Infrared Receiver Module

IRM0038A

SIVAGO® SEMICONDUCTOR

Features

Very low supply current

Photo detector and preamplifier in one package

Internal filter for PCM frequency

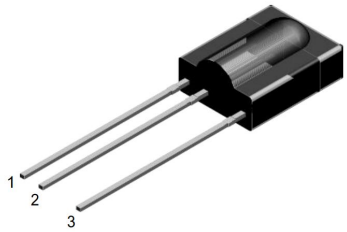
Improved shielding against EMI

Supply voltage: 2.5 V to 5.5 V

Improved immunity against ambient light

Insensitive to supply voltage ripple and noise

Material categorization: For definitions of compliance



MECHANICAL DATA

Pinning:

1 = GND, 2 = V_S, 3 = OUT

Application

TV, VCR, AUDIO, SET TOP BOX

Home Appliances

Remote Control Equipment

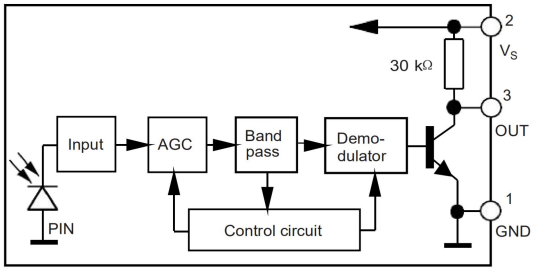
Description

These products are miniaturized receivers for infrared remote control systems. A PIN diode and a preamplifier are assembled on a lead frame, the epoxy package acts as an IR filter.

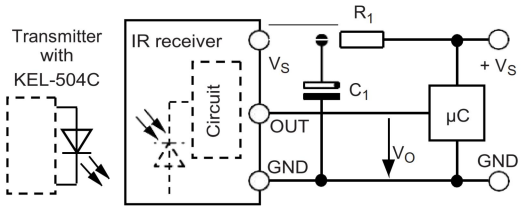
The demodulated output signal can be directly decoded by a microprocessor. The IRM0038A is compatible with all common IR remote control data formats and can suppress almost all spurious pulses from energy saving fluorescent lamps.

This component has not been qualified according to automotive specifications.

BLOCK DIAGRAM

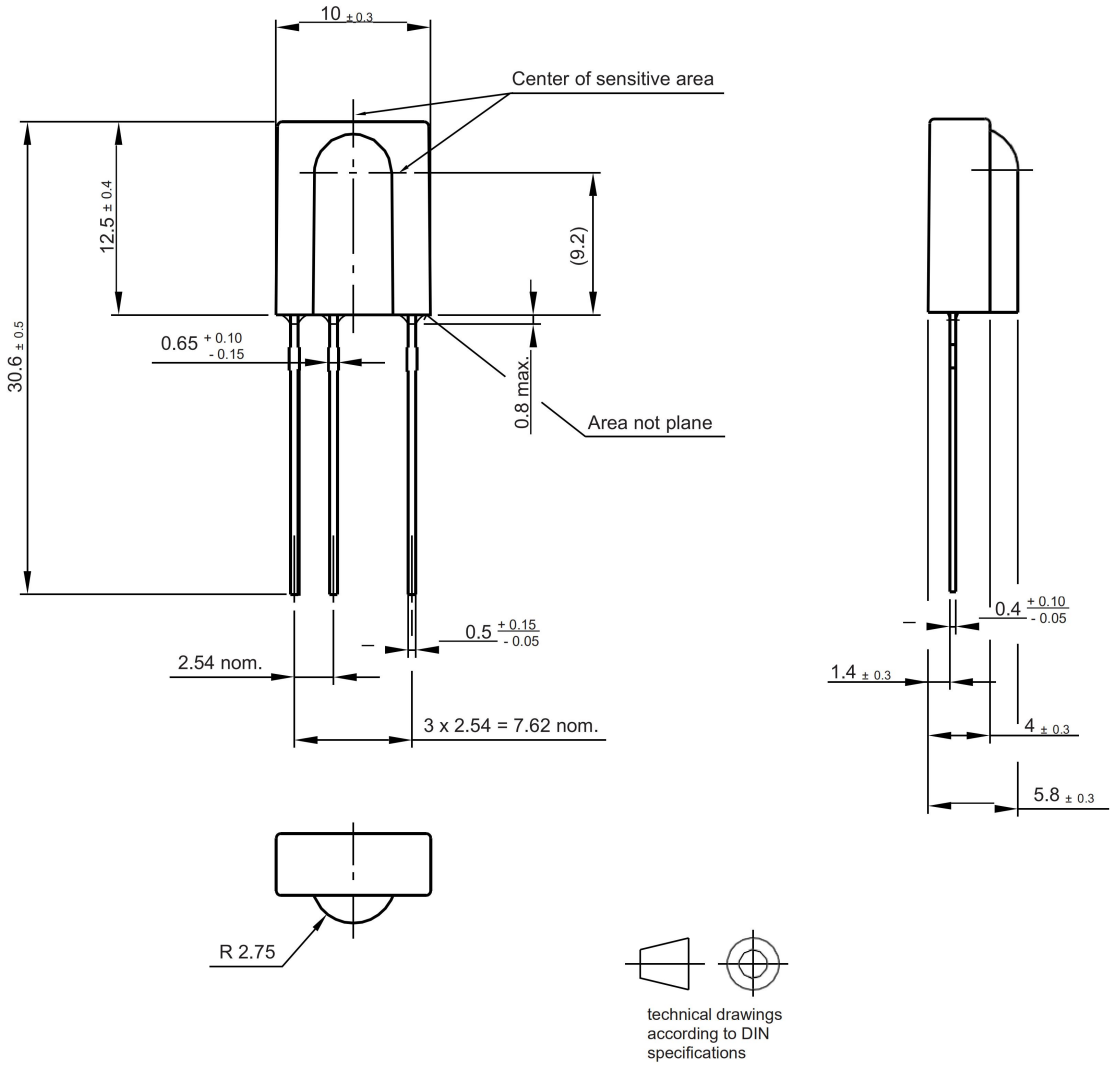


APPLICATION CIRCUIT



R_1 and C_1 are recommended for protection against EOS. Components should be in the range of 33 Ω < R_1 < 1 kΩ, C_1 > 0.1 µF.

PACKAGE DIMENSIONS



NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.2mm(.010") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
Supply voltage (pin 2)		V_S	- 0.3 to + 6.0	V
Supply current (pin 2)		I_S	3	mA
Output voltage (pin 3)		V_O	- 0.3 to (V_S+ 0.3)	V
Output current (pin 3)		I_O	5	mA
Junction temperature		T_j	100	°C
Storage temperature range		T_{stg}	- 25 to + 85	°C
Operating temperature range		T_{amb}	- 25 to + 85	°C
Power consumption	T_{amb}≤85 °C	P_{tot}	10	mW
Soldering temperature	t ≤10 s, 1 mm from case	T_{sd}	260	°C

Note
Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect the device reliability.

ELECTRICAL AND OPTICAL CHARACTERISTICS (T_{amb}= 25 °C, unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Supply current (pin 2)	E_v= 0, V_S= 3.3 V	I_{SD}	0.27	0.35	0.45	mA
	E_v= 40 klx, sunlight	I_{SH}		0.45		mA
Supply voltage		V_S	2.5		5.5	V
Transmission distance	E_v= 0, test signal see fig. 1, IR diode TSAL6200,I_F= 200 mA	d		45		m
Output voltage low (pin 3)	I_{OSL}= 0.5 mA, E_e= 0.7 mW/m2,test signal see fig. 1	V_{OSL}			100	mV
Minimum irradiance	Pulse width tolerance: t_{pi}- 5/f_o< t_{po}< t_{pi}+ 6/f_o, test signal see fig. 1	$E_{e\ min.}$		0.12	0.25	mW/m2
Maximum irradiance	t_{pi}- 5/f_o< t_{po}< t_{pi}+ 6/f_o, test signal see fig. 1	$E_{e\ max.}$	30			W/m2
Directivity	Angle of half transmission distance	φ1/2		± 45		deg

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

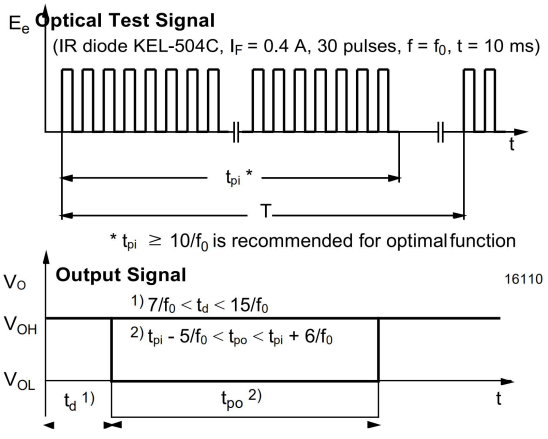


Fig. 1 - Output Active Low

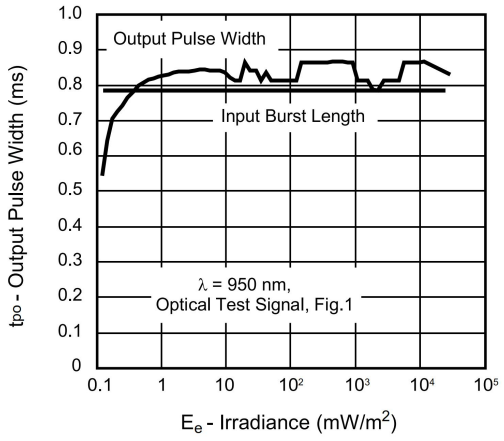


Fig. 2 - Pulse Length and Sensitivity in Dark Ambient

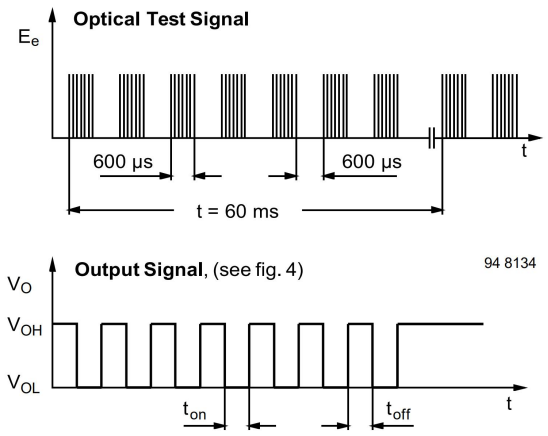


Fig. 3 - Output Function

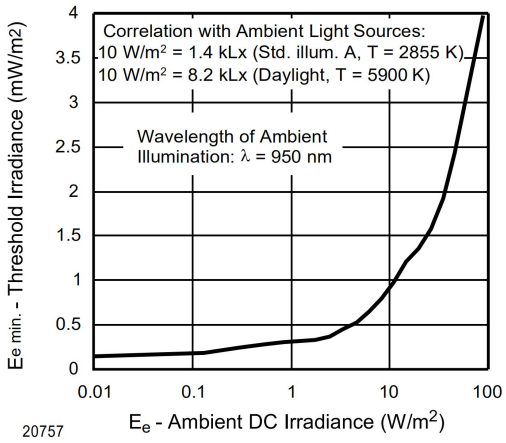


Fig. 6 - Sensitivity in Bright Ambient

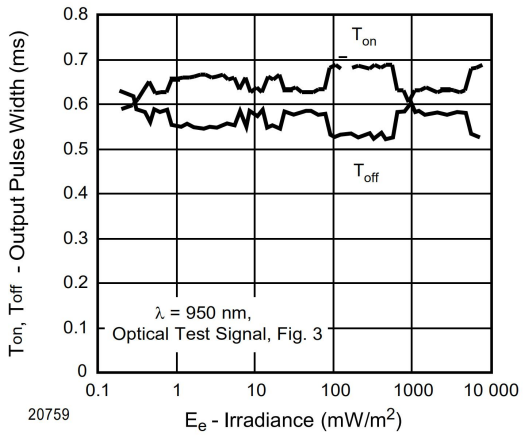


Fig. 4 - Output Pulse Diagram

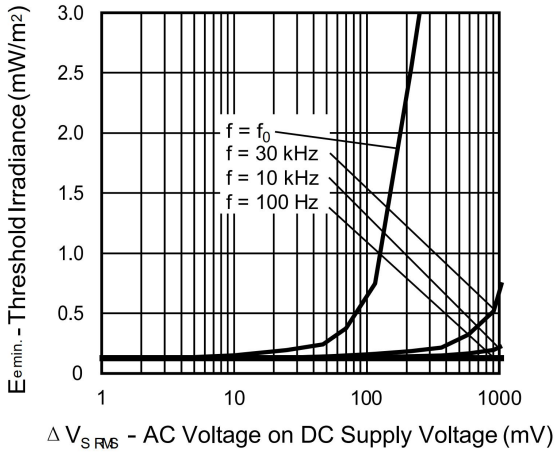


Fig. 7 - Sensitivity vs. Supply Voltage Disturbances

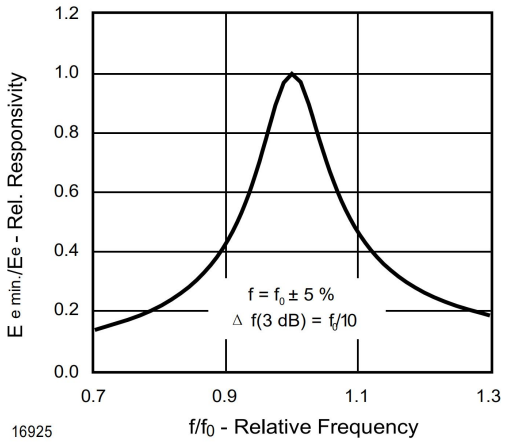


Fig. 5 - Frequency Dependence of Responsivity

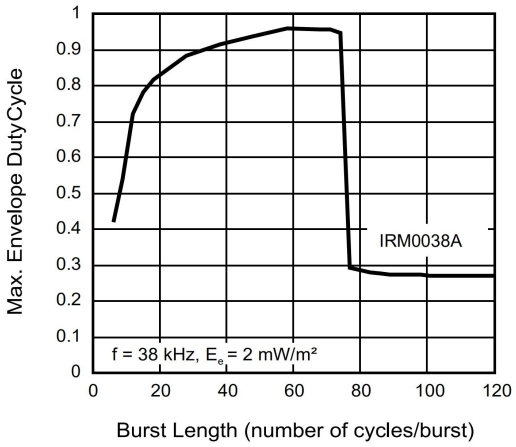


Fig. 8 - Maximum Envelope Duty Cycle vs. Burst Length

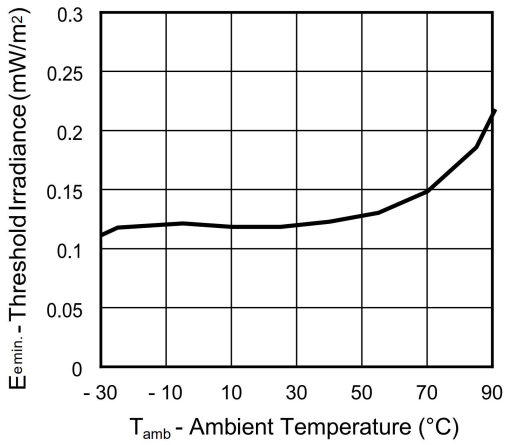


Fig. 9 - Sensitivity vs. Ambient Temperature

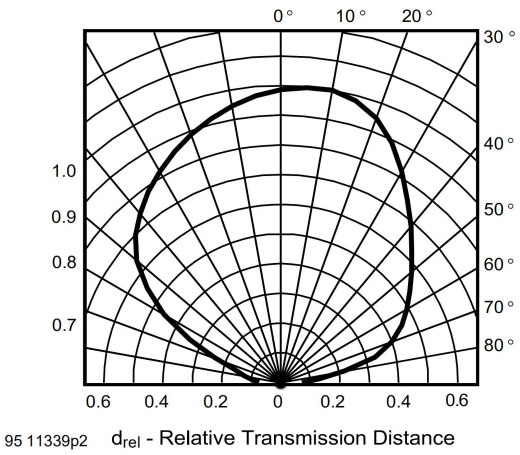


Fig. 12 - Vertical Directivity

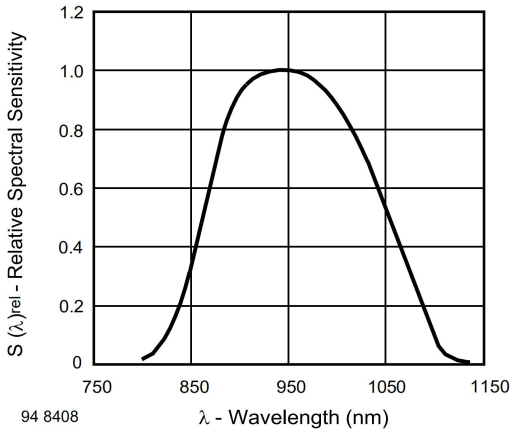


Fig. 10 - Relative Spectral Sensitivity vs. Wavelength

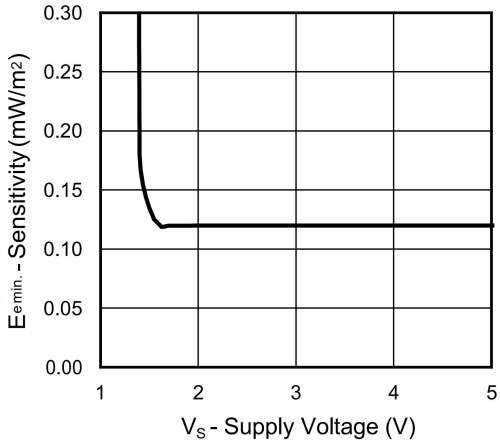


Fig. 13 - Sensitivity vs. Supply Voltage

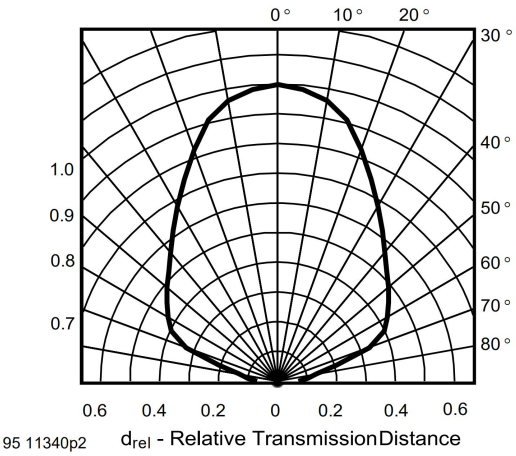


Fig. 11 - Horizontal Directivity

Packing Quantity Specification

1. 500Pcs/1Bag,10 Bag/1Box

2. 4Boxes/1Carton

Label Form Specification

- PRODUCT: Part Number
- CODE NO.: Product Serial Number
- QTY: Packing Quantity
- LOT No: Lot Number
- REMARKS:Remarks

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