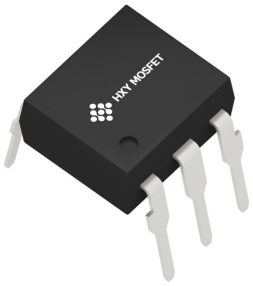
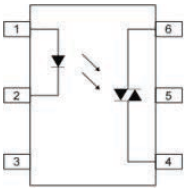
Description

The HL3053 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

DIP-6



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

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

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

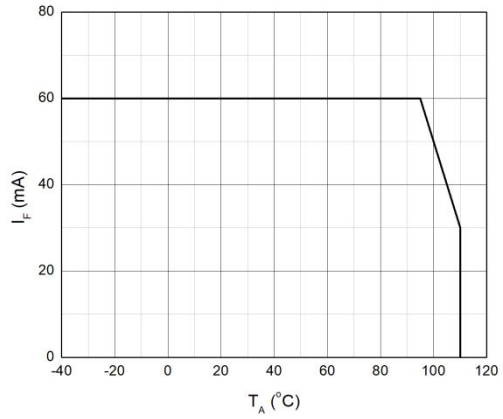


Fig.2 On-state current vs.Ambient temperature

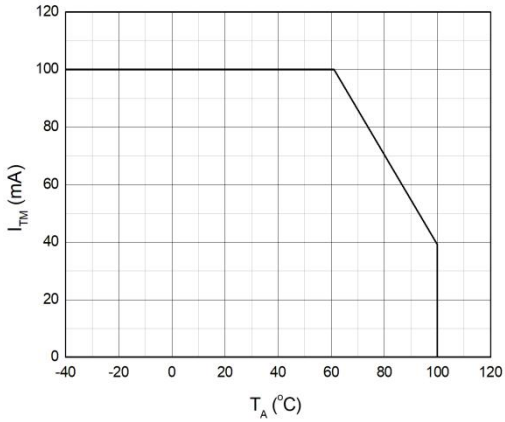


Fig.3 Forward current vs Forward Voltage

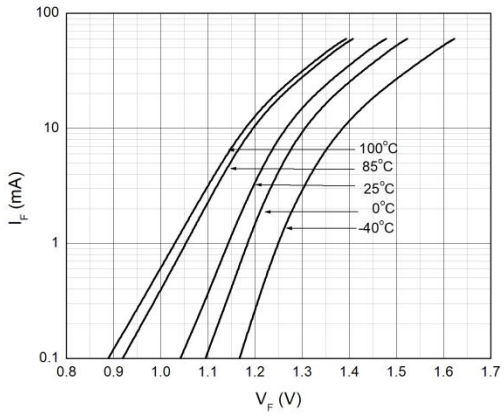


Fig.4 Holding current vs Ambient temperature

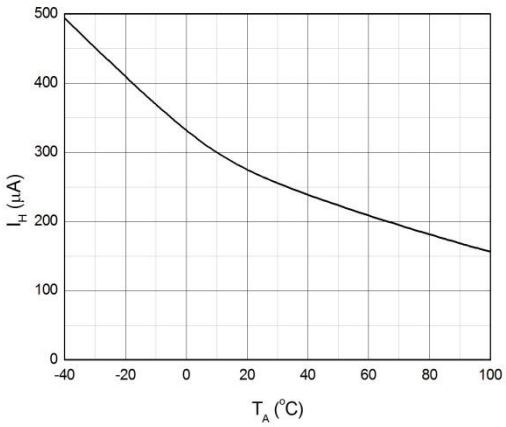
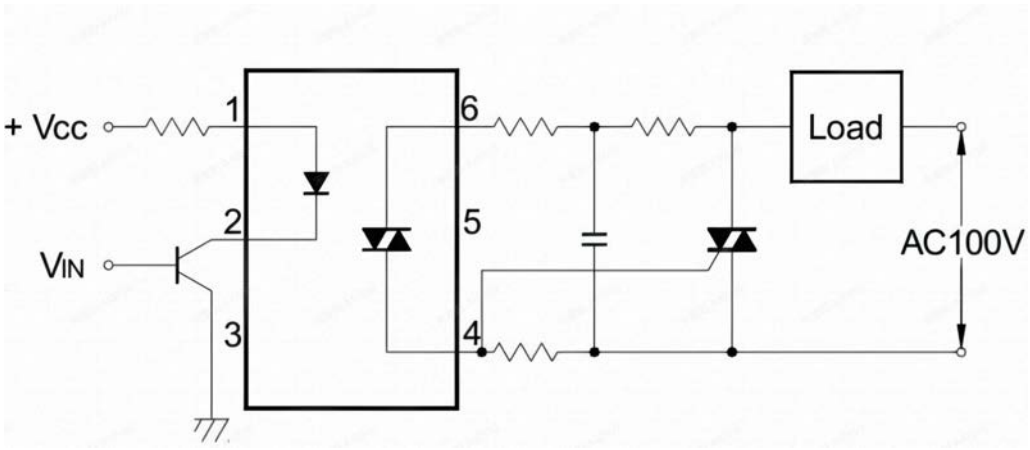
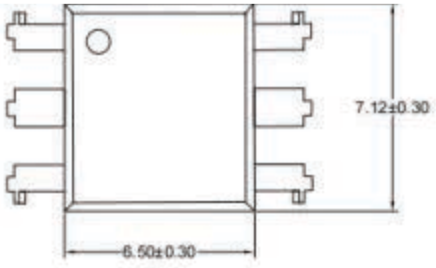


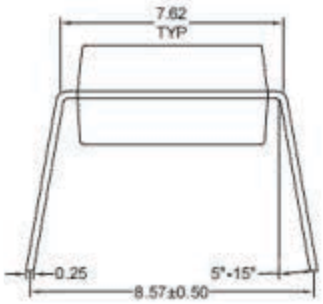
Fig.9 Basic Driver Circuit

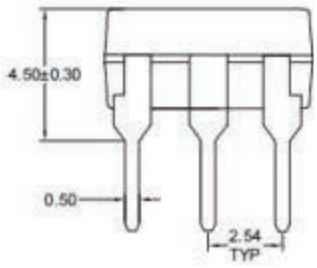


Outline Dimension

DIP-6 Normal Type:





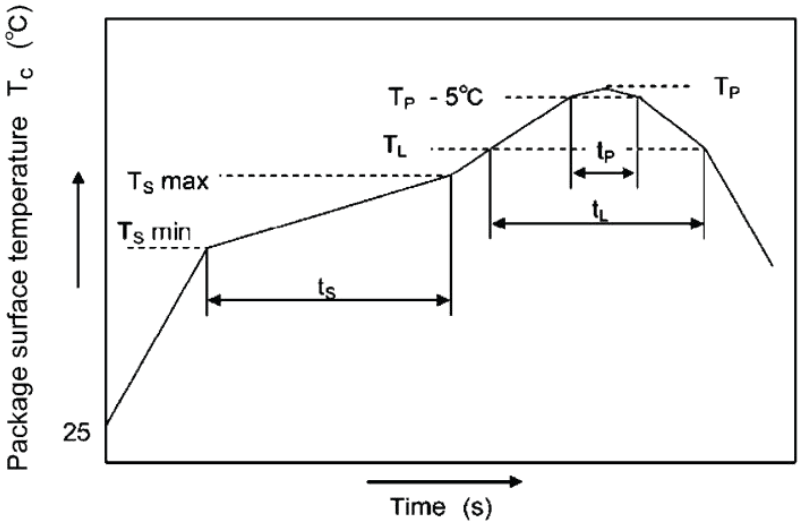


Temperature Profile Of Soldering

1. IR Reflow soldering

(JEDEC-STD-020D compliant)

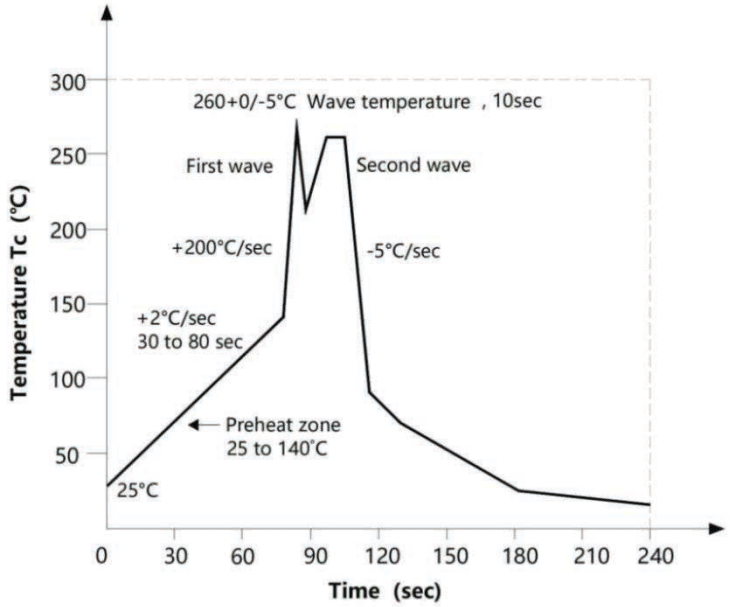
Profile item	Conditon
Preheat	
-Temperature Min (TSmin)	150°C
-Temperature Max (TSmax)	200°C
-Time (min to max) (ts)	90±30 sec
Soldering zone	
-Temperature (TL)	217°C
-Time (t_L)	60-150 sec
Peak Temperature (TP)	260°C
-Time (TP-5℃to TP) (ts)	30 sec
Ramp-up rate	3°C / sec max
Ramp-down rate	3~6°C/ sec



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.

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