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ASSR-V621 and ASSR-V622

Dual Channel Photovoltaic MOSFET Driver
(6.5V/15µA)

Data Sheet

Lead (Pb) Free
RoHS 6 fully compliant

RoHS 6 fully compliant options available;
-xxxE denotes a lead-free product

Description

The ASSR-V62X Series is specially designed to drive high power MOSFETs. It consists of an AlGaAs infrared light-emitting diode (LED) input stage optically coupled to an output detector circuit. The detector consists of a high-speed photovoltaic diode array and driver circuitry to switch on/off two discrete high voltage MOSFETs externally. The relay driver turns on (contact closes) with a minimum input current of 3mA through the input LED. The relay driver turns off (contact opens) with an input voltage of 0.8V or less.

The dual channel configurations, ASSR-V621 and ASSR-V622, allow 2 independent MOSFETs to be driven. It has the versatility to double the photovoltaic voltage by connecting the 2 channels in series or to double the short circuit current by connecting the 2 channels in parallel. They are available in 8-pin DIP and Gull Wing Surface Mount packages.

Features

- Dual Channel Photovoltaic MOSFET Driver
- Open Circuit Voltage: 7V Typical
- Short Circuit Current: 20µA Typical
- Low Input Current: CMOS Compatibility
- Fast Switching Speed:
  0.3ms (Ton), 0.03ms (Toff) Typical
- High Input-to-Output Insulation Voltage
  (Safety and Regulatory Pending Approvals)
  - 3750 Vrms for 1 min per UL1577
  - CSA Component Acceptance

Applications

- Solid State Relay Module
- Voltage Supply for electronic circuits

CAUTION: *It is advised that normal static precautions be taken in handling and assembly of this component to prevent damage and/or degradation which may be induced by ESD.*

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Ordering Information

ASSR-xxxx is UL Recognized with 3750 Vrms for 1 minute per UL1577 and is approved under CSA Component Acceptance Notice #5.

Part number	Option RoHS Compliant	Package	Surface Mount	Gull Wing	Tape & Reel	Quantity
ASSR-V621	-002E	300 mil DIP-8				50 units per tube
	-302E		X	X		50 units per tube
	-502E		X	X	X	1000 units per reel
ASSR-V622	-002E	300 mil DIP-8				50 units per tube
	-302E		X	X		50 units per tube
	-502E		X	X	X	1000 units per reel

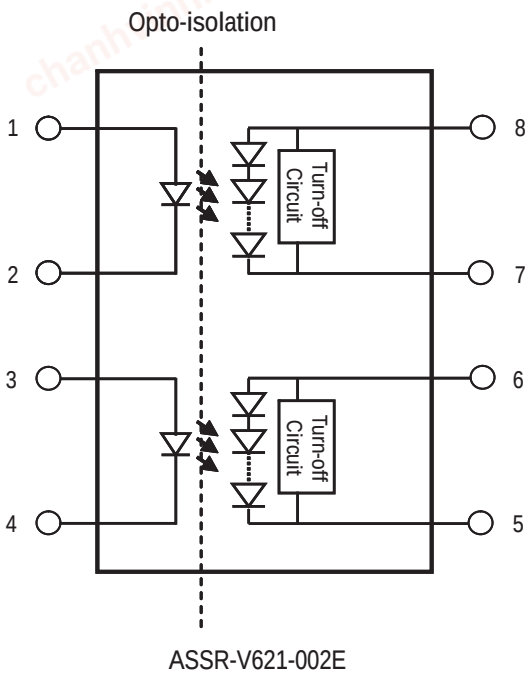
To order, choose a part number from the part number column and combine with the desired option from the option column to form an order entry.

Example:

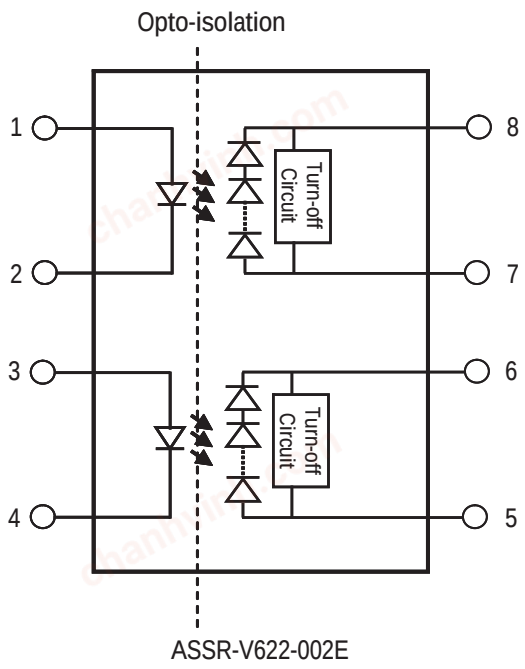
ASSR-V621-002E to order product of 300mil DIP-8 package in tube packaging and RoHS Compliant.

Option datasheets are available. Contact your Avago sales representative or authorized distributor for information.

Schematic



ASSR-V621-002E

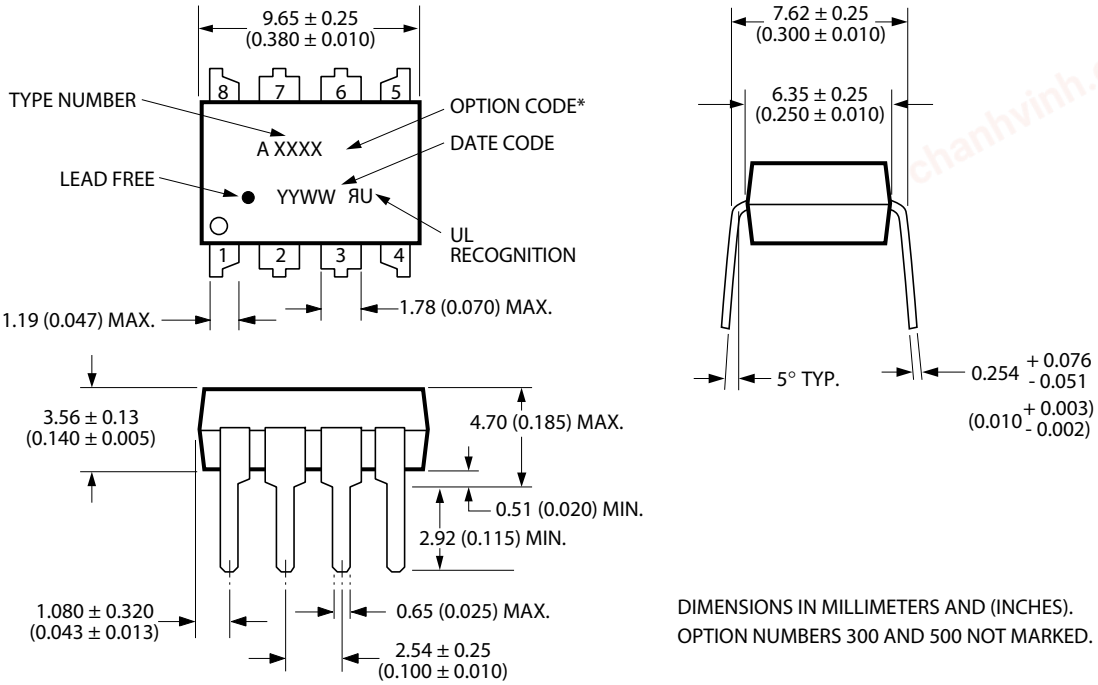


ASSR-V622-002E

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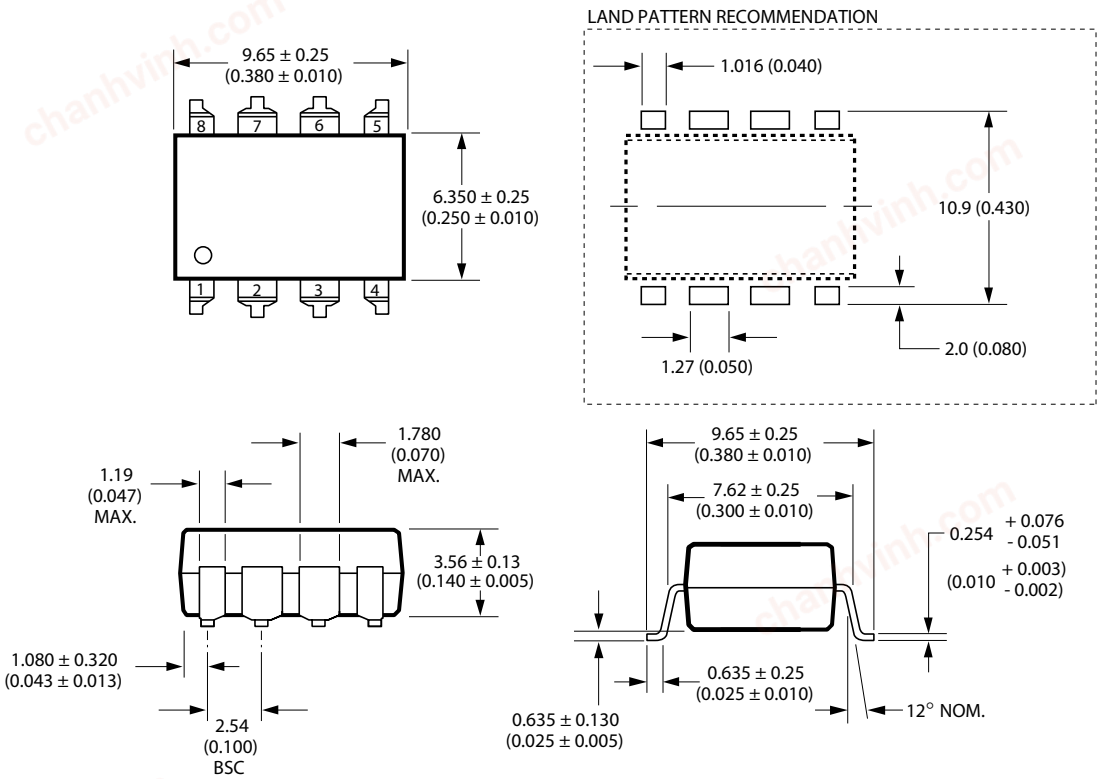
Package Outline Drawings

8-Pin DIP Package



DIMENSIONS IN MILLIMETERS AND (INCHES).
OPTION NUMBERS 300 AND 500 NOT MARKED.

8-Pin DIP Package with Gull Wing Surface Mount Option 300

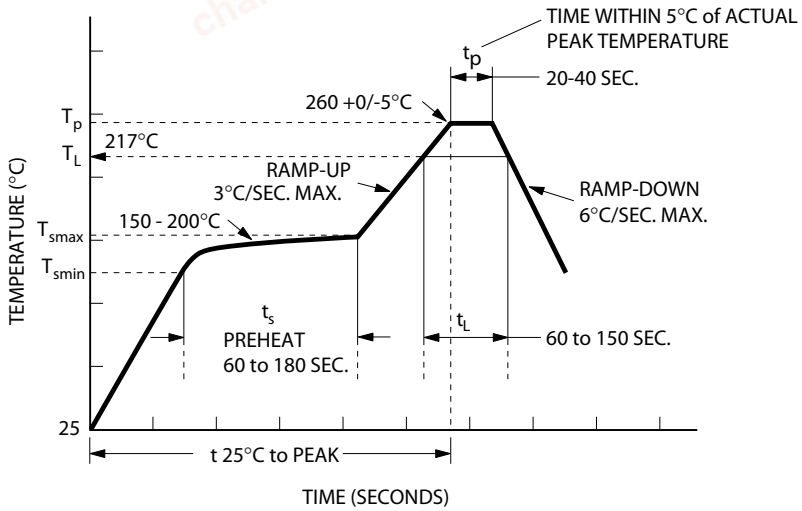


DIMENSIONS IN MILLIMETERS (INCHES).
LEAD COPLANARITY = 0.10 mm (0.004 INCHES).

NOTE: FLOATING LEAD PROTRUSION IS 0.25 mm (10 mils) MAX.

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Lead Free IR Profile



NOTES:
THE TIME FROM 25°C to PEAK TEMPERATURE = 8 MINUTES MAX.
T_{smax} = 200°C, T_{smin} = 150°C

Use of non-chlorine-activated fluxes is highly recommended.

Note: Non-Halide flux should be used.

Regulatory Information

The ASSR-V621-002E and ASSR-V622-002E are approved by the following organizations:

UL

Approved under UL 1577, component recognition program up to V_{ISO} = 3750 V_{RMS}

CSA

Approved under CSA Component Acceptance Notice #5.

Insulation and Safety Related Specifications

Parameter	Symbol	ASSR-V621-002E ASSR-V622-002E	Units	Conditions
Minimum External Air Gap (Clearance)	L(101)	7.1	mm	Measured from input terminals to output terminals, shortest distance through air.
Minimum External Tracking (Creepage)	L(102)	7.4	mm	Measured from input terminals to output terminals, shortest distance path along body.
Minimum Internal Plastic Gap (Internal Clearance)		0.08	mm	Through insulation distance conductor to conductor, usually the straight line distance thickness between the emitter and detector.
Tracking Resistance (Comparative Tracking Index)	CTI	175	V	DIN IEC 112/VDE 0303 Part 1
Isolation Group (DIN VDE0109)		IIIa		Material Group (DIN VDE 0109)

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Absolute Maximum Ratings

Parameter		Symbol	Min.	Max.	Units	Note
Storage Temperature		T_S	-55	125	°C	
Operating Temperature		T_A	-40	85	°C	
Lead Soldering Cycle	Temperature			260	°C	
	Time			10	s	
Input Current	Average	I_F		30	mA	
	Surge			300		
	Transient			1000		
Reversed Input Voltage		V_R		5	V	
Input Power Dissipation		P_{IN}		100	mW	
Solder Reflow Temperature Profile		See Lead Free IR Profile				

Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Units	Note
Input Current (ON)	$I_{F(ON)}$	3	30	mA	
Input Voltage (OFF)	$V_{F(OFF)}$	0	0.8	V	
Operating Temperature	T_A	-40	+85	°C	

Package Characteristics

Unless otherwise specified, operating temperature T_A = 25°C.

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions	Fig.	Note
Input-Output Momentary Withstand Voltage	V_{ISO}	3750			Vrms	RH ≤ 50%, t = 1 min		1
Input-Output Resistance	R_{I-O}		10^{12}		Ω	V_{I-O} = 500 Vdc		
Input-Output Capacitance	C_{I-O}		0.6		pF	f = 1 MHz; V_{I-O} = 0 Vdc		

Electrical Specifications (DC)

For operating T_A = +25°C

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions	Fig.	Note
Open Circuit Voltage	V_{OC}	6.5	7		V	I_F =10mA, I_O=0mA		
Short Circuit Current	I_{SC}	15	20		μA	I_F =10mA, V_O=0V		
Input Reverse Breakdown Voltage	V_R	5			V	I_R =10μA		
Input Forward Voltage	V_F	1.1	1.3	1.7	V	I_F =10mA		

Switching Specifications (AC)

For operating T_A = +25°C

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions	Fig.	Note
Turn On Time	T_{ON}		0.28		ms	I_F =10mA, C_L=1nF		
Turn Off Time	T_{OFF}		0.03		ms	I_F =10mA, C_L=1nF		

Note:
1. Device is considered as a two terminal device; pin 1, 2, 3, 4 shorted and pin 5, 6, 7, 8 shorted.

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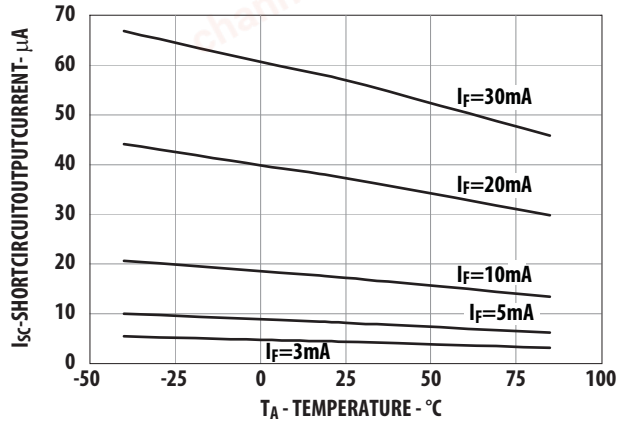


Figure 1. Short Circuit Output Current vs

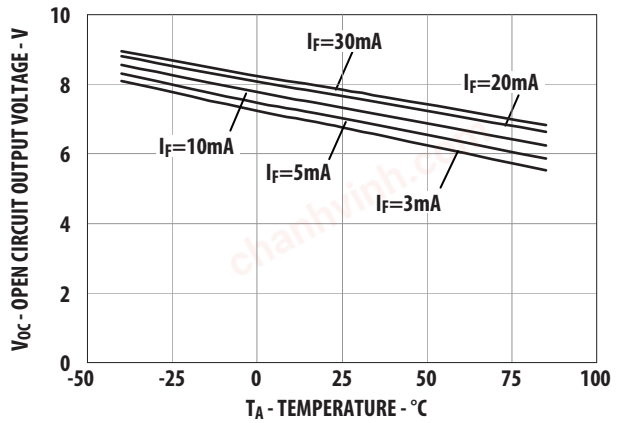


Figure 2. V_{OC} vs Temperature

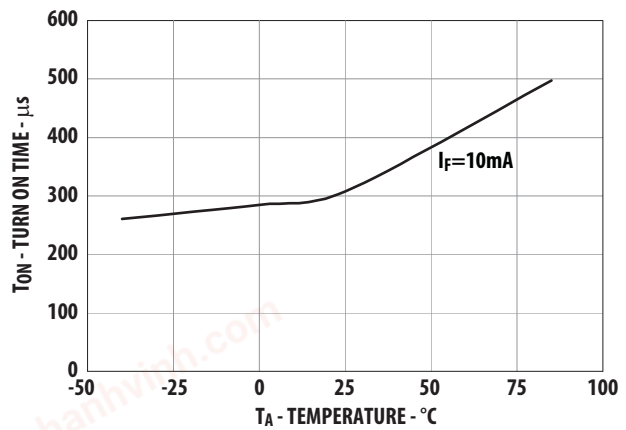


Figure 3. T_{ON} vs Temperature

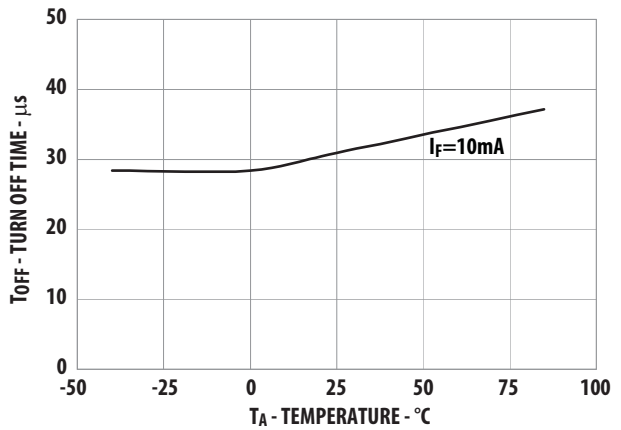


Figure 4. T_{OFF} vs Temperature

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For product information and a complete list of distributors, please go to our web site: **www.avagotech.com**

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