

IR Receiver Modules for Remote Control Systems

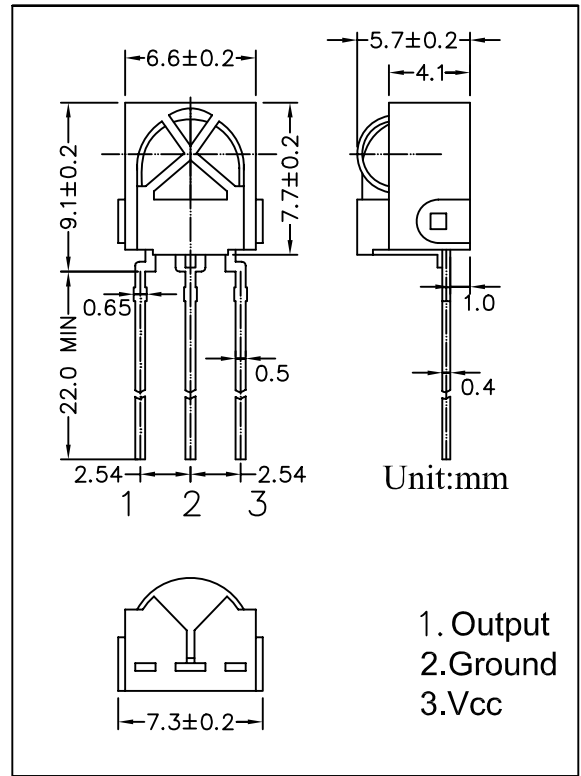
Description

The DS1838 is remote control receiver modules. Pin diode and receiver IC are assembled on one module. Small-sized, light-weight, and low current consumption. modules have been achieved by using resin mold. The demodulated output signal can directly be decoded by a microprocessor. The main benefit is the reliable function even in disturbed ambient and the protection against uncontrolled output pulses.

Features

- ◆ Supply Voltage Range: 2.7V to 5.5 V
- ◆ TTL and CMOS compatibility
- ◆ Photo detector and preamplifier in one package.
- ◆ Internal filter for PCM frequency
- ◆ Output active low
- ◆ Enhanced Immunity against all kinds of disturbance light
- ◆ No occurrence of disturbance pulses at output pin with in nominal conditions.
- ◆ Short settling time after power On.
- ◆ Meet RoHS

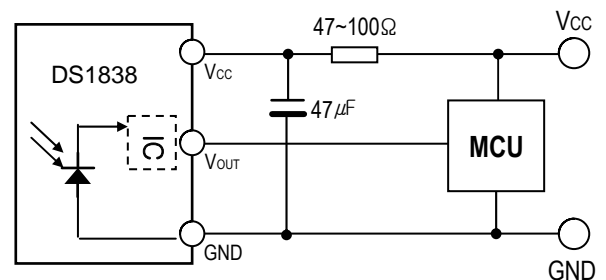
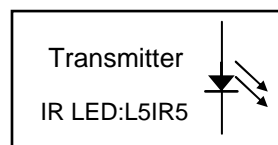
Dimensions



Applications

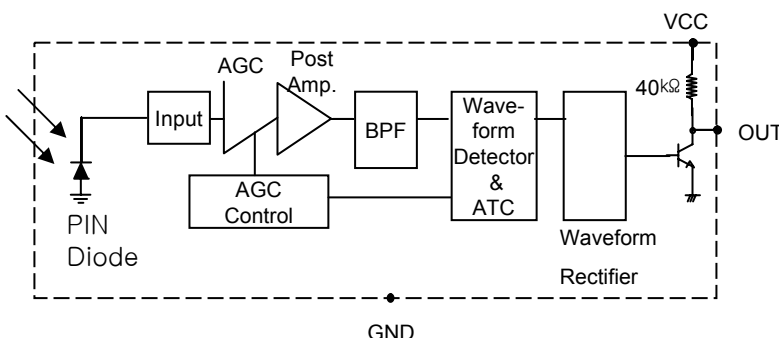
- ◆ Audio video applications
- ◆ Home appliances
- ◆ Toy applications
- ◆ Remote control equipment

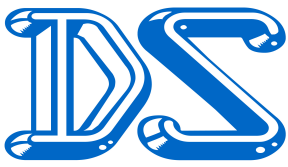
Application Circuit



R-C filter recommended to suppress power supply disturbances.
R-C filter should be connected closely between Vcc pin and GND pin.

Block Diagram





Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Min.	Max.	Unit	Conditions
Supply Voltage	Vcc	0	6.0	V	
Output Voltage	Vout	0	6.0	V	
Output Current	Iout	0	2.5	mA	
Storage Temperature	Tst	-25	85	°C	
Soldering Temperature	Tsd	260°C±5°C		°C	Max 5 sec

Recommended Operating Conditions

(Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Operating Voltage	Vcc	2.7	-	5.5	V	
Input Frequency	fin	30	38	60	kHz	
Operating Temperature	Top	-20	25	80		

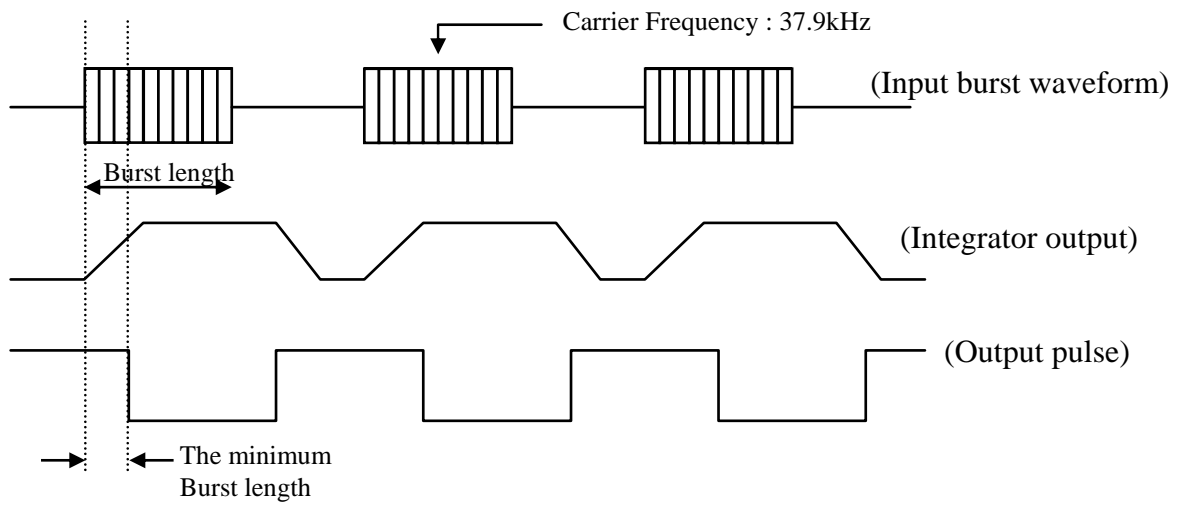
Electro-optical Characteristics

Specifications hold over the Recommended Operating Conditions, unless otherwise noted herein.

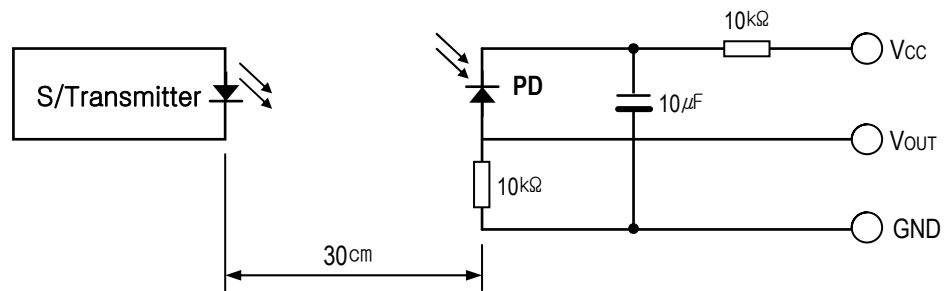
All values are at 25 and Vcc=3.0V/5.0V

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Supply Voltage	Vcc	--	2.7	--	5.5	V	
Working Temperature	Topr	--	-20	25	80	°C	
Current Consumption	Icc	Input Singnal=0	--	0.8	1.5	mA	
Max Input Current	Iin	Vin=0V	0.3	--	0.8	mA	
Half Angle	△θ	--	--	±45	--	deg	
B.P.F. Center Frequency	Fo	--	--	37.9	--	kHz	
Reception Distance	d	200±5Lux	Vcc=3V	8	12	--	m
			Vcc=5V	10	12	--	m
Peak Wavelength	λp	--	--	940	--	nm	
Signal Output	So	--	--Active Low--				
High Level Output Voltage	Voh	--	4.5	5.0	--	V	
Low Level Output Voltage	Vol	--	--	0.2	0.4	V	
High Level Pulse Width	Twh	Burst Wave=600μs	500	600	700	μs	
Low Level Pulse Width	Twl		500	600	700	μs	

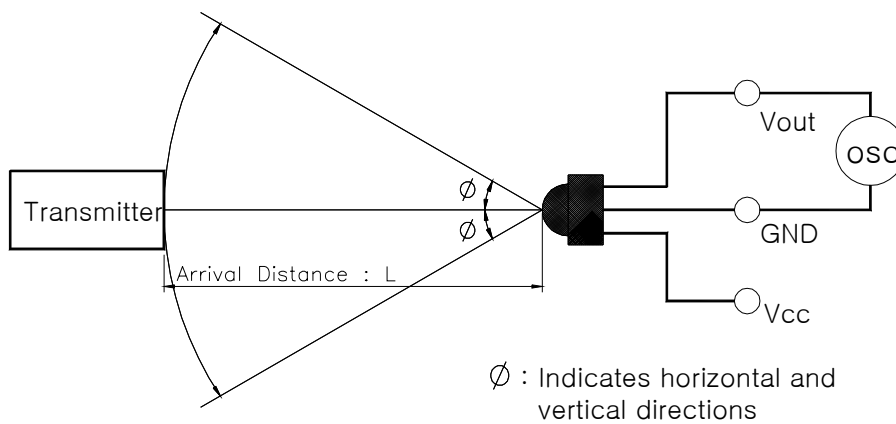
[Fig. 1] Data Signal diagram



[Fig.2] Transmitter



[Fig.3] Test condition of arrival distance

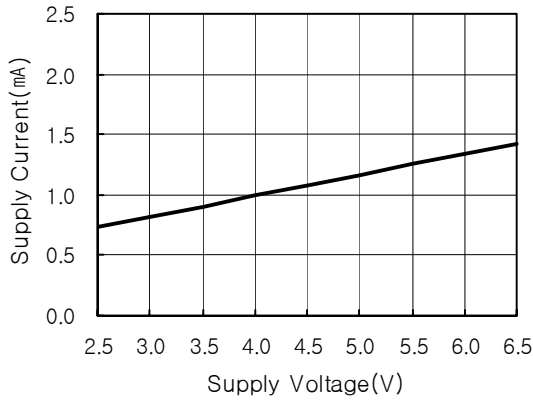


[Measurement condition for arrival distance]

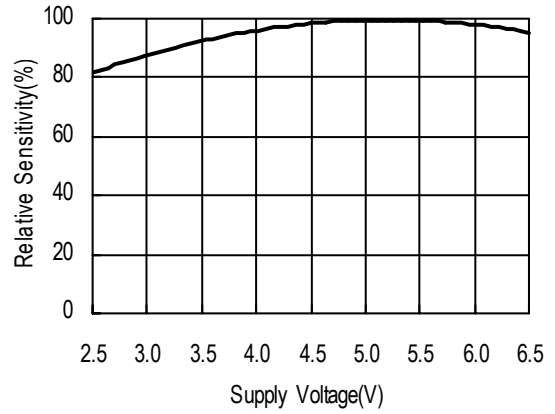
Ambient light source : Detecting surface illumination shall be irradiate 200 ± 50 Lux under ordinary white fluorescence lamp without high frequency lighting

Electrical/Optical Characteristics

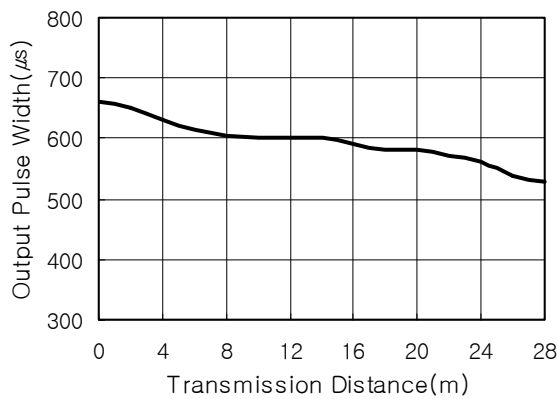
[Fig.4] Supply Current vs. Voltage



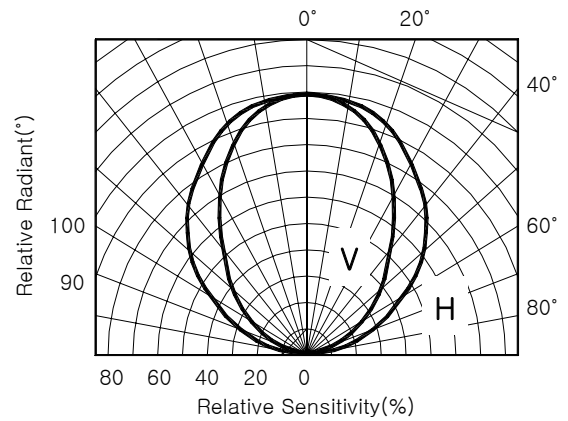
[Fig.5] Sensitivity vs. Supply Voltage



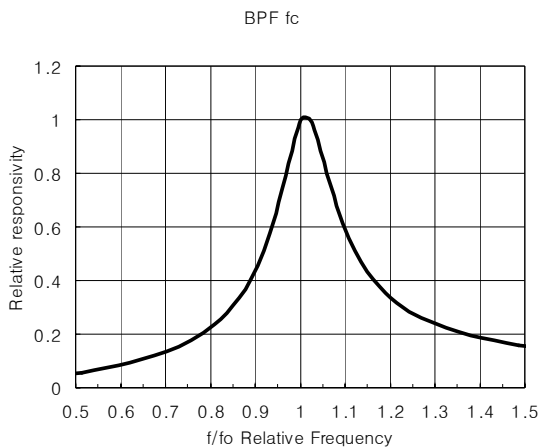
[Fig.6] Output Pulse Width vs. Distance



[Fig.7] Directivity (Horizontal)



[Fig.8] 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 ±800V	>±800V