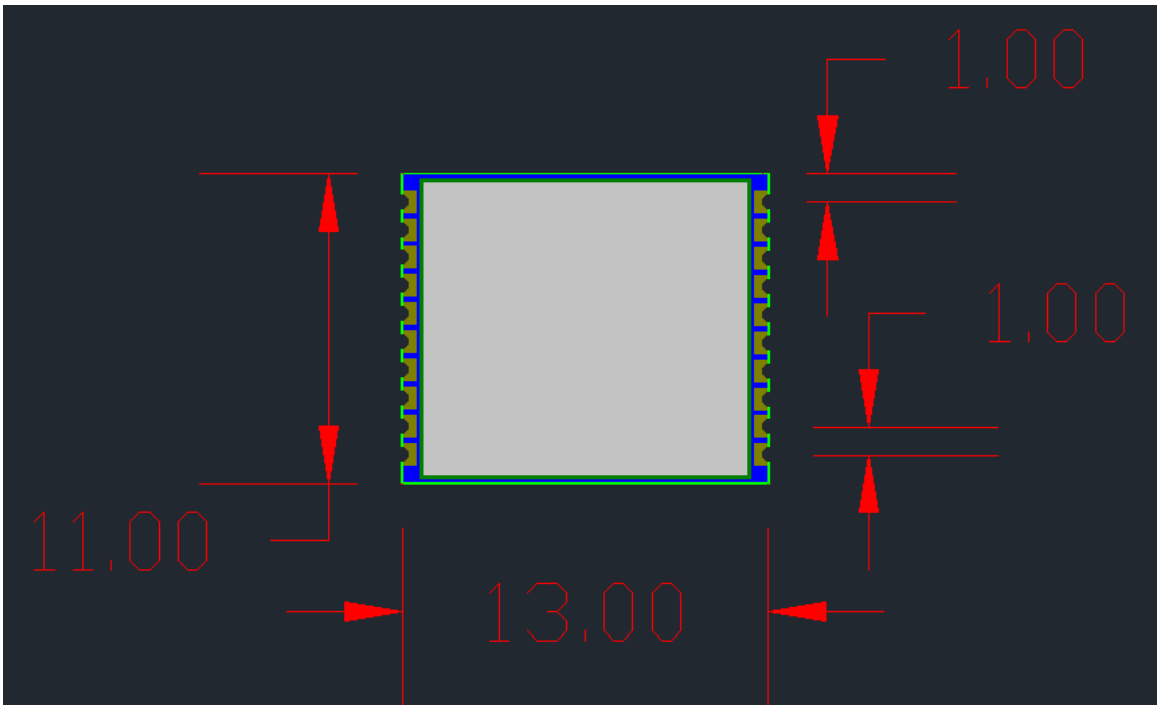
- Temperature fall rate: max 4 °C/s To avoid falling off, the REYAX RYB070I module should be placed on the topside of the motherboard during soldering.

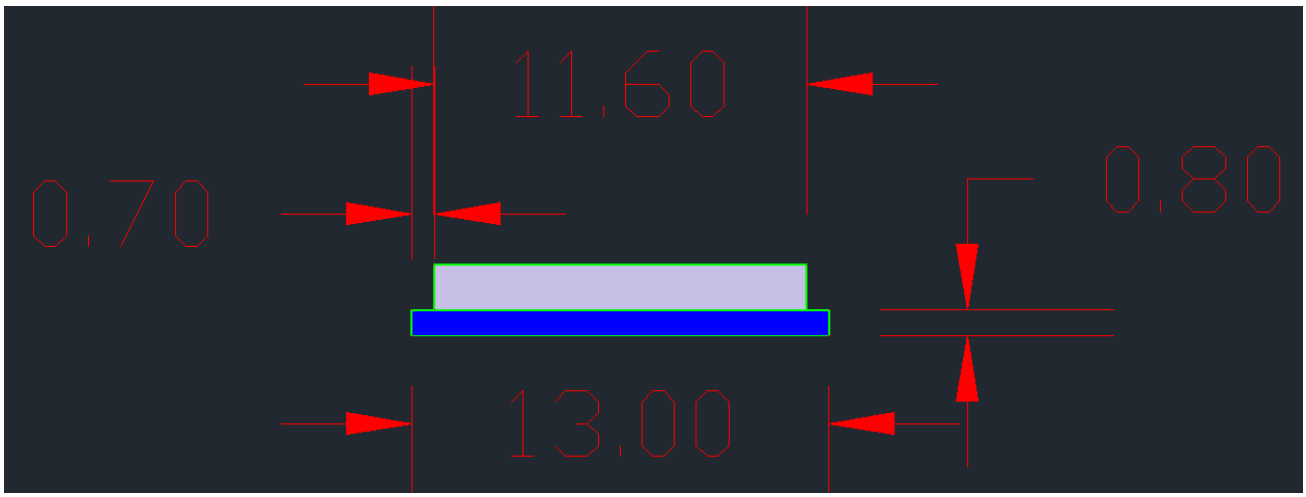


Recommended soldering profile

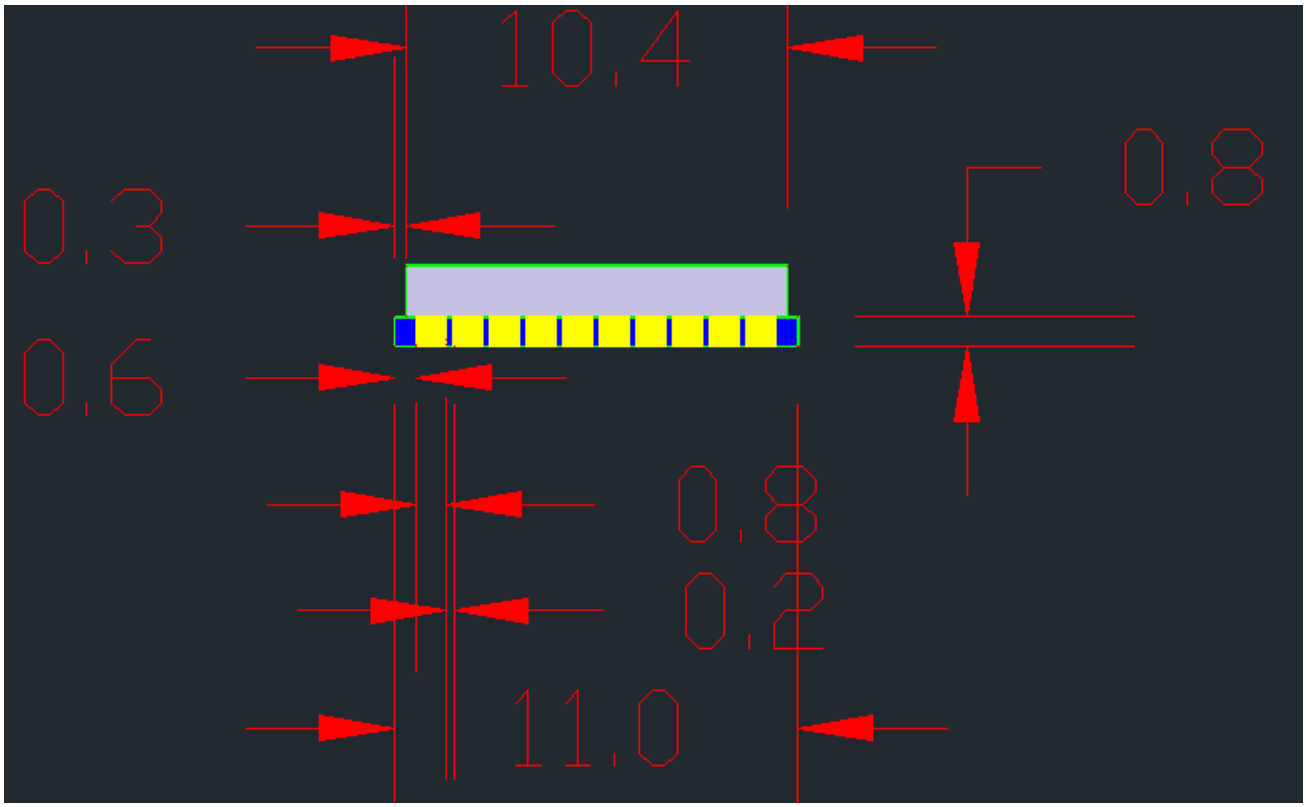
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DIMENSIONS





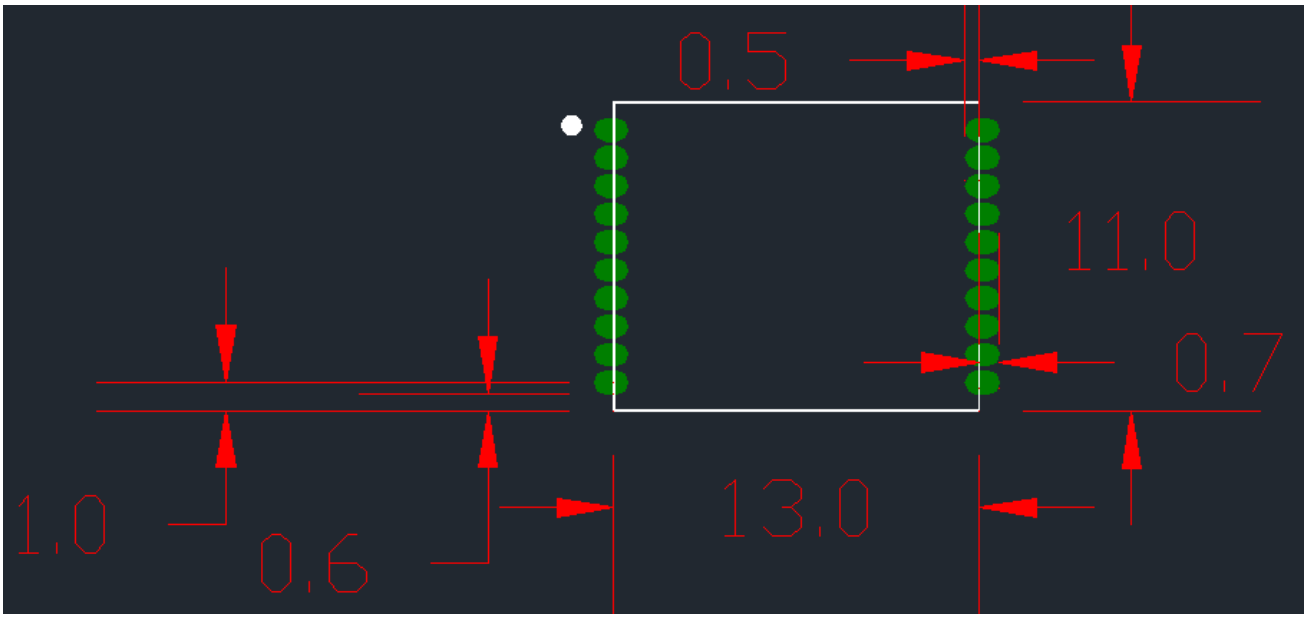
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Unit : mm

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LAYOUT FOOTPRINT RECOMMENDATIONS



Unit : mm

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