

## INFRARED RECEIVER MODULE

## CRM-383YM1-20

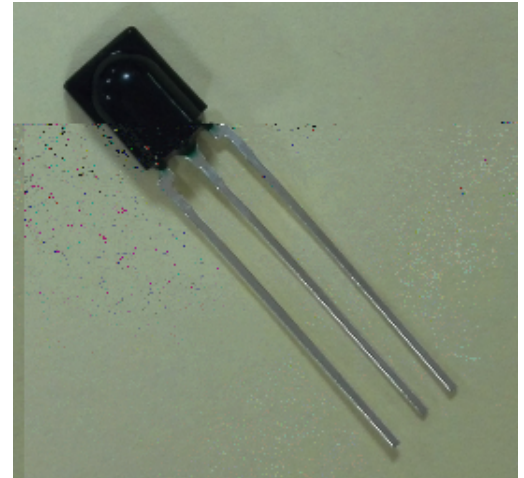
### Description

The CRM-383YM1-20 is miniaturized infrared receivers for remote control and other applications requiring improved ambient light rejection.

The separate PIN diode and preamplifier IC are assembled on a single leadframe.

The epoxy package contains a special IR filter.

This module has excellent performance even in disturbed ambient light applications and provides protection against uncontrolled output pulses.



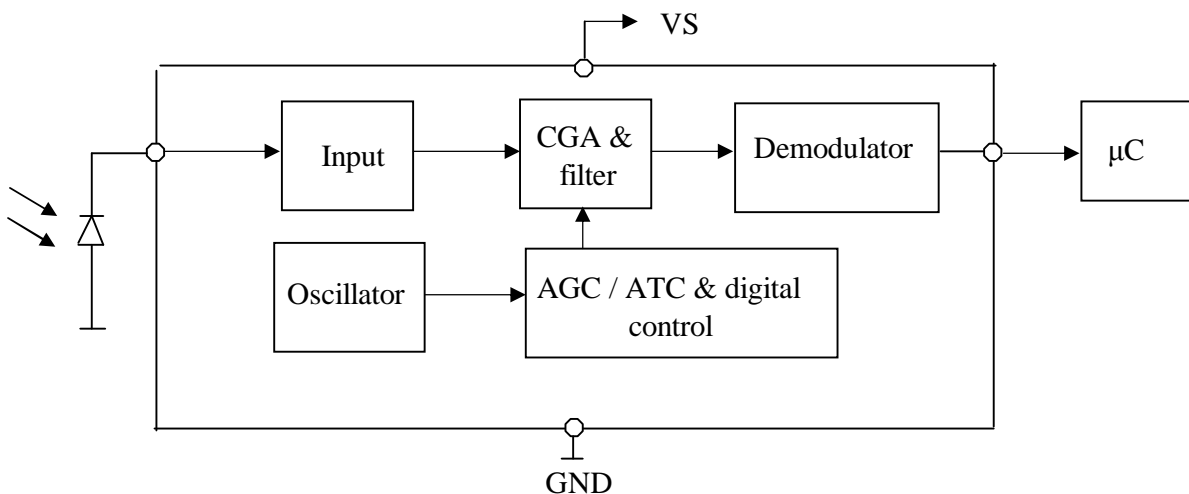
### Features

- 1 Photo detector and preamplifier in one package
- 1 Internal filter for PCM frequency
- 1 High immunity against ambient light
- 1 Improved shielding against electric field disturbance
- 1 3.0-Volt supply voltage; low power consumption
- 1 TTL and CMOS compatibility

### Applications

It can be used for TVs, VTRs, audio equipment, air conditioners, car stereo radio, toys, home computers and all other equipment requiring remote control.

### BLOCK DIAGRAM



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### Absolute Maximum Ratings

@ Ta=25°C

Item	Symbol	Ratings	Unit	Remark
Supply voltage	V <sub>CC</sub>	0 ~ 6.0	V	
Operating temperature	T <sub>opr</sub>	-20 ~ + 80	°C	
Storage temperature	T <sub>stg</sub>	-25 ~ + 85	°C	
Soldering temperature	T <sub>sd</sub>	260	°C	Maximum 5 seconds

### Electro-optical characteristics (V<sub>CC</sub>=3.0V)

@ Ta=25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remarks
Supply Voltage	V <sub>s</sub>	2.7		5.5	V	
Current consumption	I <sub>cc</sub>		0.8	2.0	mA	Under no signal
Response wavelength	λ <sub>p</sub>		940		nm	
B.P.F Center Frequency	f <sub>o</sub>		38		KHz	
Output form	----- active low output -----					
H level output voltage	V <sub>oh</sub>	2.8	3.0		V	
L level output voltage	V <sub>ol</sub>		0.2	0.4	V	
H level output pulse width	T <sub>wh</sub>	400		800	μs	
L level output pulse width	T <sub>wl</sub>	400		800	μs	
Distance between emitter & detector	L <sub>1</sub>	12			m	Note 1
Half angle	Φ <sub>h</sub>		±45		deg	Horizontal direction

### Test Method

#### A. Standard Transmitter

ON/OFF pulse width satisfied from 25 cm to detection limit

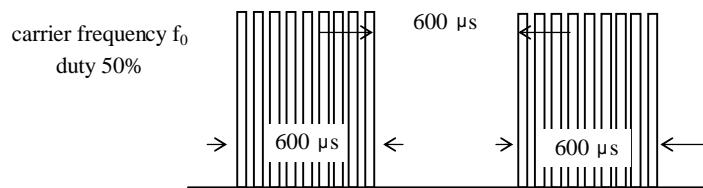


Fig 1. Burst Wave

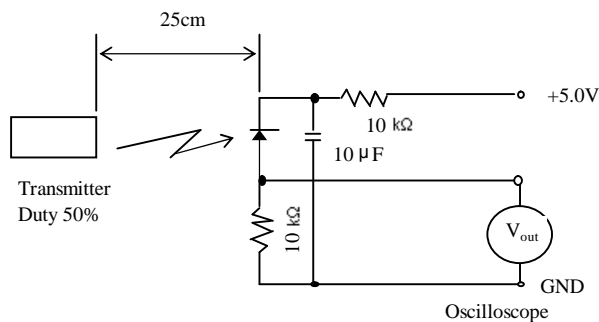
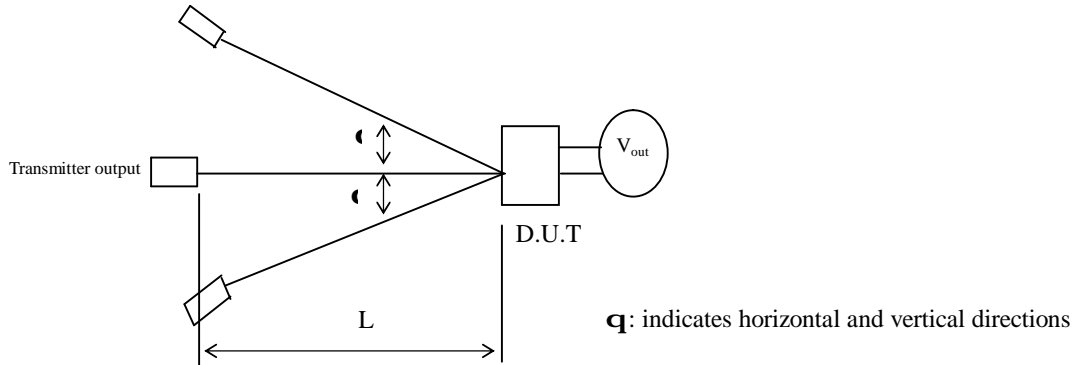


Fig 2. Standard Transmitter Measurement circuit

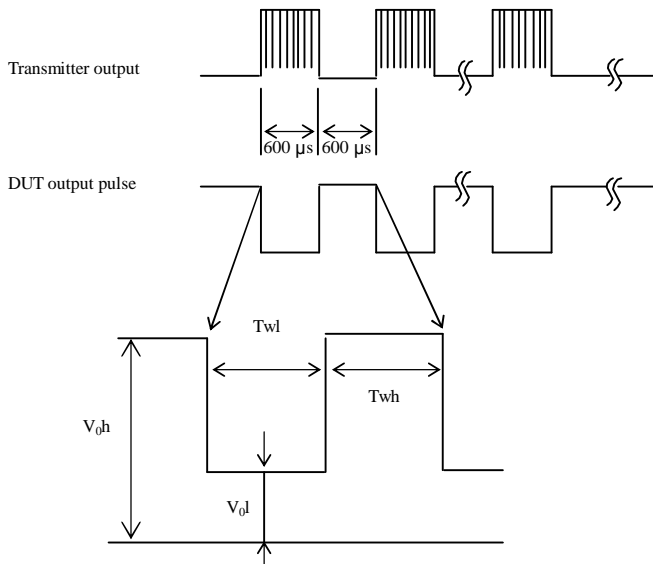
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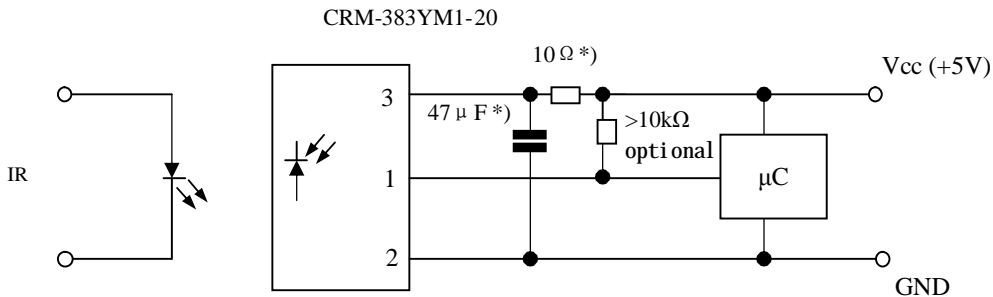
### B. Detection Length Test



### C. Pulse Width Test



### Application Circuit



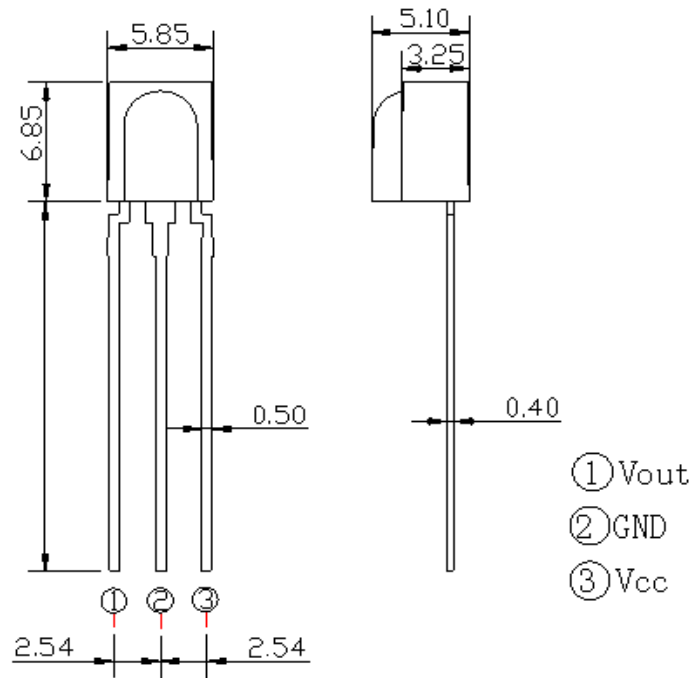
\*) recommended to suppress power supply disturbances



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Dimensions in mm



### NOTES:

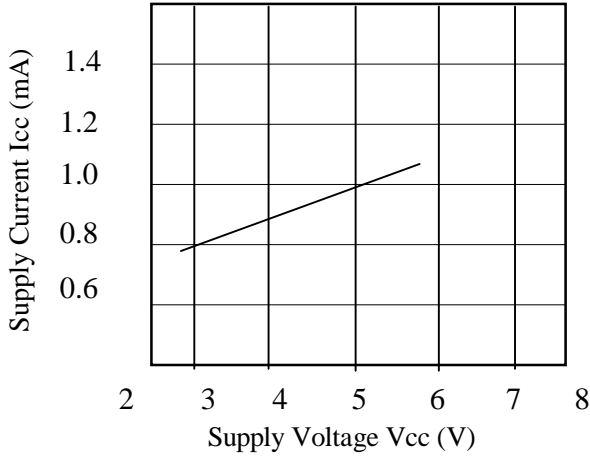
- 1.All dimensions are in millimeters .
- 2.Tolerance is  $\pm 0.40$ mm unless otherwise specified.
- 3.Specifications are subject to change without notice.



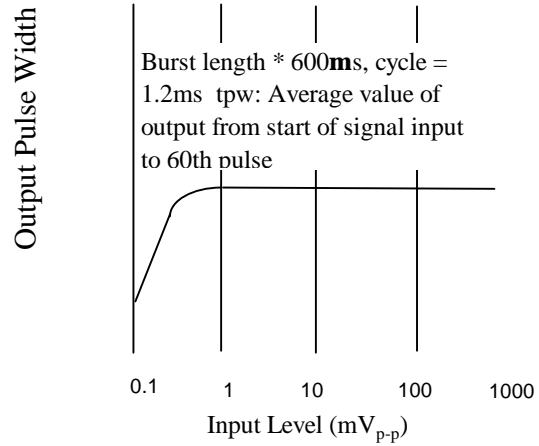
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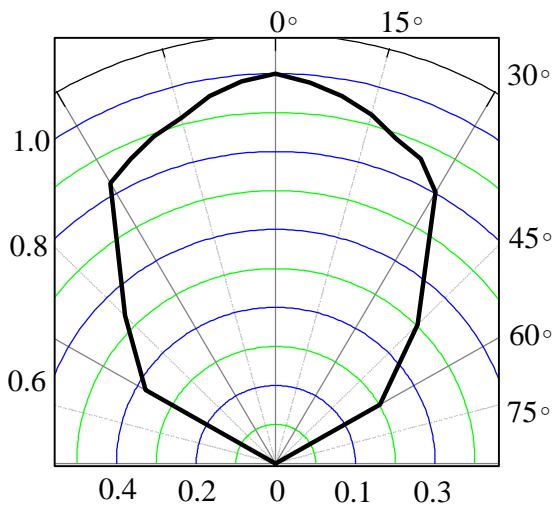
### CHARACTERISTIC CURVES (T<sub>A</sub>=25°C)



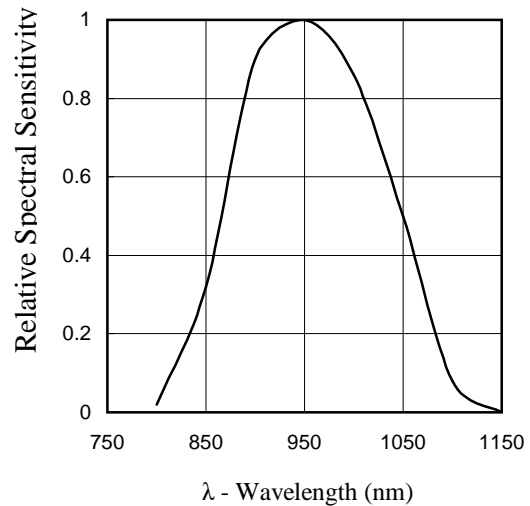
SUPPLY VOLTAGE vs. SUPPLY CURRENT



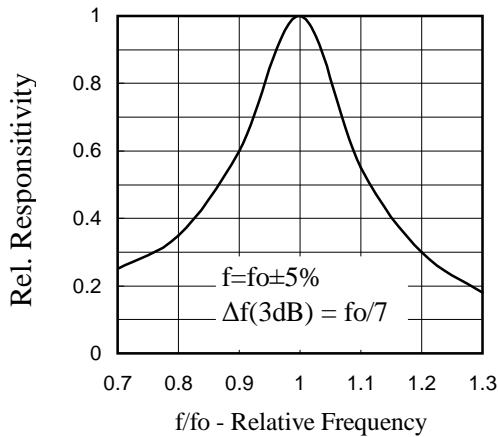
INPUT LEVEL vs. OUTPUT PULSE WIDTH



RELATIVE TRANSMISSION



RELATIVE SPECTRAL SENSITIVITY vs WAVELENGTH



FREQUENCY DEPENDENCE OF RESPONSIVITY



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### Reliability

Test item	Test condition	Standard
High temperature	Ta=+80°C      t=48H	Note 2.
Life Test	Vcc=5V      t=500H	Note 2.
Low temperature	Ta= -30°C      t=48H	Note 2.
Temperature cycle	-35°C(0.5H) ~ +85°C(0.5H) 20cycle	Note 2.
Dropping	Test devices shall be dropped 3 times naturally onto hard wooden board from a 75cm height position.	Note 2.
Soldering ability test	Ta=260°C      t=5s	Note 3.

NOTE 1. Distance between emitter & detector specifies maximum distance that output wave form satisfies the standard under the conditions below against the standard transmitter .

1)Measuring place : Indoor without extreme reflection of light .

2)Ambient light source: Detecting surface illumination shall be 200±50Lux under ordinary hite fluorescense lamp of no high frequency lighting.

3)Standard transmitter: burst wave indicated in Fig1.of standard transmitter shall be arranged to 50mVp-p under the measuring circuit specified in Fig2.

NOTE 2. (electro-optical characteristics) shall be satisfied after leaving 1 hours in the normal temperature .

NOTE 3. (electro-optical characteristics) shall be satisfied and 90% or more of the solder area is covered with solder.

### Inspection standard

1.Among electrical characteristics , total number shall be inspected on items blow.

1-1 front distance between emitter & detector

1-2 Current consumption

1-3 H level output voltage

1-4 L level output voltage

2.Items except above mentioned are not inspected particularly , but shall fully satisfy

### CAUTION ( When use and storage of this device )

1.Store and use where there is no force causing transformation or change in quality .

2.Store and use where there is no corrosive gas or sea(salt) breeze .

3.Store and use where there is no extreme humidity .

4.Solder the lead-pin within the condition of ratings. After soldering do not add extra force .

5.Do not wash this device . Wipe the stains of diode side with a soft cloth. You can use the solvent , ethylalcohol or methylalcohol or isupropylene only .

6.To prevent static electricity damage to the Pre-AMP make sure that the human body , the soldering iron is connected to ground before using .

7.Put decoupling device between Vcc and GND for reduce the noise from power supply line .

8.The performance of remote-control system depends on environments condition and ability of periferal parts. Customer should evaluate the performance as total system in those conditions after system up with components such as commander , micon and this receiver module .

### Others

1.This device is not design to endure radiative rays and heavily charged particles .

2.In case where any trouble or questions arise,both parties agres to make full discussion covering the said problem .