



深圳东裕光大电子有限公司  
广州市东裕光电科技有限公司

# 产品规格书

## SPECIFICATION

客户名称 CUSTOMER	
产品名称 PRODUCTION	红外接收头
产品型号 MODEL	DY-IRM-412
版本号 VERSION NO	A1.0

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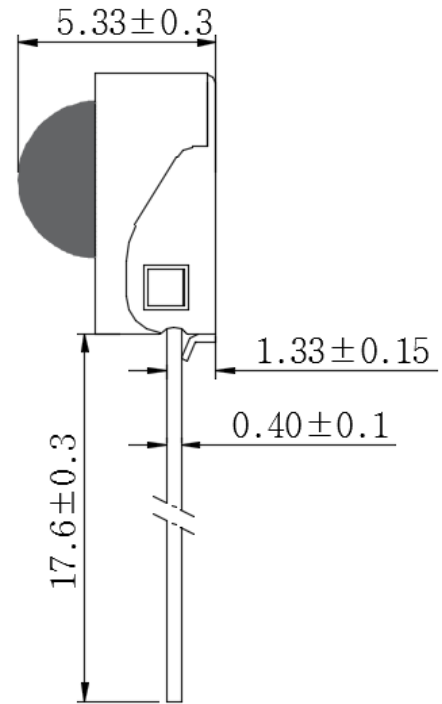
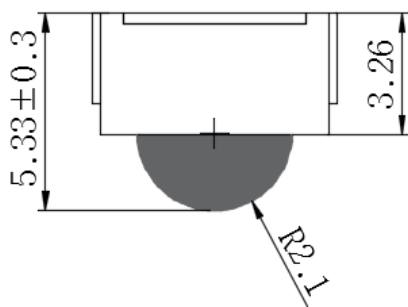
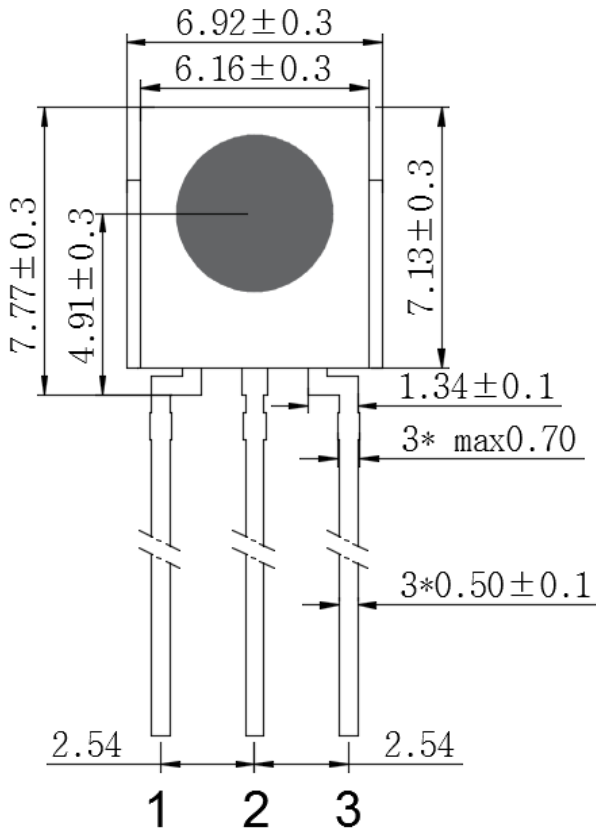
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客户确认 CUSTOMER CONFIRMATION	审核 CHECKED BY	编制 PREPARED BY
	汪建新	陈少龙

◆ External Dimension (Unit : mm)



1-Vout 2-GND 3-Vcc  
Not indicated to lerances  
 $\pm 0.3\text{mm}$

## IR Receiver Modules for Remote Control Systems

### ◆ Description

The Series is a Bi-CMOS IC for use in infrared remote control system.

They are transfer-molded, small size, light weight and low current consumption modules.

The strong points of modules are reliable operation even under disturbing ambient light source, and the protection against uncontrolled output pulses.

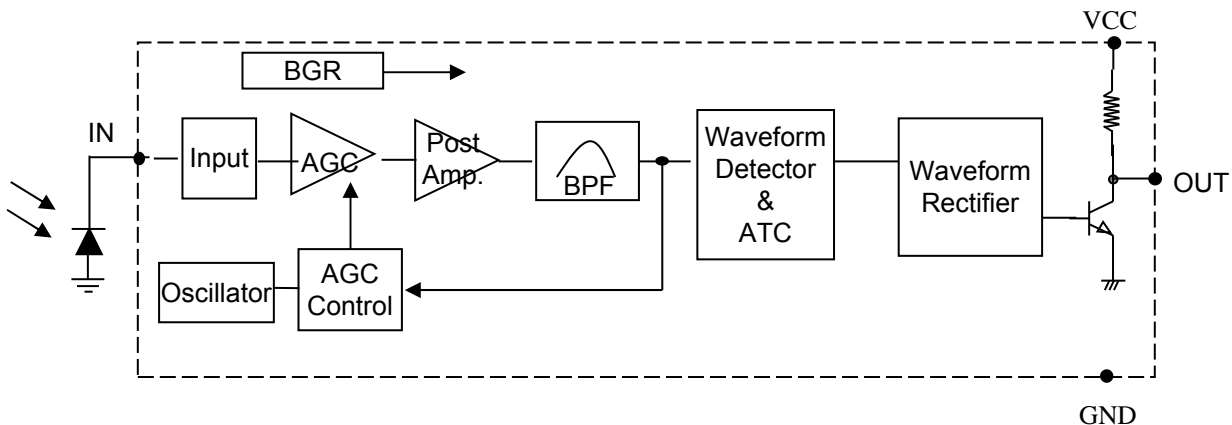
### ◆ Features

- Supply Voltage Range: 2.7V ~ 5.5 V
- TTL and CMOS compatibility
- No external components Except PIN Diode
- Available for Carrier Frequencies between 32.7kHz to 56.7kHz,  
( Adjusted by zener-Diode Fusing, 32.7kHz,36.0kHz. 36.7kHz,37.9kHz,40kHz. 56.7kHz)
- Internal filter for PCM frequency
- Open collector output (built-in Pull-up resistor 40 k $\Omega$  )
- Output active low
- No occurrence of disturbance pulses at output pin within nominal conditions.
- Short settling time after power On ( below 1msec)
- Enhanced Immunity against all kinds of disturbance light and power noise
- safety against power supply ripple noise for almost set applications.  
(especially, High performance characteristics than the other ICs without electrolytic condenser for power noise suppression.)

### ◆ Applications

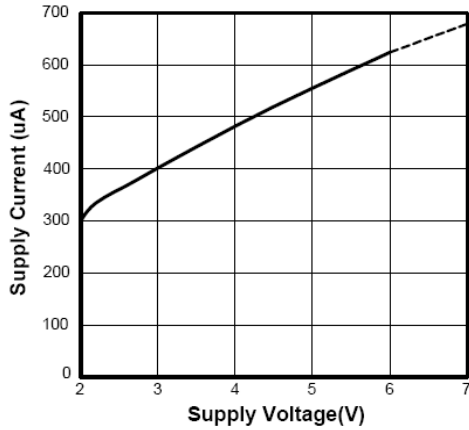
- TV, VCR, AUDIO
- Home Appliances
- Remote Control Equipment

### ◆ Block Diagram

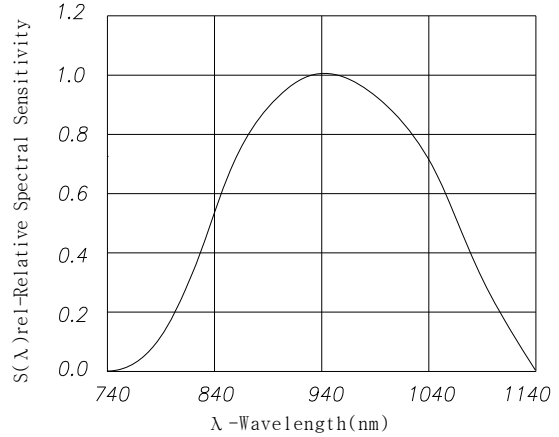


◆ Electrical / Optical Characteristics

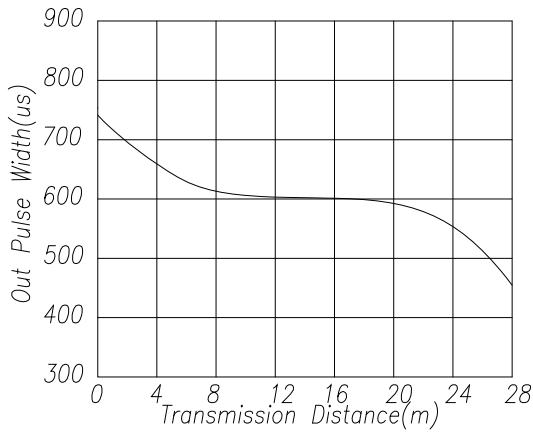
[ Fig.1 ] Supply Current vs. Voltage



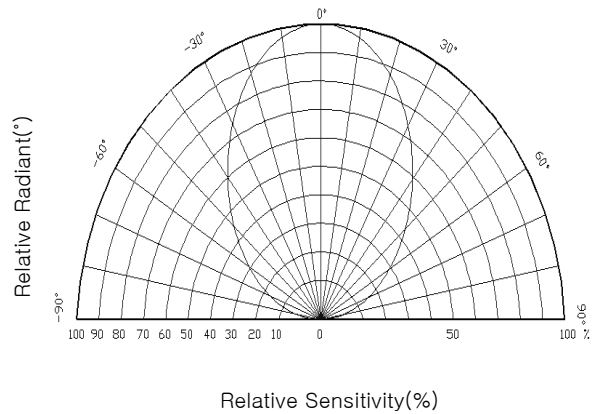
[ Fig.2 ] Relative Spectral Sensitivity



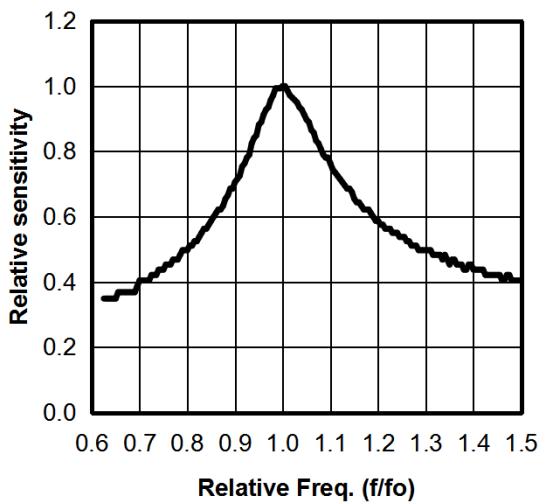
[ Fig.3 ] Output Pulse Width vs. Distance



[ Fig.4 ] Directivity



[ Fig.5 ] BPF Fc Curve

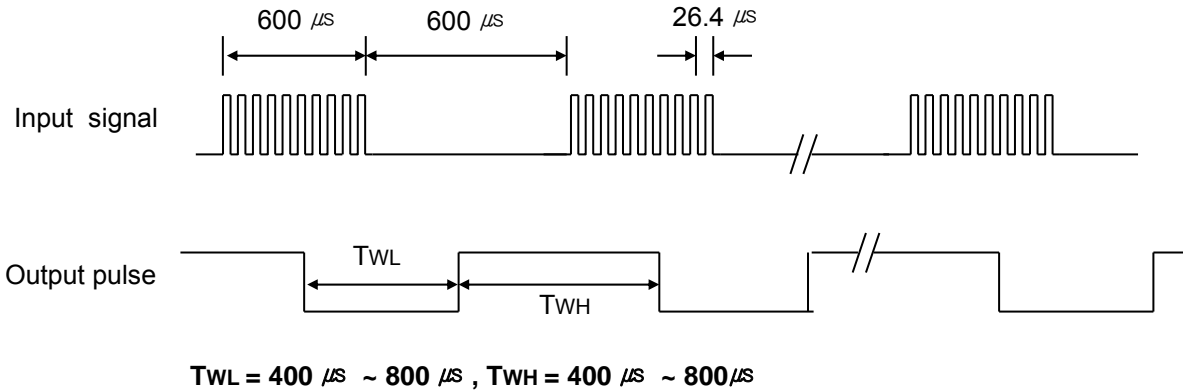


ESD Test Results

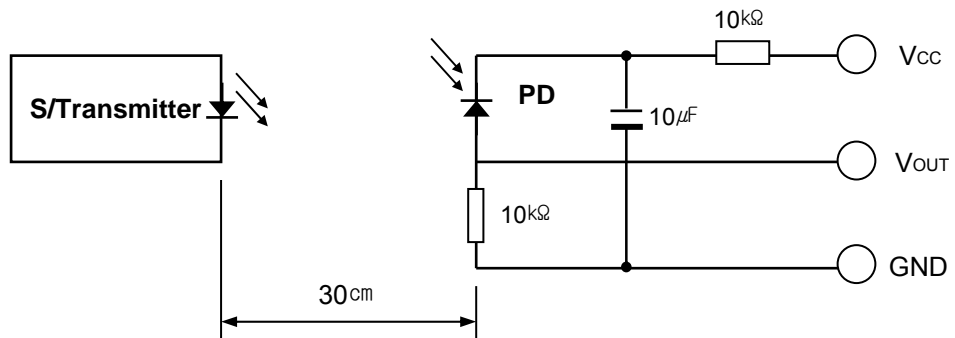
Parameter	Conditions	Specification	Results
Machine Model	C=200pF, R=0Ω	Min ±200V	>±200V
Human Body Model	C=100pF, R=1.5kΩ	Min ±2000V	>±2000V
Charged Device Model	R=100MΩ, 1Ω	Min ±400V	>±400V

◆ Measurement Conditions

[ Fig.6 ] Output Waveform ( at freq.=37.9KHz )

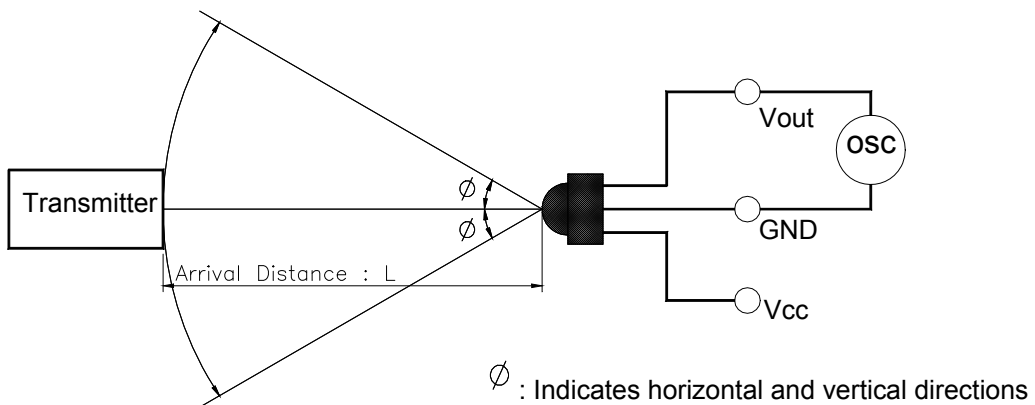


[ Fig.7 ] Transmitter



※ The specifications shall be satisfied under the following conditions. The standard transmitter shall be specified of the burst wave form adjusted to V<sub>OUT</sub> 200mVp-p upon Po measuring circuit Standard Transmitter

[ Fig.8 ] Test condition of arrival distance



[ Measurement condition for arrival distance ]

☞ Ambient light source : Detecting surface illumination shall be irradiate 200 $\pm$ 50Lux under ordinary white fluorescence lamp without high frequency lighting

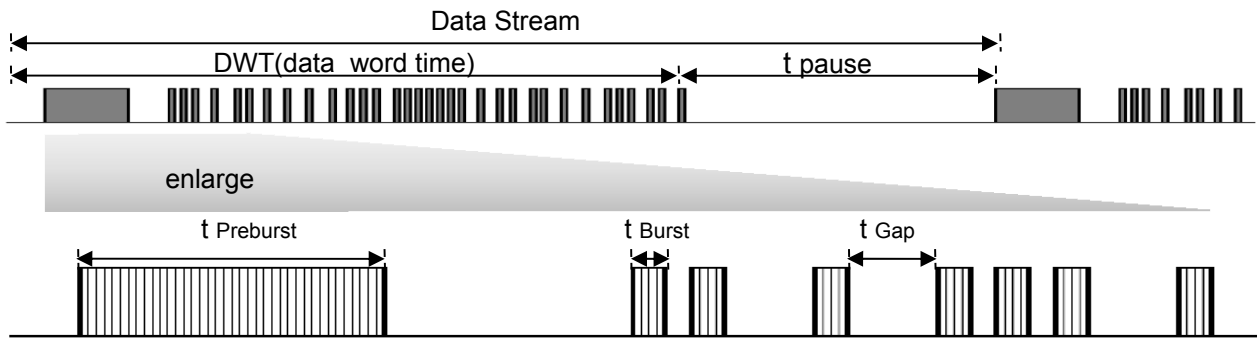
◆ Suitable Data format for Series ;

NEC code, Philips RC5 code, Philips RC6 code, RCA Code, Toshiba Micom Code, Sharp Code, Sony 12bit Code, Sony 15bit Code, Matsushita Code, Data Continuous Code,XMP-1,2,3.....

◆ Data signal limitation for Series

Item	Symbol	Time
Minimum Burst length	$t_{Burst}$	150us
Minimum Gap Time	$t_{Gap}$	350us
Minimum data pause time	$t_{Pause}$	Min. 1ms

[ Fig. 9] Data Signal diagram

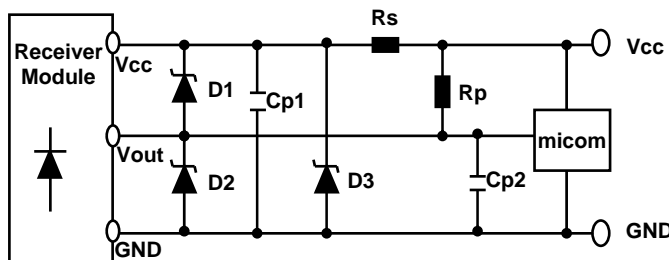


- $t_{Burst}$  ; length of a burst in pulses of the carrier frequency.
- $t_{Gap}$  ; length of the gap between two burst in pulses of carrier.
- $t_{pause}$  ; length of the pause between two data words.
- $t_{Preburst}$  ; lead code of data word

◆ External Application Circuit - Power Noise reduction & ESD Protection

[Fig.10] Application for power supply ripple suppression

A further influence to the IR receiver modules may come from a supply voltage which is not stable. Such a disturbed supply voltage can be caused by switching power supply which is not filtered well or by other components in the circuit which produced spikes on the supply line. This disturbed supply will reduce the sensitivity of receiver modules. This application circuit will filter the disturbed supply voltage.



Component	Recommend
1) $R_s$	Typ. 100ohm (47 ohm ~470ohm)
2) $C_{p1}$	Typ. 100uF (47uF ~ 100uF)
3) $R_p$	Optional (10K ohm or more)
4) $C_{p2}$	Typ. 2nF (1nF ~ 10nF)
5) D1~D3	Zener diode or protection diode

◆ Reliability Test Items

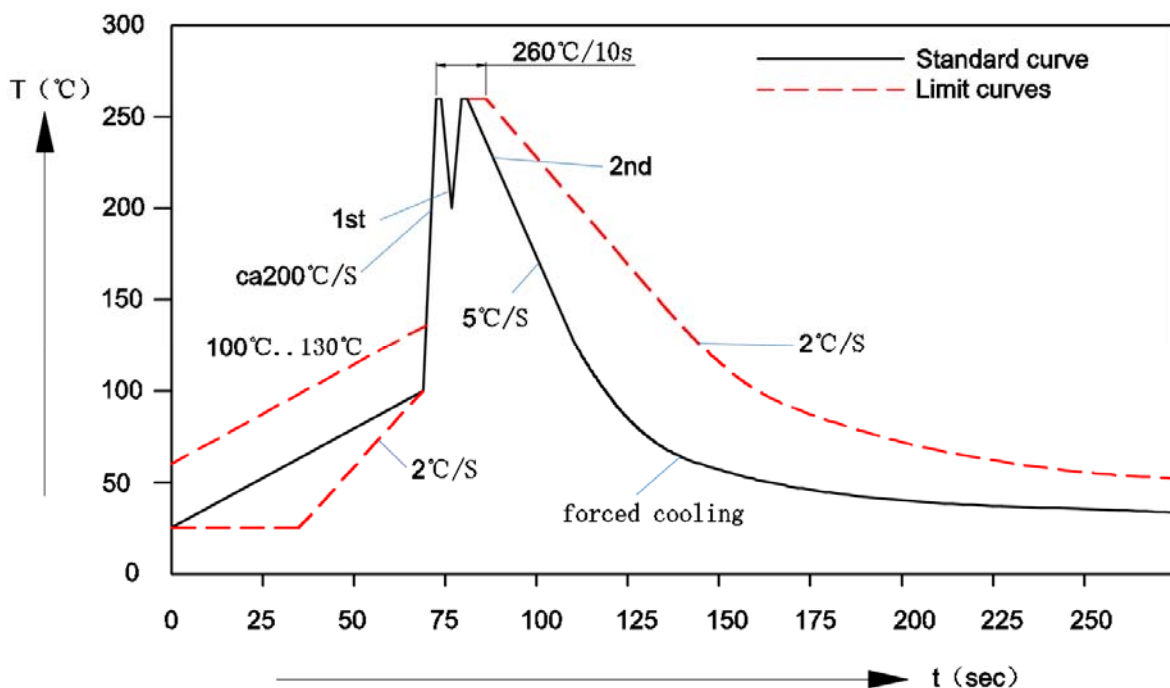
Parameter	Test conditions		Remark
High Temperature	Ta=+85°C, Vcc=5.0V	t=1000h	※1, ※2
Low Temperature	Ta=-30°C, Vcc=5.0V	t=1000h	※1, ※2
High Temp./ High Humidity	Ta=+85°C 85%RH	t=1000h	※2
Heat Cycle	Ta=-25°C(0.5h) to +85°C(0.5h)	200 cycle	※2, ※3
Fall Test	Height=75cm, 5 times		※4

- ※ 1. Supply voltage of load test is 5V.
- ※ 2. Electro-optical characteristics shall be satisfied after leaving 2 hours in the normal condition.
- ※ 3. Heat cycle test shall repeat above condition 20 times under no load.
- ※ 4. The test devices shall be dropped three time on the hard wooden board from a height of 75cm.

◆ Material Configuration

Parameter	Configuration	Remark
IC	Silicon(99%)	
Photo diode	Silicon(99%)	
Lead frame	Iron(99.5%), Silver(0.5%)	
Epoxy resin	Resin(55.5%), Hardener(45.5%)	
Silver epoxy	Silver(80%), Resin(10%), Hardener(10%)	
Bond wire	Gold(99.99%)	
Shield Case	Iron(99%), Tin(1%)	Inside

◆ DIP波峰焊接工艺曲线图



◆ Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	VCC	0	7.0	V
Supply Current	ICC	0	3.0	mA
Output Voltage	Vout	0	7.0	V
Output Current	Iout	0	2.5	mA
Storage Temperature	Tstg	-30	+85	°C
Operating Temperature	Tamb	-25	+85	°C
Soldering Temperature	Tsd	260°C ±5°C, Max 10 sec		°C

\* Stress above those listed under Absolute Maximum Ratings may cause permanent damage of device. This is stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for longer periods may affect device reliability.

◆ Electro-optical Characteristics

(Ta = 25°C)

Parameter	Symbol	Conditions	Vcc	Min	Typ	Max	Unit
Operating Voltage	Vcc	-	-	2.7	-	5.5	V
Supply Current	Icc	No input signal	5	-	0.6	-	mA
			3	-	0.5	-	
B.P.F Center Frequency	fo		5	-	37.9	-	Khz
			3	-	37.9	-	
Peak Wave Length	λP			-	940	-	nm
High Level Output Voltage	VOH	Fig.1	5	Vcc-0.5	-	-	V
			3	Vcc-0.5	-	-	
Low Level Output Voltage	VOL	Fig.1	5	-	0.2	0.4	V
			3		0.2	0.4	
High Level Output Pulse Width	TWH	Fig.1	5	400	600	800	μs
			3	400	600	800	
Low Level Output Pulse Width	TWL	Fig.1	5	400	600	800	μs
			3	400	600	800	
Arrival Distance	L	Fig. 1,2,3	±0°	18	-	-	m
			±30°	12	-	-	
			±45°	8	-	-	
Output Form	Active Low						

\*\* Arrival Distance Effected by Environment



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