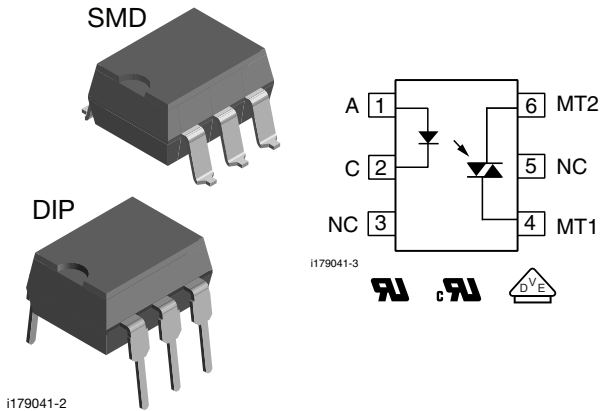


# Optocoupler, Phototriac Output, Non-Zero Crossing, 1.5 kV/ $\mu$ s dV/dt, 600 V



## DESCRIPTION

The VO3052 and VO3053 triac driver family consists of a GaAs infrared LED optically coupled to a monolithic photosensitive non-zero crossing triac detector chip.

The 600 V blocking voltage permits control of off-line voltages up to 240 V<sub>AC</sub>, with a safety factor or more than two, and is sufficient for as much as 380 V.

## FEATURES

- 1500 V/ $\mu$ s dV/dt minimum 2000 V/ $\mu$ s typical
- 600 V blocking voltage
- 100 mA on-state current
- Low input trigger current
- 6 pin DIP package
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

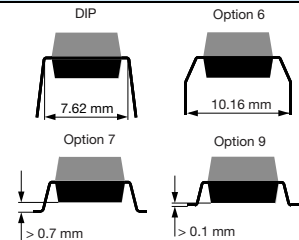
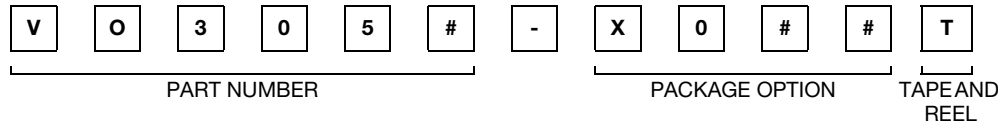
## APPLICATIONS

- Household appliances
- Triac drive/AC motor drives
- Solenoid/valve controls
- Office automation equipment/machine
- Temperature (HVAC)/lighting controls
- Switching power supply

## AGENCY APPROVALS

- UL-file E52744 system code H or J
- cUL - file no. E52744, equivalent to CSA bulletin 5A
- DIN EN 60747-5-2 (VDE 0884) available with option 1

## ORDERING INFORMATION



AGENCY CERTIFIED/PACKAGE	TRIGGER, CURRENT I <sub>FT</sub> (mA)	
	5	10
<b>UL, cUL</b>		
DIP-6	VO3053	VO3052
DIP-6, 400 mil, option 6	VO3053-X006	VO3052-X006
SMD-6, option 7	VO3053-X007T	VO3052-X007T
SMD-6, option 9	VO3053-X009T	-
<b>VDE, UL, cUL</b>		
DIP-6, 400 mil, option 6	-	VO3052-X016





<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>INPUT</b>							
Reverse current	$V_R = 6\text{ V}$		$I_R$			10	$\mu\text{A}$
Forward voltage	$I_F = 30\text{ mA}$		$V_F$		1.2	1.5	V
<b>OUTPUT</b>							
Leakage with LED off, either direction	$V_{DRM} = 600\text{ V}$		$I_{DRM}$		10	500	nA
Critical rate of rise off-state voltage	$V_D = 400\text{ V}$		$dV/dt_{cr}$	1500	2000		V/ $\mu\text{s}$
<b>COUPLER</b>							
LED trigger current, current required to latch output		VO3053	$I_{FT}$			5	mA
		VO3052	$I_{FT}$			10	mA
Peak on-state voltage, either direction	$I_{TM} = 100\text{ mA peak}$ , $I_F = \text{rated } I_{FT}$		$V_{TM}$		1.7	3	V
Holding current, either direction			$I_H$		200		$\mu\text{A}$
Coupling capacitance	10 KHz		$C_{IO}$		0.4		pF

**Note**

- Typical values are characteristics of the device and are the result of engineering evaluations. Typical values are for information only and are not part of the testing requirements.

<b>SAFETY AND INSULATION RATINGS</b>						
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	
Climatic classification (according to IEC 68 part 1)			55/100/21			
Pollution degree (DIN VDE 0109)			2			
Comparative tracking index	CTI	175				
Peak transient overvoltage	$V_{IOTM}$	8000			$V_{peak}$	
Peak working insulation voltage	$V_{IORM}$	890			$V_{peak}$	
Isolation resistance at $T_{amb} = 100\text{ }^{\circ}\text{C}$ , $V_{DC} = 500\text{ V}$	$R_{IO}$	$10^{11}$			$\Omega$	
Isolation resistance at $T_{amb} = 25\text{ }^{\circ}\text{C}$ , $V_{DC} = 500\text{ V}$	$R_{IO}$	$10^{12}$			$\Omega$	
Partial discharge test voltage (method a, $V_{pd} = V_{IORM} \times 1.875$ )	$V_{pd}$	1669			$V_{peak}$	
Safety rating - power	$P_{SO}$			500	mW	
Safety rating - input current	$I_{SI}$			250	mA	
Safety rating - temperature	$T_{SI}$			175	$^{\circ}\text{C}$	
Clearance distance (Standard DIP-6)		7			mm	
Creepage distance (Standard DIP-6)		7			mm	
Clearance distance (400 mil DIP-6)		8			mm	
Creepage distance (400 mil DIP-6)		8			mm	

**Note**

- According to DIN EN60747-5-5 (see figure 4). This optocoupler is suitable for safe electrical isolation only within the safety ratings. Compliance with the safety ratings shall be ensured by means of suitable protective circuits.

**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

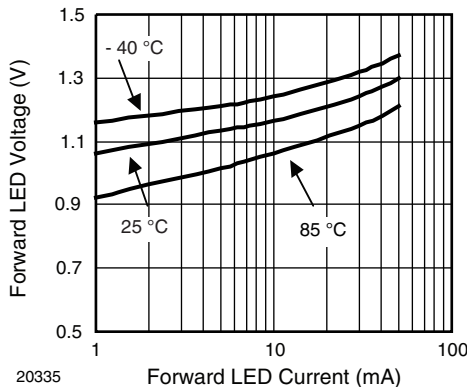


Fig. 1 - Forward Voltage vs. Forward Current

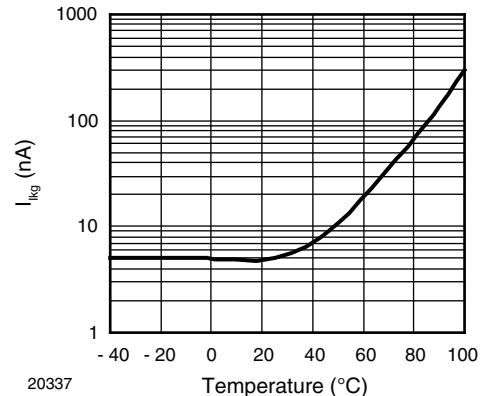


Fig. 2 - Off-State Leakage Current vs. Temperature

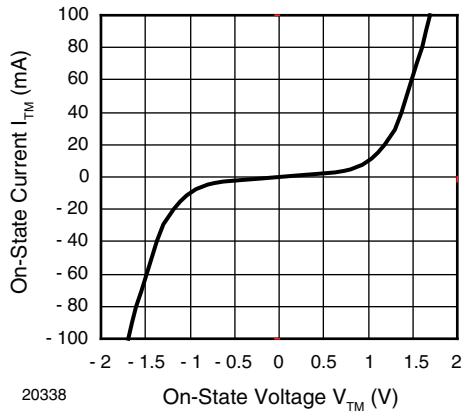


Fig. 3 - On-State Current vs.  $V_{TM}$

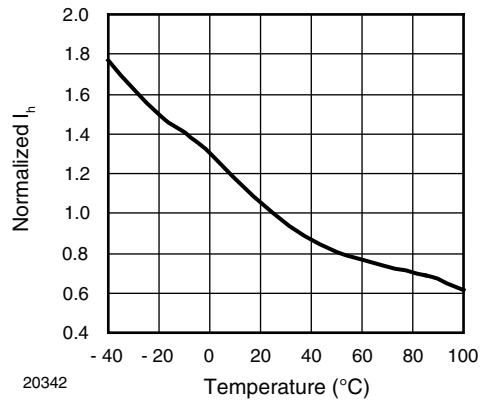


Fig. 6 - Normalized Holding Current vs. Temperature

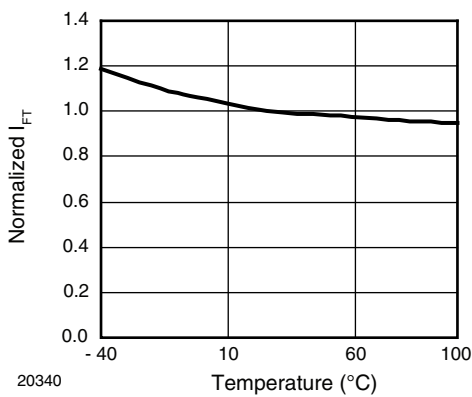


Fig. 4 - Normalized Trigger Current vs. Temperature

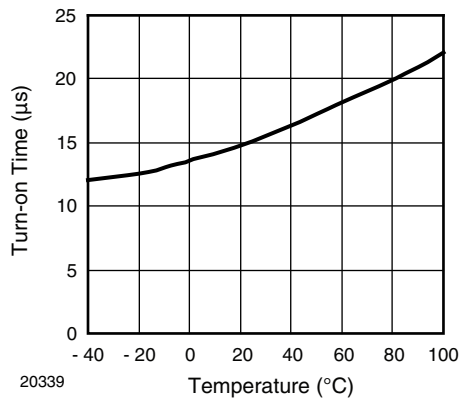


Fig. 7 - Turn-on Time vs. Temperature

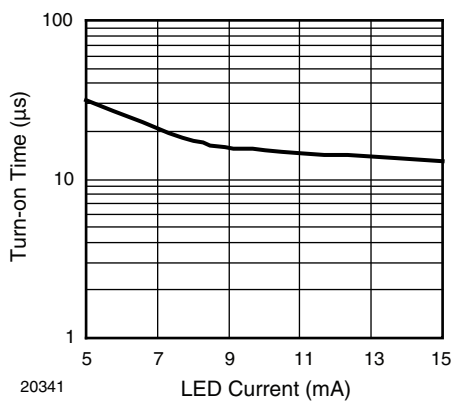


Fig. 5 - Turn-on Time vs. LED Current

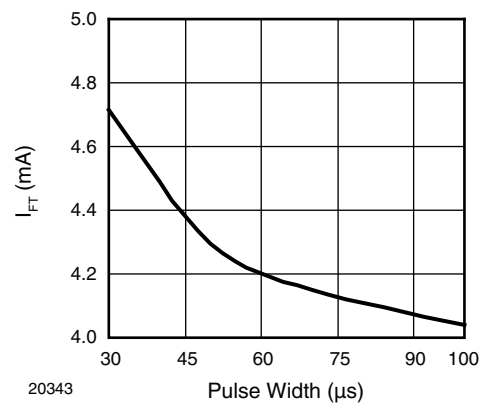
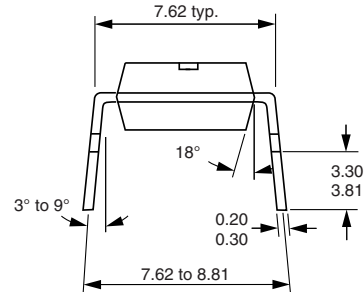
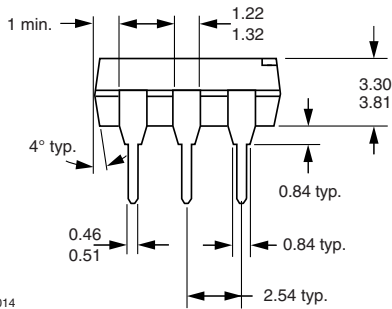
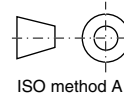
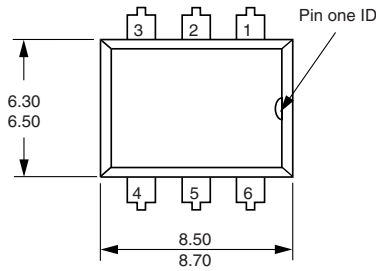


Fig. 8 - Trigger Current vs. Pulse Width

**PACKAGE DIMENSIONS** in millimeters

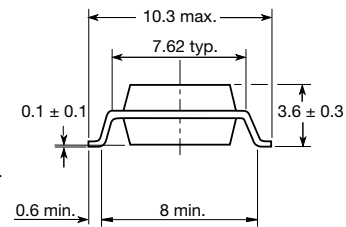
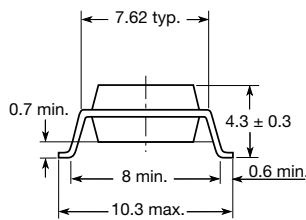
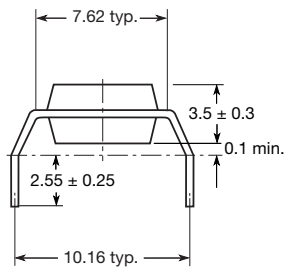


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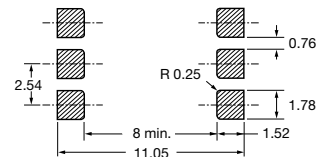
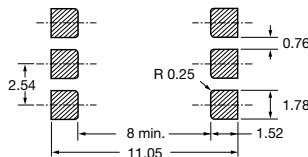
**Option 6**

**Option 7**

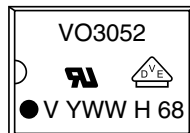
**Option 9**



20802-24



**PACKAGE MARKING**



**Notes**

- The VDE logo is only marked on option1 parts.
- Tape and reel suffix (T) is not part of the package marking.



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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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