


FEATURES

- Direct Replacement for HCPL4503
- High Speed Optocoupler without Base Connection
- GaAIAs Emitter
- Integrated Detector with Photodiode and Transistor
- High Data Transmission Rate: 1 MBit/s
- TTL Compatible
- Open Collector Output
- CTR at $I_F=16\text{ mA}$, $V_O=0.4\text{ V}$, $V_{CC}=4.5\text{ V}$, $T_A=25^\circ\text{C}$: $\geq 19\%$
- Good CTR Linearity Relative to Forward Current
- Field Effect Stable
- Low Coupling Capacitance
- Very High Common Mode Transient Immunity $dV/dt: \geq 15\text{ kV}/\mu\text{s}$ at $V_{CM}=1500\text{ V}$
- Insulation Test Voltage: 5300 VAC_{PK}
-  VDE 0884 Available with Option 1
- UL Approval, File #E52744

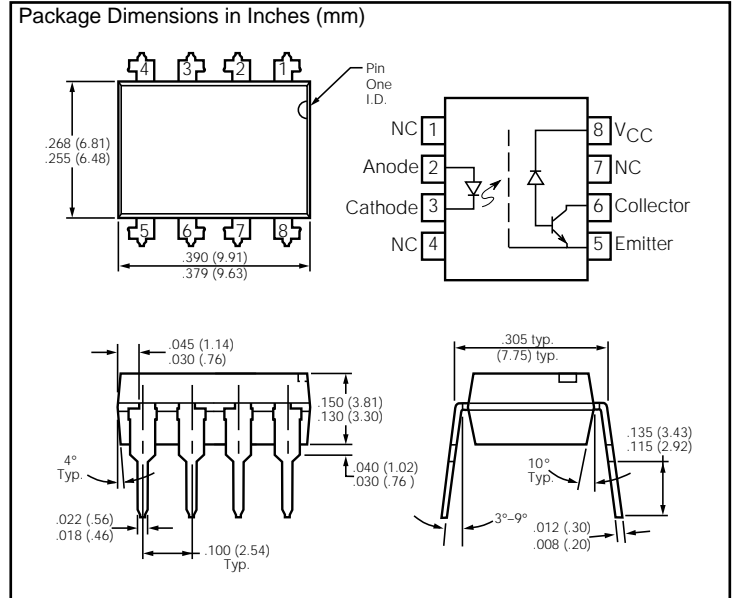
APPLICATIONS

- Data Communications
- IGBT Drivers
- Programmable Controllers

DESCRIPTION

The SFH6345 is an optocoupler with a GaAIAs infrared emitting diode, optically coupled to an integrated photodetector consisting of a photodiode and a high speed transistor in a DIP-8 plastic package. The device is similar to the 6N135 but has an additional Faraday shield on the detector which enhances the input-output dv/dt immunity.

Signals can be transmitted between two electrically separated circuits up to frequencies of 2 MHz. The potential difference between the circuits to be coupled should not exceed the maximum permissible reference voltages.



Absolute Maximum Ratings

Emitter (GaAIAs)

Reverse Voltage.....	3 V
DC Forward Current	25 mA
Surge Forward Current.....	1 A
$t_p \leq 1\ \mu\text{s}$, 300 pulses/sec.	
Total Power Dissipation.....	45 mW

Detector (Si Photodiode + Transistor)

Supply Voltage.....	-0.5 to 30 V
Output Voltage	-0.5 to $\geq 25\text{ V}$
Output Current.....	8 mA
Total Power Dissipation.....	100 mW

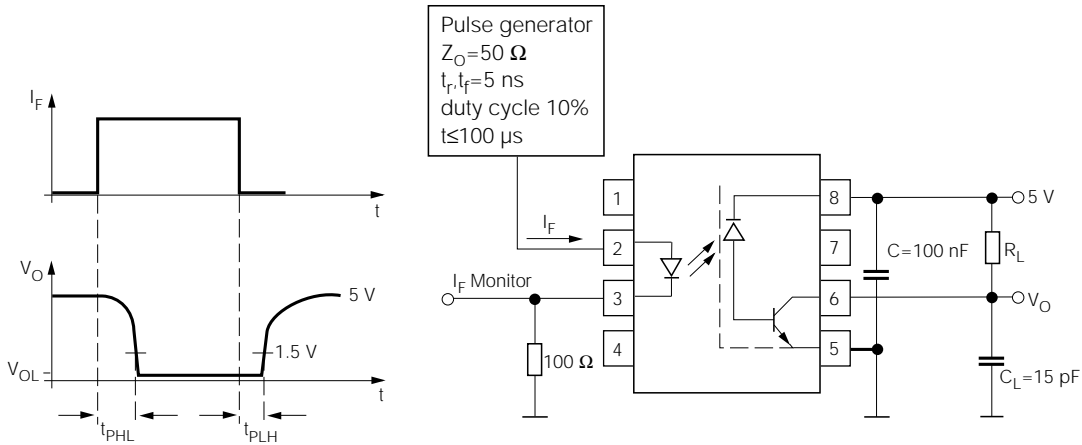
Package Insulation

Isolation Test Voltage	
between emitter and detector	5300 VAC _{PK}
(refer to climate DIN 40046, part 2, Nov. 74)	
Creepage	$\geq 7\text{ mm min.}$
Clearance	$\geq 7\text{ mm min.}$
Comparative Tracking Index	
per DIN IEC 112/VDE0303, part 1	≥ 175
Isolation Resistance	
$V_{IO}=500\text{ V}$, $T_A=25^\circ\text{C}$, R_{ISOL}	$\geq 10^{12}\ \Omega$
$V_{IO}=500\text{ V}$, $T_A=100^\circ\text{C}$, R_{ISOL}	$\geq 10^{11}\ \Omega$
Storage Temperature Range	-55 to +150°C
Ambient Temperature Range.....	-55 to +100°C
Junction Temperature	100°C
Soldering Temperature ($t=10\text{ sec. max.}$).....	260°C
Dip soldering: distance to seating plane $\geq 1.5\text{ mm}$	

Characteristics ($T_A=0^\circ$ to 70°C , unless otherwise specified, typical values $T_A=25^\circ\text{C}$)

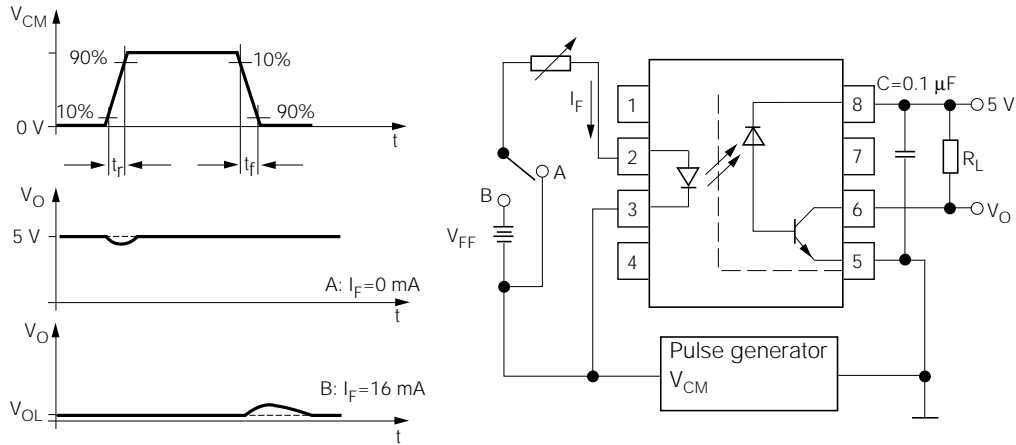
Description	Symbol	Min.	Typ.	Max.	Unit
Emitter (IR GaAlAs)					
Forward Voltage, $I_F=16\text{ mA}$	V_F		1.6	1.9	V
Reverse Current, $V_R=3\text{ V}$	I_R		0.5	10	μA
Capacitance, $V_R=0\text{ V}$, $f=1\text{ MHz}$	C_0		75		pF
Thermal Resistance	R_{thJA}		700		$^\circ\text{K/W}$
Detector (Si Photodiode + Transistor)					
Supply Current, Logic High $I_F=0$, V_O (open), $V_{CC}=15\text{ V}$, $T_A=25^\circ\text{C}$ $I_F=0$, V_O (open), $V_{CC}=15\text{ V}$	I_{CCH}		0.01	1 2	μA
Output Current, Output High $I_F=0$, V_O (open), $V_{CC}=5.5\text{ V}$, $T_A=25^\circ\text{C}$ $I_F=0$, V_O (open), $V_{CC}=15\text{ V}$, $T_A=25^\circ\text{C}$ $I_F=0$, V_O (open), $V_{CC}=15\text{ V}$	I_{OH}		.003 .01 —	0.5 1 50	μA
Capacitance, $V_{CE}=5\text{ V}$, $f=1\text{ MHz}$	C_{CE}		3		pF
Thermal Resistance	R_{thJA}		300		$^\circ\text{K/W}$
Package					
Coupling Capacitance	C_C		0.6		pF
Coupling Transfer Ratio $I_F=16\text{ mA}$, $V_O=0.4\text{ V}$, $V_{CC}=4.5\text{ V}$, $T_A=25^\circ\text{C}$ $I_F=16\text{ mA}$, $V_O=0.5\text{ V}$, $V_{CC}=4.5\text{ V}$	I_C/I_F	19 15	30 —		%
Collector Emitter Saturation Voltage $I_F=16\text{ mA}$, $I_O=2.4\text{ mA}$, $V_{CC}=4.5\text{ V}$, $T_A=25^\circ\text{C}$	V_{OL}		0.1	0.4	V
Supply Current, Logic Low $I_F=16\text{ mA}$, V_O open, $V_{CC}=15\text{ V}$	I_{CCL}		80	200	μA

Switching Times (typ.)



Description	Symbol	Min.	Typ.	Max.	Unit
Propagation Delay Time (High–Low) $I_F=16\text{ mA}$, $V_{CC}=5\text{ V}$, $R_L=1.9\text{ k}\Omega$, $T_A=25^\circ\text{C}$	t_{PHL}		0.3	0.8	μs
Propagation Delay Time (Low–High) $I_F=16\text{ mA}$, $V_{CC}=5\text{ V}$, $R_L=1.9\text{ k}\Omega$, $T_A=25^\circ\text{C}$	t_{PLH}		0.3	0.8	μs

Common Mode Transient Immunity



Description	Symbol	Min.	Typ.	Max.	Unit
Common Mode Transient Immunity (High) $I_F = 0$, $V_{CM} = 1500$ V _{P-P} , $R_L = 1.9$ k Ω , $V_{CC} = 5$ V, $T_A = 25^\circ\text{C}$	$ CM_H $	15	30		kV/ μs
Common Mode Transient Immunity (Low) $I_F = 16$ mA, $V_{CM} = 1500$ V _{P-P} , $R_L = 1.9$ k Ω , $V_{CC} = 5$ V, $T_A = 25^\circ\text{C}$	$ CM_L $	15	30		kV/ μs