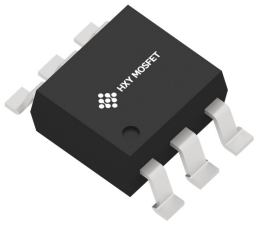
Description

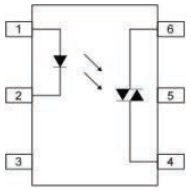
The HL3053S1 series of devices each consist of a GaAs infrared emitting diode optically coupled to a monolithic silicon non zero voltage crossing photo triac.They are designed for use with a discrete power triac in the interface of logic systems , such as solid-state relays, industrial controls, motors, solenoids and consumer appliances.



Pin 1

Features

- 6pin Non-zero-cross optoisolators triac driver
- High input-output isolation voltage(Viso = 5,000Vrms)
- High repetitive peak off-state voltage VDRM.
- Min.600V;
- High critical rate of rise of off-state voltage(dv/dt : MIN. 1000V/s)
- Operating Temperature: -40℃~110℃
- RoHS



Pin Configuration
1 Anode
2 Cathode
3 No Connection
4 Terminal
5 No Connection (do not connect)
6 Terminal

Applications

- Solenoid/valve controls
- Static power switch
- AC motor drivers
- Temperature Control

Maximum Ratings

Parameter		Symbol	Values	Unit
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Power Dissipation	P	120	mW
	Junction Temperature	T_J	125	℃
Output	Off-State Output Terminal Voltage	V_{DRM}	600	V
	Peak Repetitive Surge Current (PW=1ms，120 pps)	I_{TSM}	1	A
	On-State RMS Current	$I_{T(RMS)}$	100	mA
	Junction Temperature	T_J	125	℃
	Collector Power Dissipation	P_C	150	mW
Operating temperature range		T_{opr}	－40 ~ 110	℃
Storage temperature range		T_{stg}	－55 ~ 125	℃
Total Power consumption		$P_{(W)}$	250	mW
Isolation Voltage(1)		V_{ISO}	5000	Vrms
Soldering Temperature(2)		T_{SOL}	260	° C

Notes:
(1). AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2 are shorted together, and pins 3, 4 are shorted together.
(2).For 10 seconds

Electronic Optical Characteristics (T_A = 25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditon
Input	Forward Voltage	V_F	-	1.2	1.6	V	I_F=20mA
	Reverse Current	V_R	-	-	5	μA	V_R=6V
Output	Peak Blocking Current, Either Direction（1）	I_{DRM}	-	-	500	nA	V_{DRM} = Rated VDRM
	Peak On-State Voltage, Either Direction	V_{TM}	-	-	3	V	I_{TM}= 100mA Peak
	Critical rate of Rise of Off-State Voltage（2）	dv/dt	1000	-	-	V/μs	Vin=240Vrms
Couple	Led Trigger Current, Current Required to Latch Output, Either Direction	I_{FT}	-	-	5	mA	Main Terminal Voltage = 3V
	Holding Current, Either Direction	I_H	-	200	-	uA	-

（1）Test voltage must be applied within dv/dt rating.
（2）This is static dv/dt. Commutating dv/dt is a function of the load-driving thyristor(s) only.

Characteristics Curves

Fig.1 Forward current vs.Ambient temperature

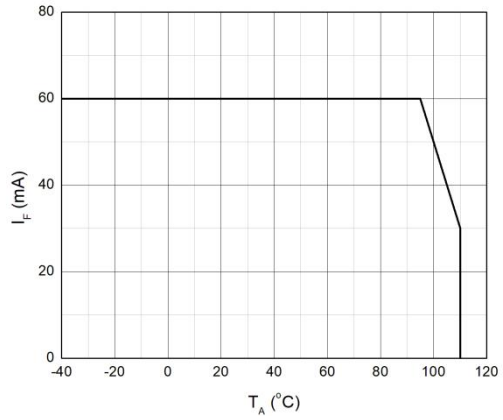


Fig.2 On-state current vs.Ambient temperature

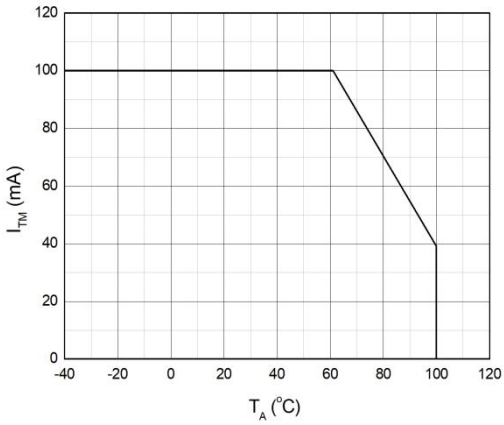


Fig.3 Forward current vs Forward Voltage

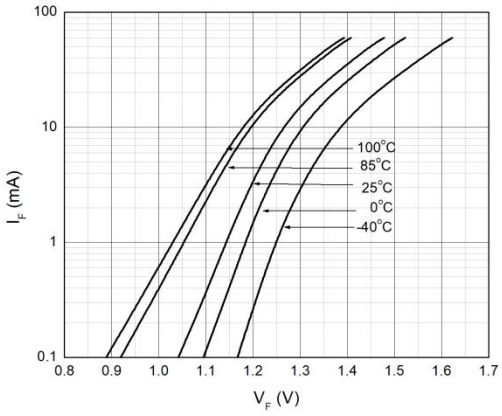


Fig.4 Holding current vs Ambient temperature

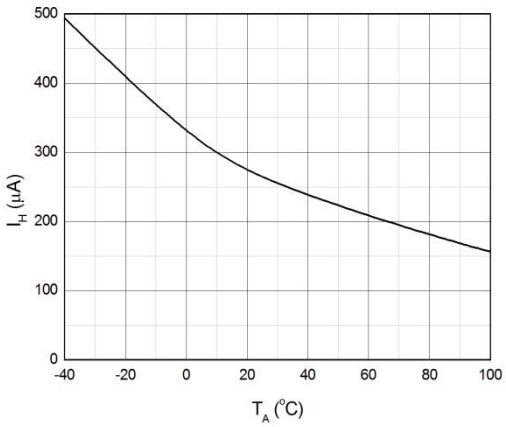
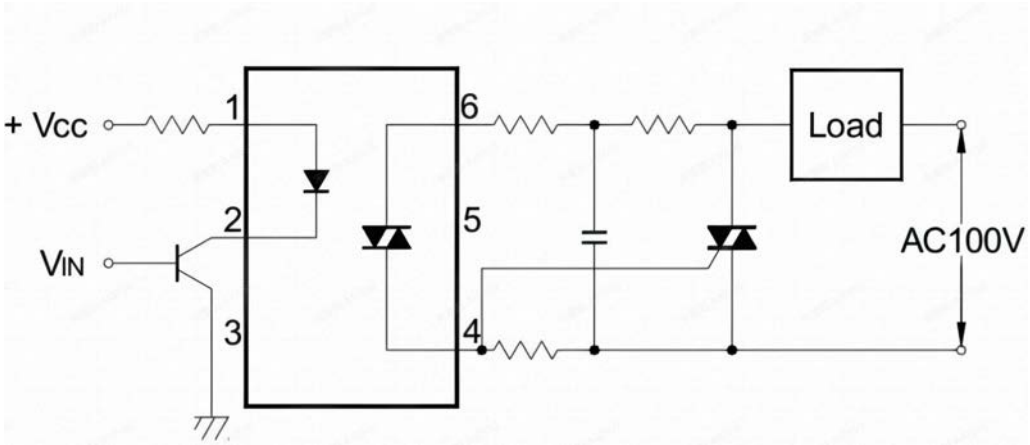
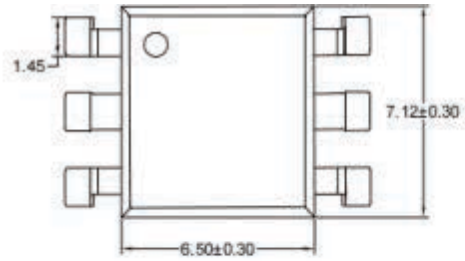


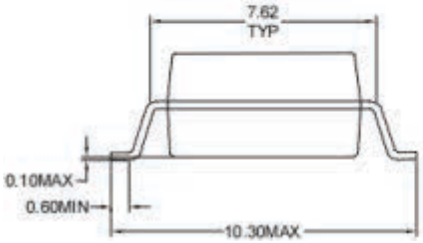
Fig.9 Basic Driver Circuit

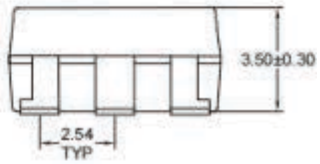


Outline Dimension

SMD-6 Type:

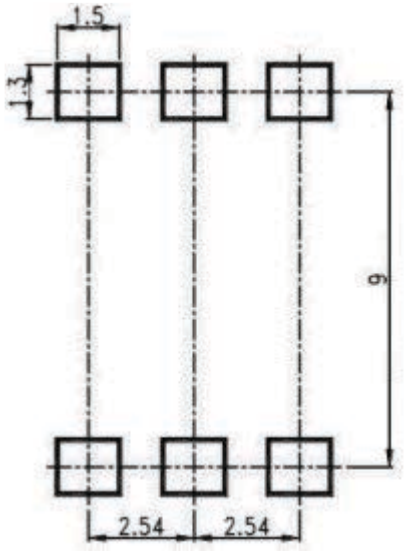






Unit: mm
Tolerance: ±0.1mm

Recommended solder pad Design



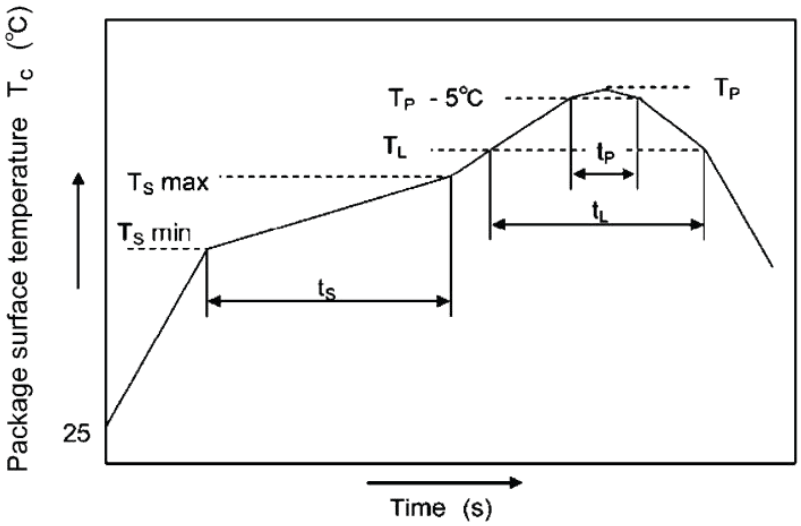
Unit: mm
Tolerance: ±0.1mm

Temperature Profile Of Soldering

1. IR Reflow soldering

(JEDEC-STD-020D compliant)

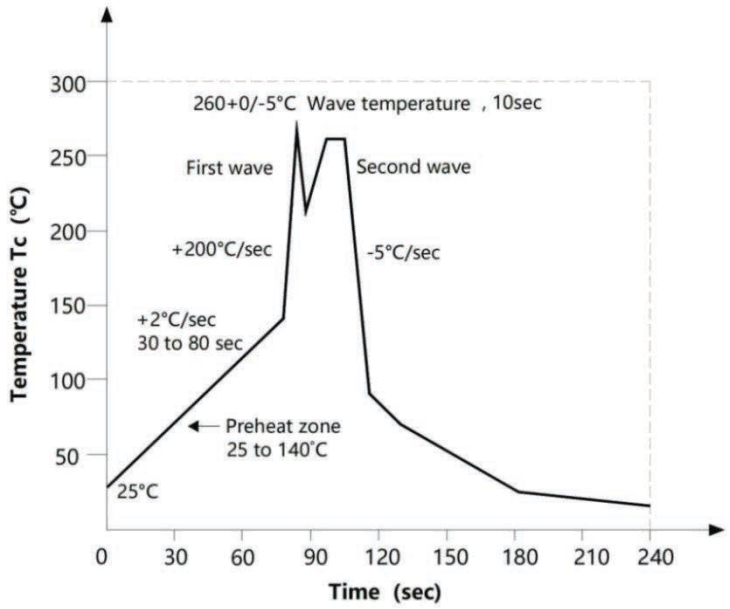
Profile item	Conditon
Preheat	
-Temperature Min (TSmin)	150°C
-Temperature Max (TSmax)	200°C
-Time (min to max) (ts)	90±30 sec
Soldering zone	
-Temperature (TL)	217°C
-Time (t_L)	60-150 sec
Peak Temperature (TP)	260°C
-Time (TP-5℃to TP) (ts)	30 sec
Ramp-up rate	3°C / sec max
Ramp-down rate	3~6°C/ sec



Notes:
One time soldering reflow is recommended within the condition of temperature and time profile shown below.
Do not solder more than three times.

2. Wave soldering (JEDEC22A111 compliant)

One time soldering is recommended within the condition.
Temperature:260+0/-5˚C.
Time:10 sec.
Preheat temperature:25 to 140˚C.
Preheat time:30 to 80 sec.



3. Hand soldering by soldering iron

Allow single lead soldering in every single process. One time soldering is recommended.
Temperature: 380+0/-5˚C
Time: 3 sec max.

Attention

■ Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.

■ HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.

■ Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

■ HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could
give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

■ In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

■ Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.