

MT684

2D Scan Engine

Integration Guide



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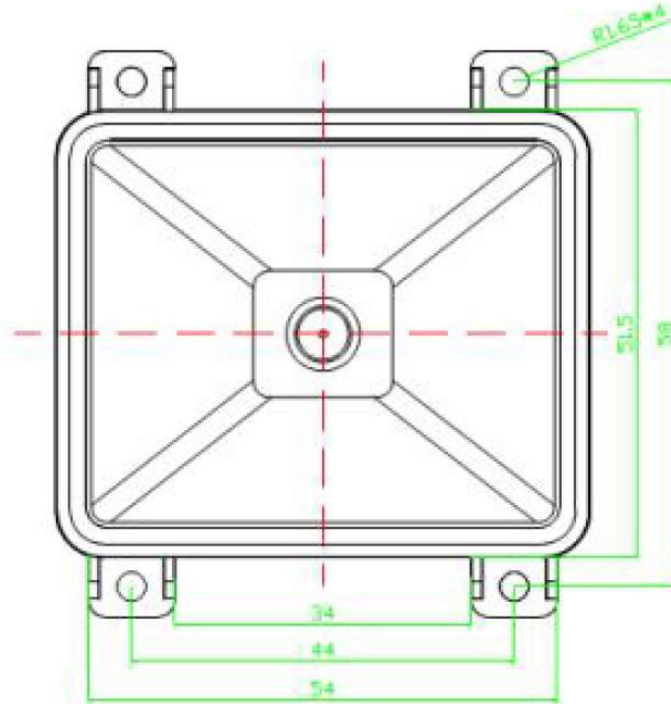
1. SPECIFICATIONS

Light Source	white LED
Sensor	640 x 480 pixels
Resolution	5mil/ 0.125mm (1D barcode) 10mil/ 0.25mm (2D barcode)
Field of View	Horizontal 68° Vertical 50°
Scan Angle	Pitch Angle $\pm 60^\circ$ Skew Angle $\pm 60^\circ$ Roll Angle 360°
Print Contrast Ratio	25%
Typical Depth of Field	UPC/EAN 13Mil: 8 ~ 181mm Code 128 15Mil: 5 ~ 143mm QR Code 15Mil: 2 ~ 119mm
Dimension	W61.5 x L65 x H37 mm
Connector	Micro USB Port 12 pin ZIF (pitch=0.5mm) 9pin Wafer (pitch=1.0mm)
Operation Voltage	3.3VDC $\pm 5\%$ 5V (USB)
Working Current	< 120 mA
Interface	UART TTL USB HID USB VCP
Operating Temperature	-20°C ~ 60°C
Storage Temperature	-40°C ~ 70°C
Humidity	5% ~ 95%RH (Non-condensing)
Drop Durability	1.2M
Ambient Light	100,000 Lux (Sunlight)
1D Symbologies	UPC-A/ UPC-E0/ UPC-E1, EAN-8/ EAN-13, Code128, Code39, Code93, Codabar, Interleaved 2 of 5, Industrial 2 of 5, Matrix 2 of 5, Standard 2 of 5, China Post 25, Code11, MSI Plessey, Plessey, GS1 Databar, GS1 Databar Limited, GS1 Databar Expanded

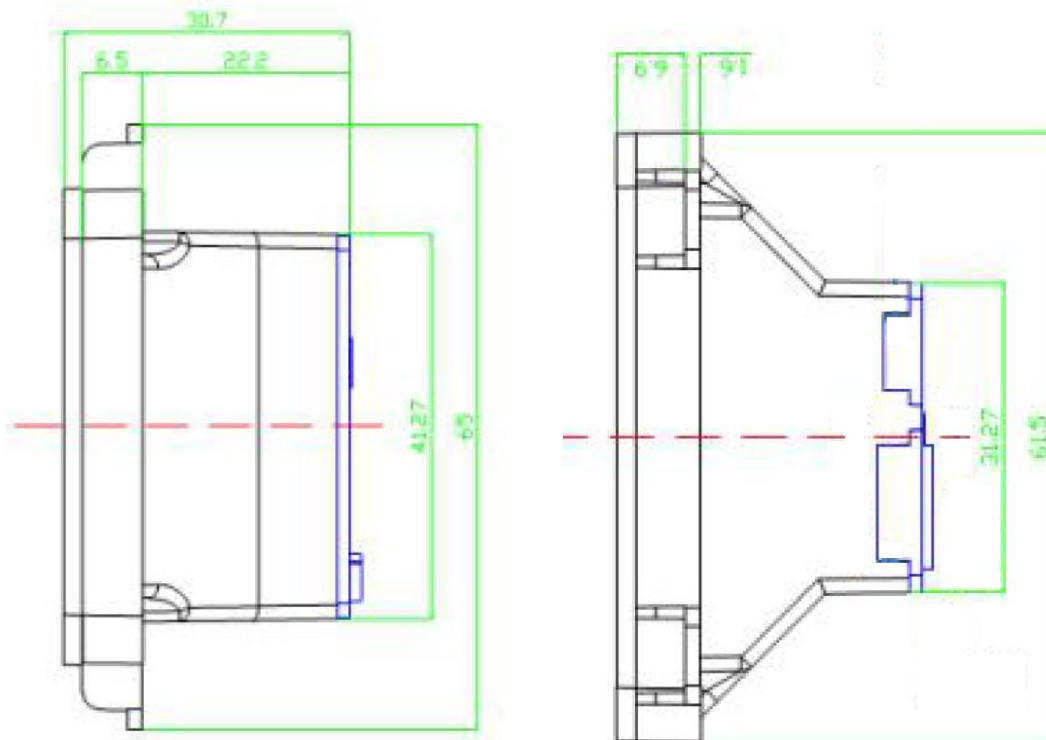
2D Symbologies	QR Code, Micro QR Code, PDF417, MicroPDF417, Data Matrix, Aztec, MaxiCode, Han Xin, Code16K
ESD	Functional after 4KV contact, 8KV air discharge (requires housing that is designed for ESD protection and stray from electric fields)
EMC	FCC Part 15B Class B, CE EN55032/35
Safety Approval	IEC 62471 (Exempt Group)
Environmental	WEEE, RoHS 2.0

2. MECHANICAL DIMENSIONS

(Unit = mm)

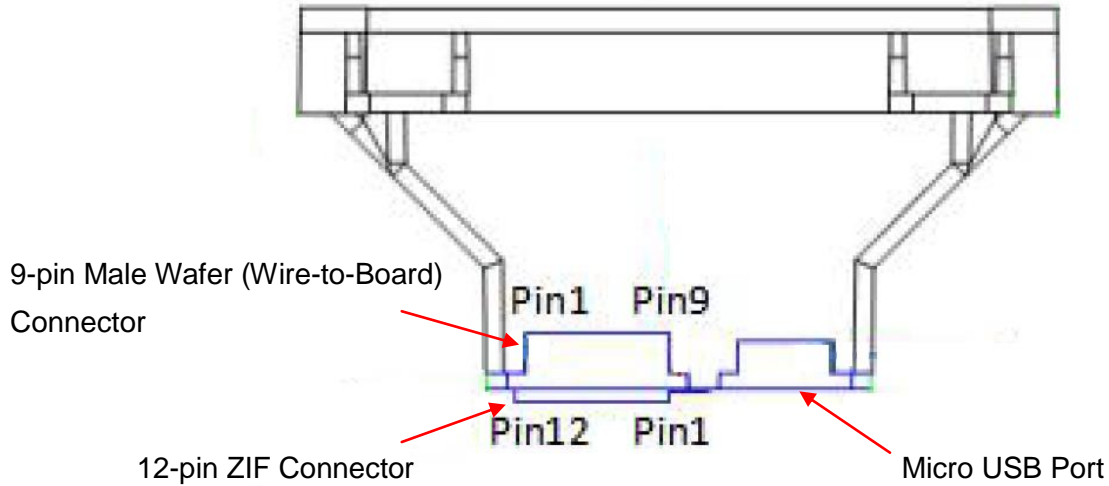


Front view



Side view

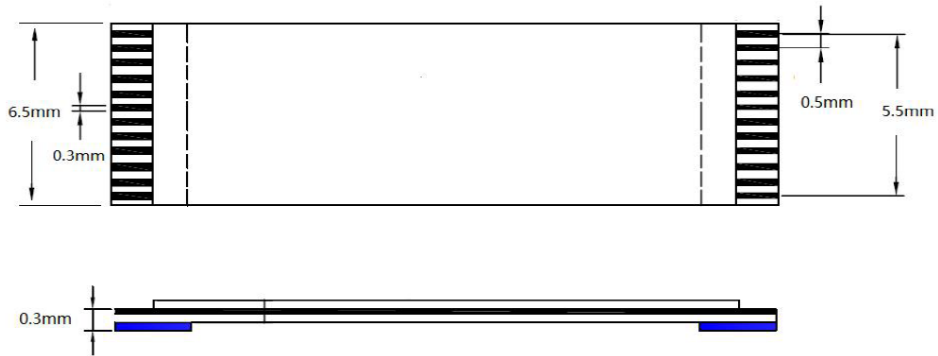
3. ELECTRIC INTERFACE



3-1. 12-pin ZIF Connector (Pitch 0.5mm, bottom contact)

Pin#	Signal	Description	I/O
1	NC	-	-
2	VCC	3.3V power supply	-
3	GND	Ground	-
4	RXD	TTL receive	I
5	TXD	TTL send	O
6	DN	USB D-	I
7	DP	USB D+	I
8	NC	-	-
9	BEEP	Good read buzzer indicator	O
10	DLED	Good read LED indicator	O
11	NC	-	-
12	TRIG	Trigger Input	I

Below is the drawing of FFC cable that connects to ZIF connector.

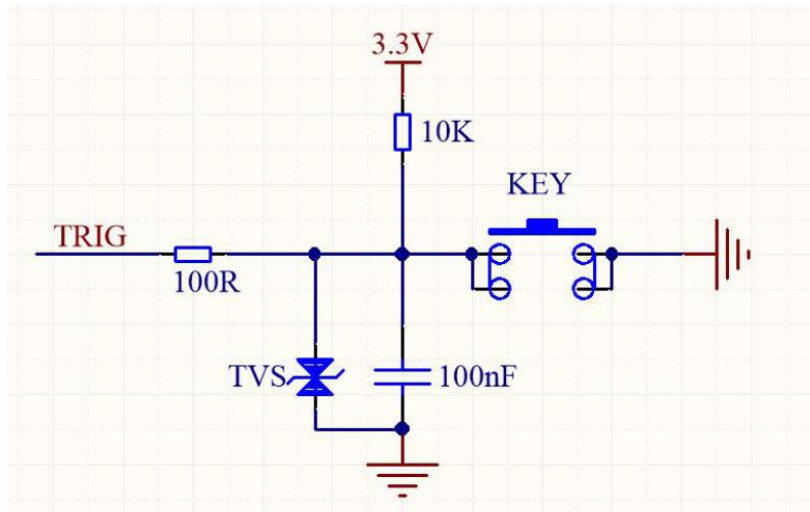


3-2. 9-pin Male Wafer (Wire-to-Board) Connector (Pitch 1.0mm)

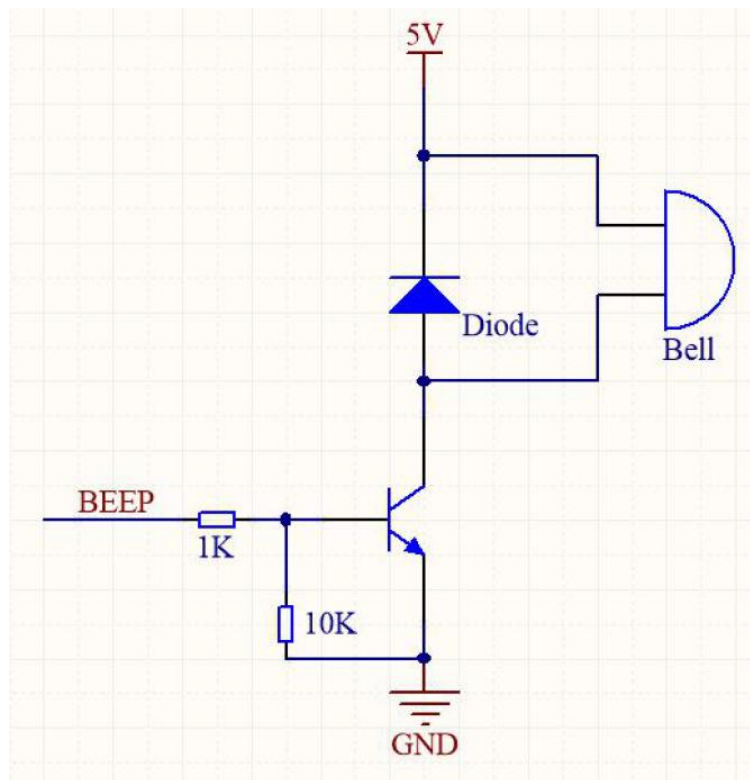
Pin#	Signal	Description	I/O
1	TRIG	Trigger Input	I
2	DLED	Good read LED indicator	O
3	BEEP	Good read buzzer indicator	O
4	DP	USB D+	I
5	DN	USB D-	I
6	TXD	TTL send	O
7	RXD	TTL receive	I
8	GND	Ground	-
9	VCC	3.3V power supply	-

3-3. Reference Circuit Design

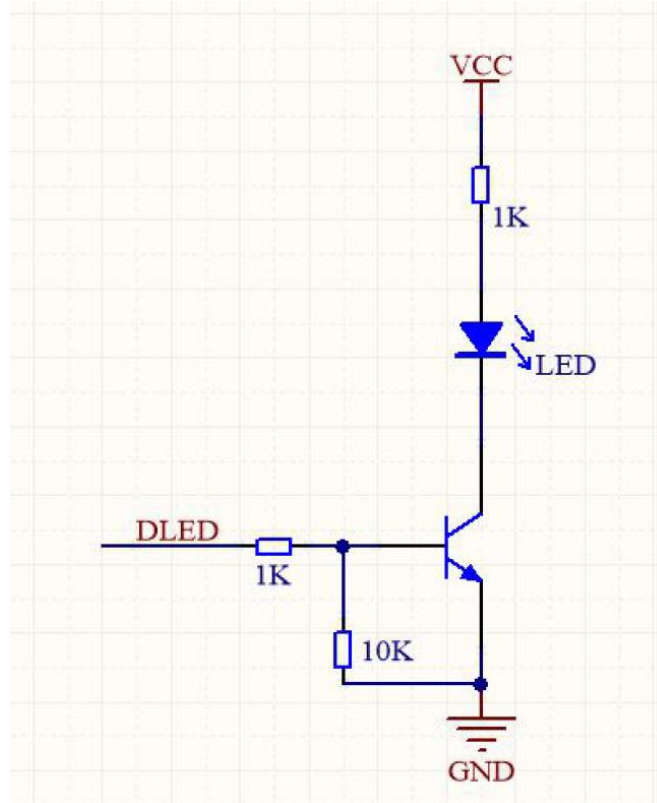
Reference design for external trigger (TRIG) driver circuit



Reference design for external buzzer (BEEP) driver circuit



Reference design for external LED (DLED) driver circuit



After a barcode is successfully read, both BEEP and DLED pin will send a high-level pulse.

4. OPERATIONAL TIMING

4-1. Power Up

When power is initially applied, the MT684 is activated and begins the process of initialization. Once initialization (duration $\geq 1000\text{mS}$) is completed, the MT684 emits power-up beeps, enters **Standby Mode** and is ready for barcode scanning.

4-2. Decode Timing

By default MT684 is in Continuous Mode, in which it takes at least 80mS for MT684 to complete a scanning operation (decode + data output + buzzer signal).

When MT684 is configured in Trigger Mode, the Trigger signal must be kept low for at least 20mS to activate scanning. Therefore in Trigger Mode it takes at least 100mS for MT684 to complete a scanning operation (trigger signal + decode + data output + buzzer signal).

4-3. Summary of Operational Timings

The minimum duration of initialization is 1000mS.

In Continuous Mode (default), the minimum duration of scanning operation is 80mS.

In Trigger Mode, the minimum duration of valid Trigger signal is 20mS and minimum duration of scanning operation is 100mS.

5. VERSION HISTORY

Rev.	Date	Description	Issued
0.1	2021.09.07	Preliminary Draft Release	Shaw
0.2	2021.09.22	Added Vertical Field of View Angle & Scan Rate	Shaw
0.3	2021.10.15	Updated Specifications Added Operational Timing	Shaw
0.4	2022.05.09	Updated Specifications	Shaw
0.5	2022.09.07	Removed Scan Rate	Shaw
0.6	2023.10.20	Updated Electric Interface	Shaw
0.7	2023.12.13	Updated Dimension Added EMC & Safety	Shaw

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