1 Mbd High Speed Optocoupler SPICE Model 6N136, 6N1136, SFH6136, SFH6316T, SFH6343T

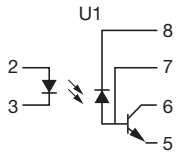
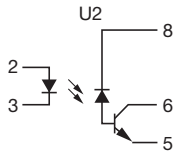
DESCRIPTION

The 1 Mbd high speed optocoupler consists of a GaAlAs infrared emitting diode, optically coupled with an integrated photo detector and a high speed transistor. The open collector output function allows circuit designers to adjust the load conditions when interfacing with different logic systems such as TTL, CMOS, etc. Their SPICE models have been created from device characterization data and were tested with NI Multisim simulation program. All SYM and PRZ files are Multisim version 11.

For NI Multisim 11 Power Pro edition users, import the component packed file VSH_1M.prz into your user or corporate database with the tool Database Manager.

For other editions, create components using the provided symbol and model data with the tool Component Wizard.

This document is intended as a guideline of simulating with provided models and does not constitute as commercial product, neither a substitute to datasheet.

PART	MODEL DESCRIPTION	SYMBOL FILE	MODEL FILE	COMPONENT PACKED FILE
6N136 6N1136 SFH6136 SFH6316T	Single channel with Base connection	 6N136.sym	6N136.cir	VSH_1M.prz
SFH6343T	Single channel	 SFH6343T.sym	SFH6343T.cir	

RECOMMENDED USE OF THE MODEL

This model is designed only for use at 25 °C.

SIMULATED PARAMETERS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**DATA**	**UNIT**
INPUT				
Input forward voltage	I_F = 16 mA	V_F	1.36	V
COUPLER				
Logic low output voltage	I_F = 16 mA, V_{CC} = 4.5 V, I_O = 3 mA	V_{OL}	0.25	V
Current transfer ratio	I_F = 16 mA, V_O = 0.4 V	CTR	28	%
SWITCHING				
Propagation delay time to logic low at output (1)	V_{CC} = 5 V, I_F = 16 mA, R_L = 1.9 kΩ	t_{pHL}	0.4	µs
Propagation delay time to logic high at output (1)	V_{CC} = 5 V, I_F = 16 mA, R_L = 1.9 kΩ	t_{pHL}	0.6	µs

Note

(1) See fig. 1 and timing simulation setup on page 3.

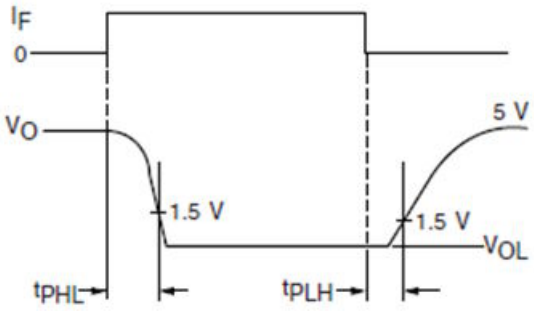


Fig. 1 - Switching Times

EXAMPLE SIMULATION PLOTS MULTISIM 11

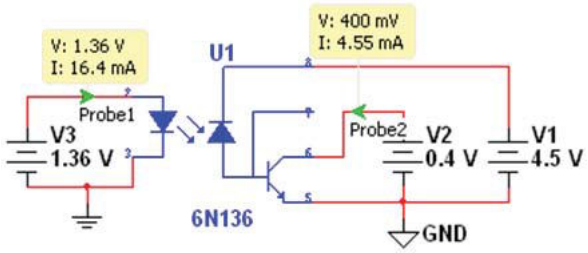


Fig. 2 - Simulation Setup for the Following DC Curves

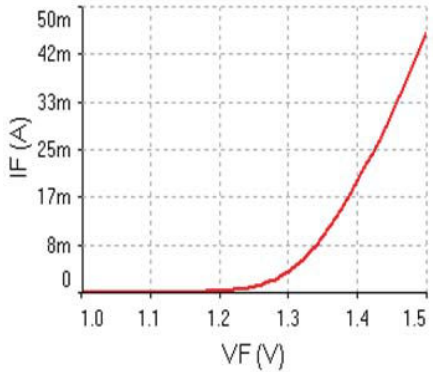


Fig. 3 - Simulation of Input Forward Current vs. Forward Voltage

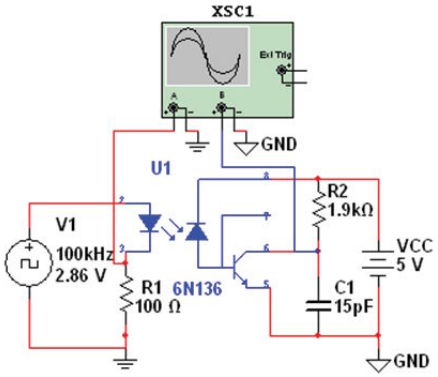


Fig. 5 - Timing Simulation Setup
(V_{CC} = 5 V, I_F = 16 mA, R_L = 1.9 kΩ, C_L = 15 pF)

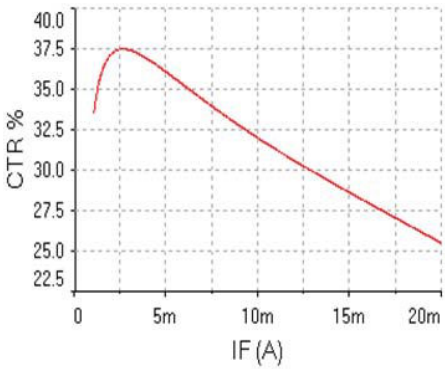


Fig. 4 - Simulation of CTR vs. Forward Voltage (V_O = 0.4 V)

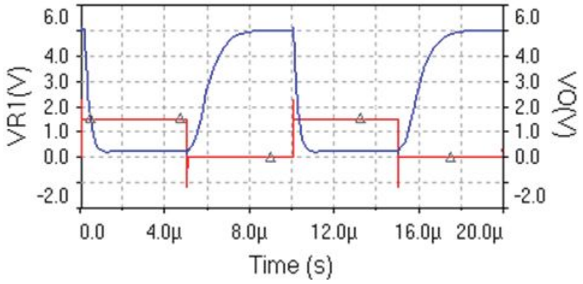


Fig. 6 - Timing Simulation Output

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