


### FEATURES

- High Current Transfer Ratios  
at 10 mA: 40–320%  
at 1 mA: 45% typical (>13)
- Low CTR Degradation
- Good CTR Linearity Depending on Forward Current
- Isolation Test Voltage, 5300 VAC<sub>RMS</sub>
- High Collector-Emitter Voltage, V<sub>CEO</sub>=70 V
- Low Saturation Voltage
- Fast Switching Times
- Field-Effect Stable by TRIOS (Transparent Ion Shield)
- Temperature Stable
- Low Coupling Capacitance
- End-Stackable, .100" (2.54 mm) Spacing
- High Common-Mode Interference Immunity (Unconnected Base)
- Underwriters Lab File #52744
-  VDE 0884 Available with Option 1
- SMD Option, See SFH6206 Data Sheet

### DESCRIPTION

The SFH620A features a high current transfer ratio, low coupling capacitance and high isolation voltage. These couplers have a GaAs infrared emitting diode emitter, which is optically coupled to a silicon planar phototransistor detector, and is incorporated in a plastic DIP-4 package.

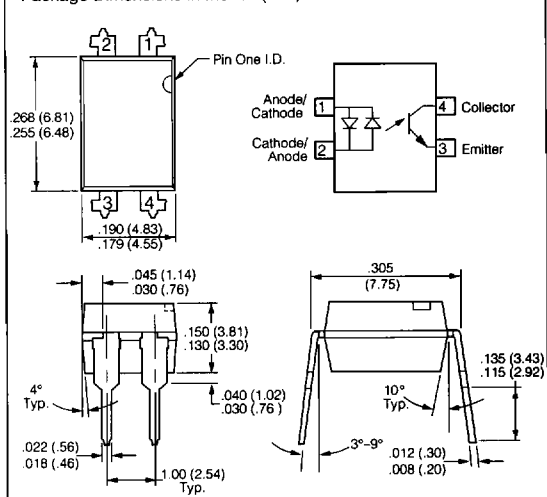
The coupling devices are designed for signal transmission between two electrically separated circuits.

The couplers are end-stackable with 2.54 mm spacing.

Creepage and clearance distances of >8 mm are achieved with option 6. This version complies with IEC 950 (DIN VDE 0805) for reinforced insulation up to an operation voltage of 400 V<sub>RMS</sub> or DC.

*Specifications subject to change.*

Package Dimensions in Inches (mm)



### Maximum Ratings

#### Emitter

Reverse Voltage .....	6 V
DC Forward Current .....	±60 mA
Surge Forward Current (t <sub>p</sub> ≤10 μs) .....	±2.5 A
Total Power Dissipation .....	100 mW

#### Detector

Collector-Emitter Voltage .....	70 V
Emitter-Collector Voltage .....	7 V
Collector Current .....	50 mA
Collector Current (t <sub>p</sub> ≤1 ms) .....	100 mA
Total Power Dissipation .....	150 mW

#### Package

Isolation Test Voltage between Emitter and Detector, refer to Climate DIN 40046, part 2, Nov. 74 .....	5300 VAC <sub>RMS</sub>
Creepage .....	≥7 mm
Clearance .....	≥7 mm
Insulation Thickness between Emitter and Detector ...	≥0.4 mm
Comparative Tracking Index per DIN IEC 112/MDE0 303, part 1 .....	175
Isolation Resistance	
V <sub>IO</sub> =500 V, T <sub>A</sub> =25°C .....	≥10 <sup>12</sup> Ω
V <sub>IO</sub> =500 V, T <sub>A</sub> =100°C .....	≥10 <sup>11</sup> Ω
Storage Temperature Range .....	-55 to +150°C
Ambient Temperature Range .....	-55 to +100°C
Junction Temperature .....	100°C
Soldering Temperature (max. 10 s. Dip Soldering Distance to Seating Plane ≥1.5 mm) .....	260°C

**Characteristics** ( $T_A=25^\circ\text{C}$ )

Description	Symbol		Unit	Condition
<b>Emitter</b>				
Forward Voltage	$V_F$	1.25 ( $\leq 1.65$ )	V	$I_F = \pm 60 \text{ mA}$
Capacitance	$C_0$	50	pF	$V_R = 0 \text{ V}$ , $f = 1 \text{ MHz}$
Thermal Resistance	$R_{thJA}$	750	K/W	
<b>Detector</b>				
Capacitance	$C_{CE}$	6.8	pF	$V_{CE} = 5 \text{ V}$ , $f = 1 \text{ MHz}$
Thermal Resistance	$R_{thJA}$	500	K/W	
<b>Package</b>				
Collector-Emitter Saturation Voltage	$V_{CESAT}$	0.25 ( $\leq 0.4$ )	V	$I_F = 10 \text{ mA}$ , $I_C = 2.5 \text{ mA}$
Coupling Capacitance	$C_C$	0.2	pF	

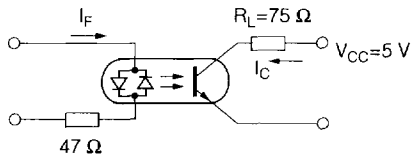
Note: 1. Still air, coupler soldered to PCB or base.

**Current Transfer Ratio ( $I_C/I_F$  at  $V_{CE}=5 \text{ V}$ ) and Collector-Emitter Leakage Current by Dash Number**

Description	-1	-2	-3	
$I_C/I_F$ ( $I_F = \pm 10 \text{ mA}$ )	40-125	63-200	100-320	%
$I_C/I_F$ ( $I_F = \pm 1 \text{ mA}$ )	30 (>13)	45 (>22)	70 (>34)	%
Collector-Emitter Leakage Current, $I_{CEO}$ $V_{CE} = 10 \text{ V}$	2 ( $\leq 50$ )	2 ( $\leq 50$ )	5 ( $\leq 100$ )	nA

**Switching Times**

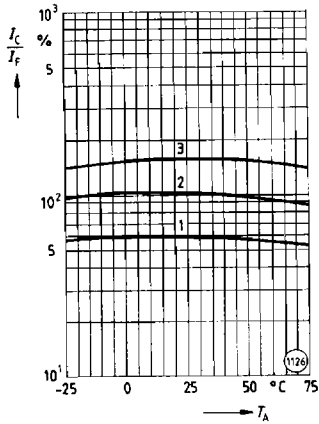
**Linear Operation** (without saturation)



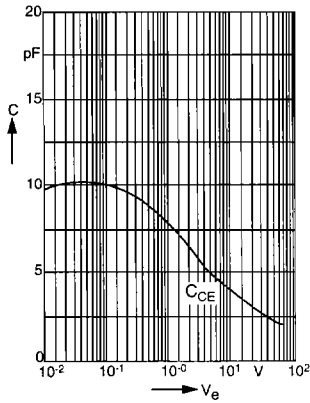
$I_F = 10 \text{ mA}$ ,  $V_{CC} = 5 \text{ V}$ ,  $T_A = 25^\circ\text{C}$

Load Resistance	$R_L$	75	$\Omega$
Turn-on Time	$t_{ON}$	3.0	$\mu\text{s}$
Rise Time	$t_R$	2.0	$\mu\text{s}$
Turn-off Time	$t_{OFF}$	2.3	$\mu\text{s}$
Fall Time	$t_F$	2.0	$\mu\text{s}$
Cut-off Frequency	$F_{CO}$	250	kHZ

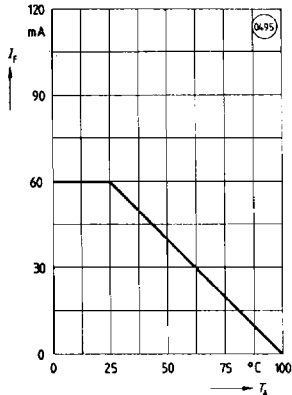
**Figure 1. Current transfer ratio (typ.) vs. temperature**  
 $I_F = 10 \text{ mA}$ ,  $V_{CE} = 0.5 \text{ V}$



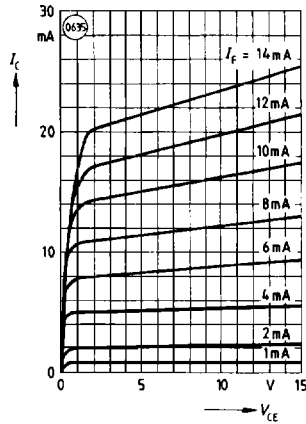
**Figure 4. Transistor capacitance (typ.) vs. collector-emitter voltage**  
 $T_A = 25^\circ\text{C}$ ,  $f = 1 \text{ MHz}$



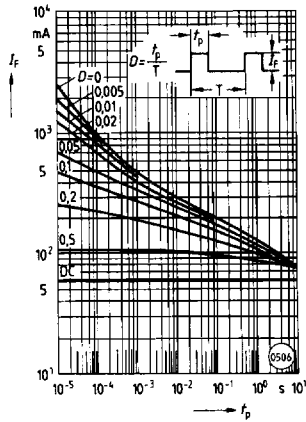
**Figure 7. Permissible diode forward current vs. ambient temp.**



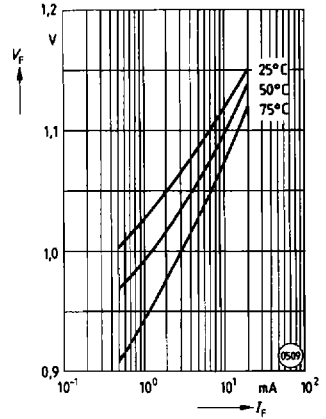
**Figure 2. Output characteristics (typ.) Collector current vs. collector-emitter voltage  $T_A = 25^\circ\text{C}$**



**Figure 5. Permissible pulse handling capability. Fwd. current vs. pulse width**  
 Pulse cycle  $D = \text{parameter}$ ,  $T_A = 25^\circ\text{C}$



**Figure 3. Diode forward voltage (typ.) vs. forward current**



**Figure 6. Permissible power dissipation vs. ambient temp.**

