



# M10-TE-A

Quectel Cellular Engine

## Hardware Design

M10-TE-A\_HD\_V1.01



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## 0. Revision history

Revision	Date	Author	Description of change
1.00	2009-09-01	Yong AN	Initial
1.01	2009-10-26	Yong AN	Modify figure 5, 6 and 7

## 1. Introduction

This document describes specification of M10-TE-A module which is designed based on M10 module, including mechanical characteristics, PCB decal and pin assignment. For reference design of each pin and the electrical characteristics of M10-TE-A module, please refer to document [1].

### Related documents

Table 1: Reference document

SN	Document name	Remark
[1]	M10_HD	The document of M10 hardware design

## 2. Photo

### 2.1. Top view of M10-TE-A



Figure 1: Top view of the M10-TE-A module

### 2.2. Bottom view of M10-TE-A

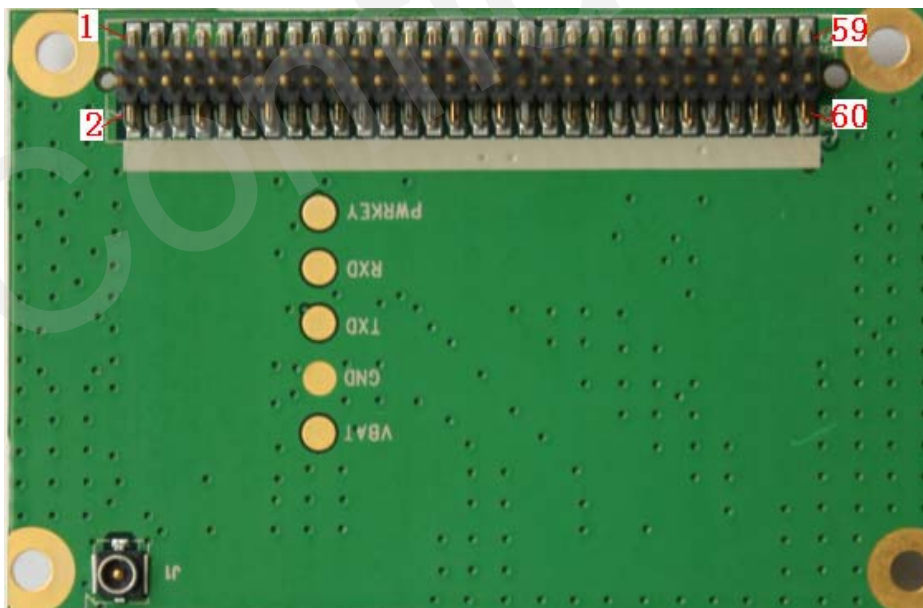


Figure 2: Bottom view of the M10-TE-A module



### 2.3. Top view of M10



Figure 3: Top view of the M10 module

### 2.4. Bottom view of M10



Figure 4: Bottom view of the M10 module

### 3. PIN assignment

Table 2: M10-TE-A pin assignment

PIN NO.	PIN NAME	I/O	PIN NO.	PIN NAME	I/O
1	VBAT	I	2	GND	
3	VBAT		4	GND	
5	VBAT		6	GND	
7	VBAT		8	GND	
9	VBAT		10	GND	
11	VCHG <sup>(1)</sup>	I	12	ADC0	I
13	TEMP_BAT	I	14	VRTC	I/O
15	VDD_EXT	O	16	NETLIGHT	O
17	PWRKEY	I	18	KBR0	O
19	STATUS	O	20	KBR1	O
21	GPIO0	I/O	22	KBR2	O
23	BUZZER	I/O	24	TXD3	O
25	SIM_VDD	O	26	RXD3	I
27	SIM_RST	O	28	KBC0	I
29	SIM_DATA	I/O	30	KBC1	I
31	SIM_CLK	O	32	KBC2	I
33	SIM_PRESENCE	I	34	LIGHT_MOS	O
35	GPIO1/ KBC3	I/O	36	EMERG_OFF	I
37	DCD	O	38	DISP_CS	O
39	DTR	I	40	DISP_CLK	O
41	RXD	I	42	DISP_DATA	I/O
43	TXD	O	44	DISP_D/C	O
45	RTS	I	46	DISP_RST	O
47	CTS	O	48	DBG_RXD	I
49	RI	O	50	DBG_TXD	O
51	AGND		52	AGND	
53	SPK1P	O	54	MIC1P	I
55	SPK1N	O	56	MIC1N	I
57	SPK2P	O	58	MIC2P	I
59	AGND		60	MIC2N	I

(1): The charging function is optional and not supported in the default configuration.

Table 3: Comparison of pin assignment between M10-TE-A and M10

PIN NO. M10-TE-A	PIN NAME M10-TE-A	PIN NO. M10	PIN NO. M10-TE-A	PIN NAME M10-TE-A	PIN NO. M10
1	VBAT	50	2	GND	8
3	VBAT	51	4	GND	45
5	VBAT	52	6	GND	46
7	VBAT	50	8	GND	47
9	VBAT	51	10	GND	48
11	VCHG	53	12	ADC0	41
13	TEMP_BAT	40	14	VRTC	16
15	VDD_EXT	7	16	NETLIGHT	6
17	PWRKEY	18	18	KBR0	28
19	STATUS	54	20	KBR1	29
21	GPIO0	64	22	KBR2	30
23	BUZZER	39	24	TXD3	62
25	SIM_VDD	12	26	RXD3	63
27	SIM_RST	15	28	KBC0	33
29	SIM_DATA	13	30	KBC1	34
31	SIM_CLK	14	32	KBC2	35
33	SIM_PRESEN CE	11	34	LIGHT_MOS	27
35	GPIO1/ KBC3	38	36	EMERG_OFF	17
37	DCD	56	38	DISP_CS	3
39	DTR	59	40	DISP_CLK	2
41	RXD	61	42	DISP_DATA	1
43	TXD	60	44	DISP_D/C	4
45	RTS	58	46	DISP_RST	5
47	CTS	57	48	DBG_RXD	9
49	RI	55	50	DBG_TXD	10
51	AGND	19	52	AGND	19
53	SPK1P	22	54	MIC1P	23
55	SPK1N	21	56	MIC1N	24
57	SPK2P	20	58	MIC2P	25
59	AGND	19	60	MIC2N	26

## 4. Mechanical dimension

This chapter describes the mechanical dimensions of the module.

### 4.1. Mechanical dimensions of module

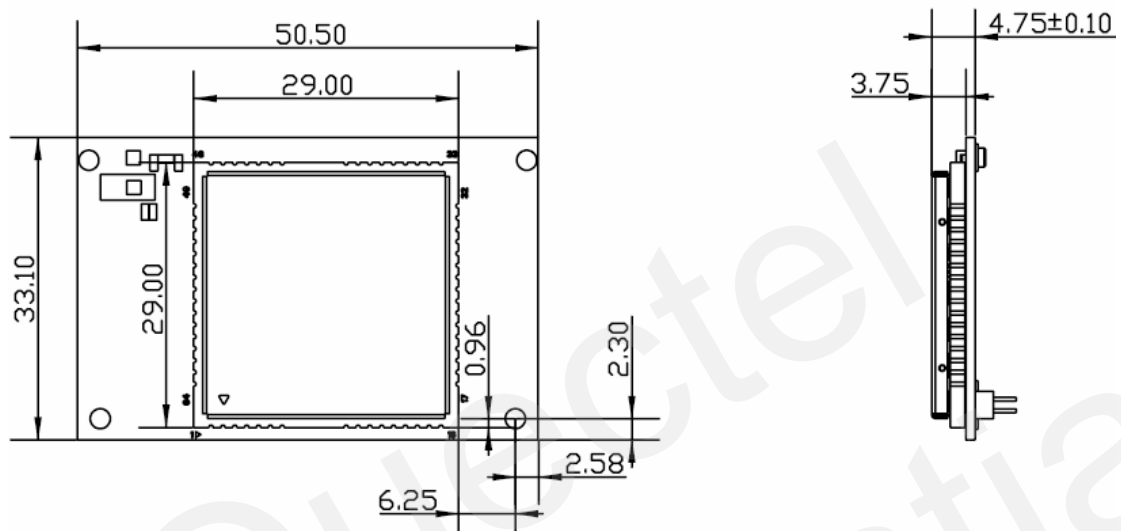


Figure 5: M10-TE-A top and side dimensions (Unit: mm)

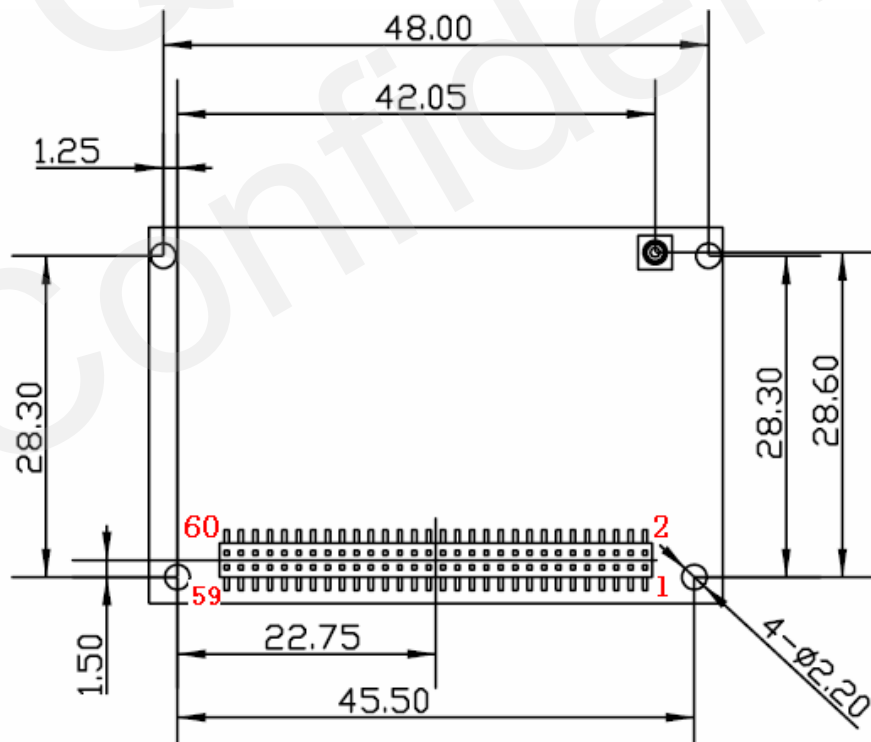


Figure 6: M10-TE-A bottom dimensions (Unit: mm)

## 4.2. Footprint of recommendation

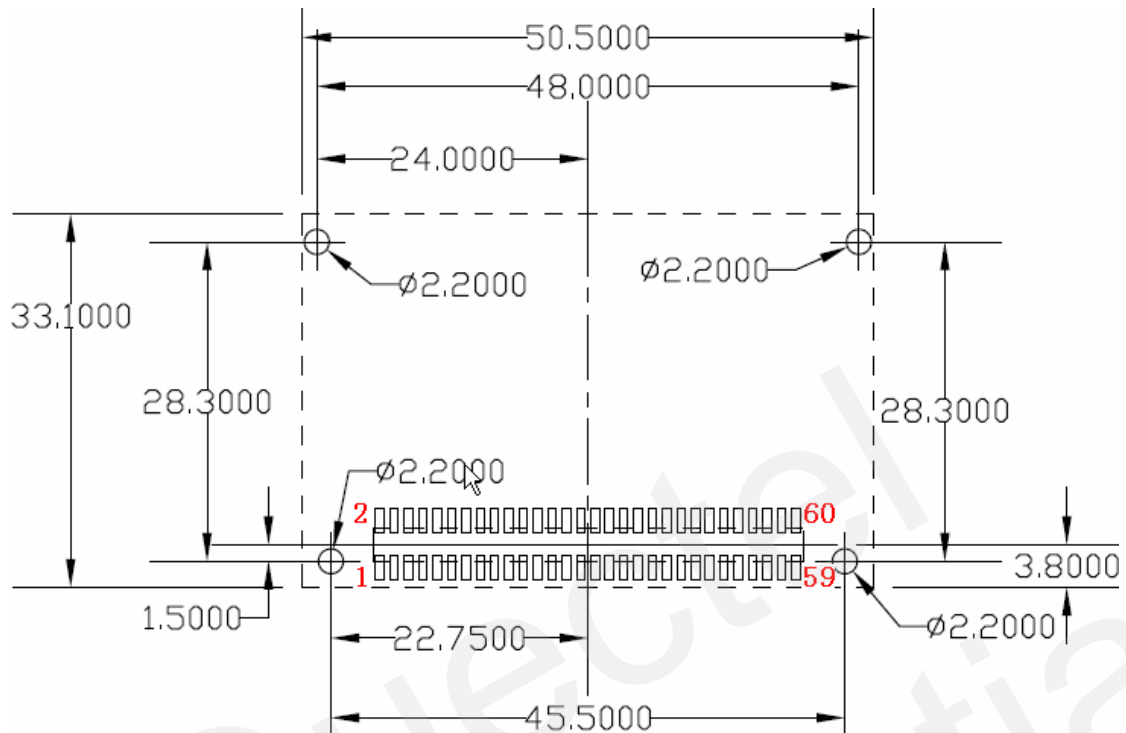


Figure 7: Footprint of recommendation (Unit: mm)

## 4.3. Mounting M10-TE-A

Use the 60-pin connector and the four mounting holes to fix the M10-TE-A in customer's host PCB.

## 4.4. Board-to-Board connector

Recommend to use ASTRON Company's 1590060-09T-R in host PCB to match the connector 1491060-09T-R used in the module. This high density SMT connector is very robust thus extremely suitable for industrial application.

### 4.5. Mechanical dimensions of the ASTRON 1590060-09T-R connector

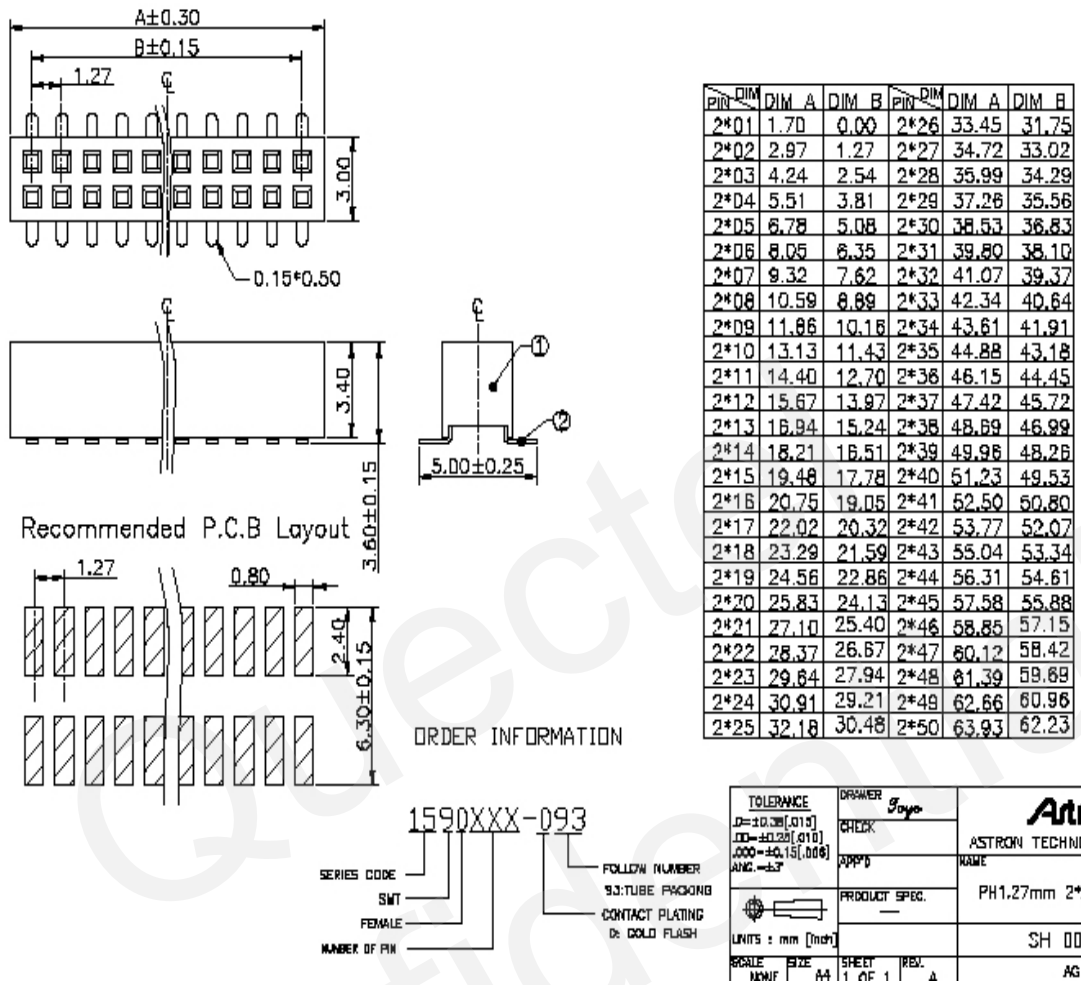


Figure 8: ASTRON 1590060-09T-R board-to-board connector

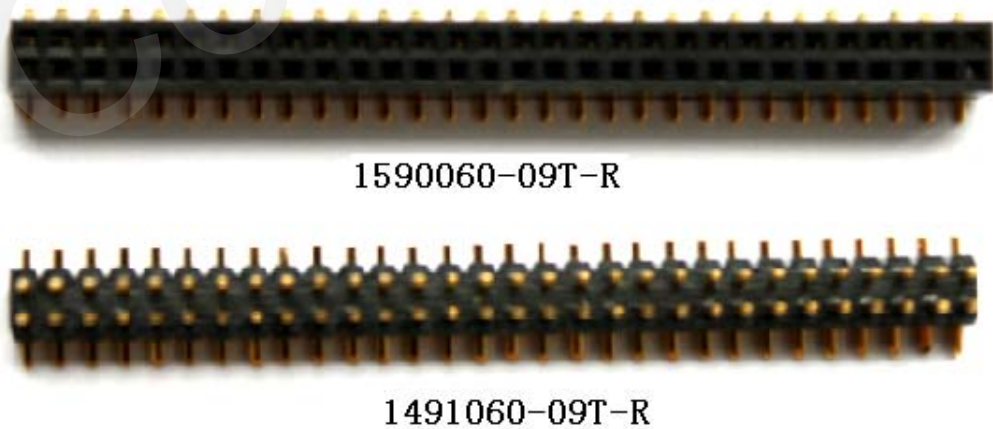


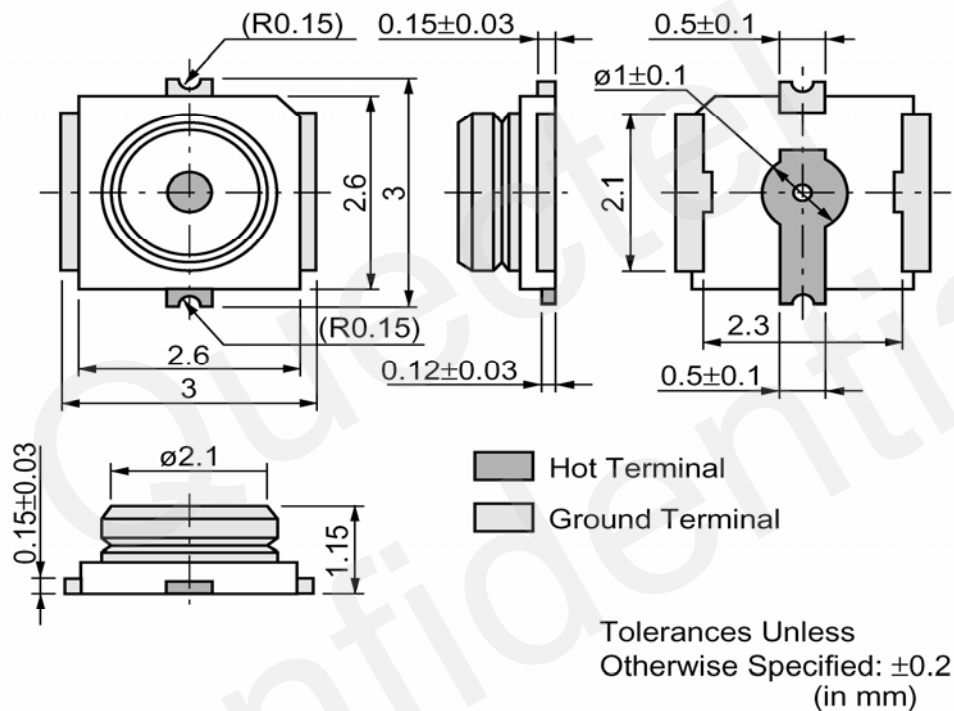
Figure 9: Photos of ASTRON B2B connectors

**Note:**

The connector *ASTRON 1491060-09T-R* is used in the M10-TE-A module, while the *1590060-09T-R* connector should be used in customer's host PCB.

**4.6. RF adapter cabling**

Murata's coaxial RF connector MM9329-2700RA1 is adopted in the module. It matches with Murata's RF connector MXTK. These connectors support wide frequency range, SMT production, and reflow solderable. The detailed mechanical sizes of these 2 RF connectors are shown in Figure 6 and Figure 7. Visit <http://www.murata.com/> for more information.



**Figure 10: MM9329-2700RA1**

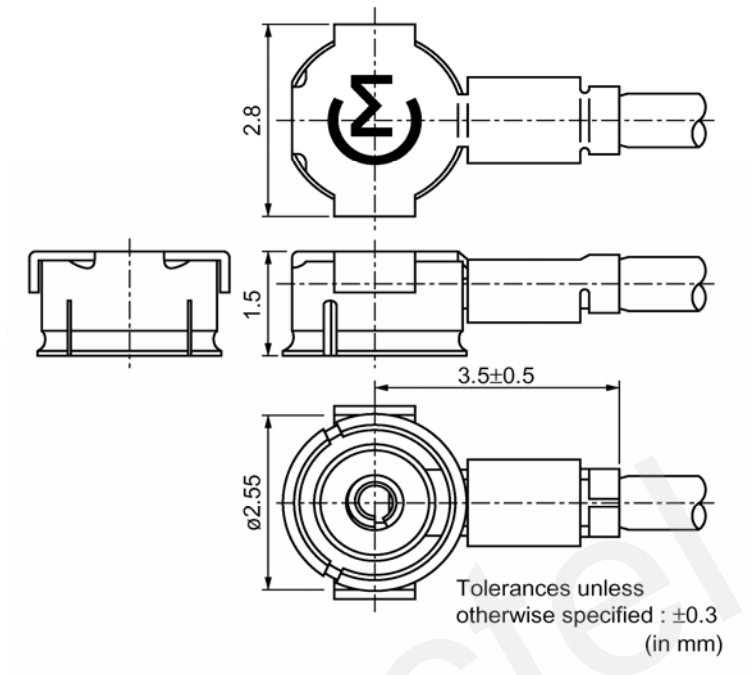


Figure 11: RF connector MXTK



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