



## **PRODUKTINFORMATION**

**Vi reserverar oss mot fel samt förbehåller oss rätten till ändringar utan föregående meddelande**

**ELFA artikelnr**

**75-352-55 IL205AT Optokopplare**

**75-352-63 IL207AT Optokopplare**



# IL205AT/206AT/207AT/208AT

## Phototransistor

### Small Outline Surface Mount

### Optocoupler

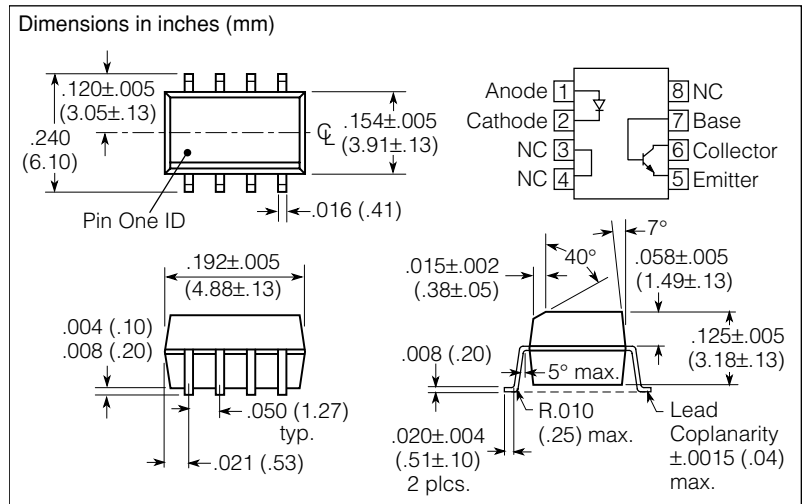
#### FEATURES

- High Current Transfer Ratio,  
 $I_F=10\text{ mA}$ ,  $V_{CE}=5.0\text{ V}$   
IL205AT, 40–80%  
IL206AT, 63–125%  
IL207AT, 100–200%  
IL208AT, 160–320%
- High  $BV_{CEO}$ , 70 V
- Isolation Test Voltage, 3000  $V_{RMS}$ , 1 s
- Industry Standard SOIC-8A Surface Mountable Package,
- Standard Lead Spacing, .05"
- Compatible with Dual Wave, Vapor Phase and IR Reflow Soldering
- Underwriters Lab File #E52744 (Code Letter Y)
- VDE 0884 Available with Option 1

#### DESCRIPTION

The IL205AT/206AT/207AT/208AT are optically coupled pairs with a Gallium Arsenide infrared LED and a silicon NPN phototransistor. Signal information, including a DC level, can be transmitted by the device while maintaining a high degree of electrical isolation between input and output. This family comes in a standard SOIC-8A small outline package for surface mounting which makes them ideally suited for high density applications with limited space. In addition to eliminating through-holes requirements, this package conforms to standards for surface mounted devices.

A specified minimum and maximum CTR allows a narrow tolerance in the electrical design of the adjacent circuits. The high  $BV_{CEO}$  of 70 volts gives a higher safety margin compared to the industry-standard 30 volts.



#### Maximum Ratings, $T_A=25^\circ\text{C}$ (except where noted)

##### Emitter

Peak Reverse Voltage .....	6.0 V
Continuous Forward Current .....	60 mA
Power Dissipation at $25^\circ\text{C}$ .....	90 mW
Derate Linearly from $25^\circ\text{C}$ .....	1.2 mW/ $^\circ\text{C}$

##### Detector

Collector-Emitter Breakdown Voltage .....	70 V
Emitter-Collector Breakdown Voltage .....	7.0 V
Collector-Base Breakdown Voltage .....	70 V
$I_{C\text{MAX}}\text{ DC}$ .....	50 mA
$I_{C\text{MAX}}$ ( $t < 1.0\text{ ms}$ ) .....	100 mA
Power Dissipation .....	150 mW
Derate Linearly from $25^\circ\text{C}$ .....	2.0 mW/ $^\circ\text{C}$

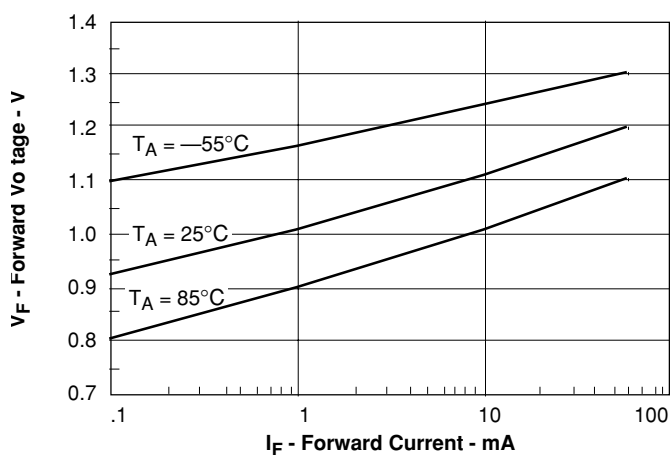
##### Package

Total Package Dissipation at $25^\circ\text{C}$ Ambient (LED + Detector) .....	240 mW
Derate Linearly from $25^\circ\text{C}$ .....	3.3 mW/ $^\circ\text{C}$
Operating Temperature .....	$-55^\circ\text{C}$ to $+100^\circ\text{C}$
Storage Temperature .....	$-55^\circ\text{C}$ to $+150^\circ\text{C}$
Soldering Time at $260^\circ\text{C}$ .....	10 s

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

Parameter	Sym.	Min.	Typ.	Max.	Unit	Condition	
<b>Emitter</b>							
Forward Voltage	$V_F$	—	1.3	1.5	V	$I_F=10\text{ mA}$	
Reverse Current	$I_R$	—	0.1	100	$\mu\text{A}$	$V_R=6.0\text{ V}$	
Capacitance	$C_O$	—	13	—	pF	$V_R=0$	
<b>Detector</b>							
Breakdown Voltage	$BV_{CEO}$	70	—	—	V	$I_C=100\text{ }\mu\text{A}$	
	$BV_{ECO}$	7.0	10	—		$I_E=100\text{ }\mu\text{A}$	
Leakage Current, Collector-Emitter	$I_{CEO}$	—	5.0	50	nA	$V_{CE}=10\text{ V}$	
<b>Package</b>							
DC Current Transfer	IL205AT	$CTR_{DC}$	40	—	80	%	$I_F=10\text{ mA}, V_{CE}=5.0\text{ V}$
	IL206AT		63	—	125		
	IL207AT		100	—	200		
	IL208AT		100	—	320		
DC Current Transfer	IL205AT	$CTR_{DC}$	13	25	—	%	$I_F=1.0\text{ mA}, V_{CE}=5.0\text{ V}$
	IL206AT		22	40	—		
	IL207AT		34	60	—		
	IL208AT		56	95	—		
Saturation Voltage, Collector-Emitter	$V_{CEsat}$	—	—	0.4	—	$I_C=2.0\text{ mA}, I_F=10\text{ mA},$	
Isolation Test Voltage	$V_{IO}$	3000	—	—	$V_{RMS}$	—	
Equivalent DC, Isolation Voltage	—	3535	—	—	VDC	—	
Capacitance, Input to Output	$C_{IO}$	—	0.5	—	pF	—	
Resistance, Input to Output	$R_{IO}$	—	100	—	$\Omega$	—	
Switching Time	$t_{ON}, t_{OFF}$	—	3.0	—	$\mu\text{s}$	$I_C=2.0\text{ mA}, R_L=100\text{ }\Omega, V_{CC}=10\text{ V}$	

**Figure 1. Forward voltage vs. forward current**



**Figure 2. Normalized non-saturated and saturated  $CTR_{CE}$  vs. LED current**

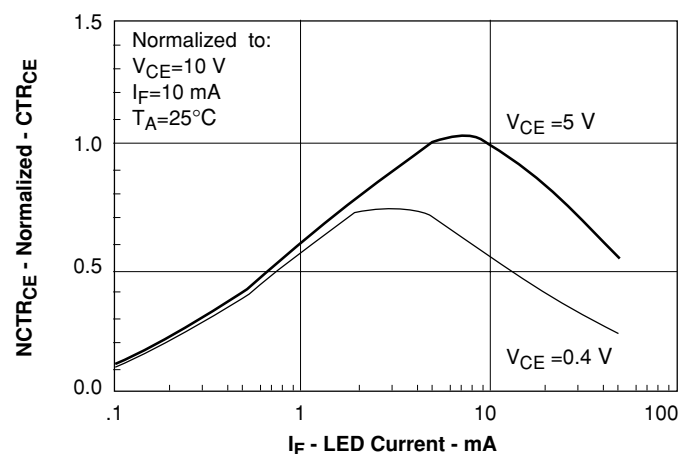


Figure 3. Collector-emitter current vs. LED current

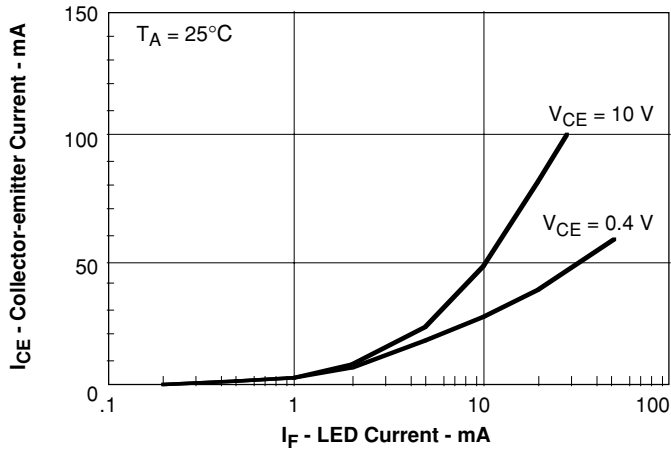


Figure 4. Normalized collector-base photo current vs. LED current

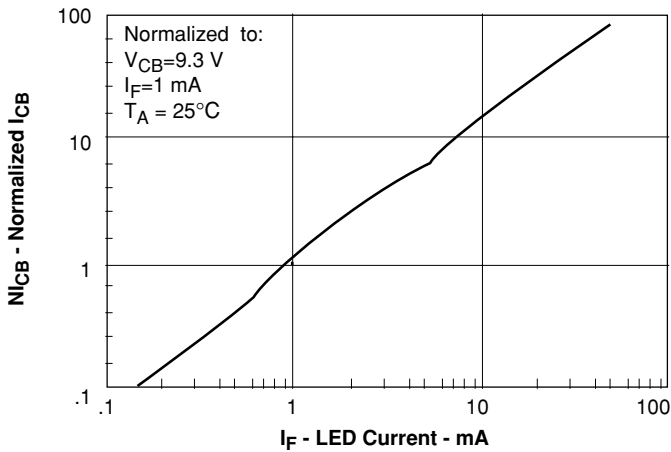


Figure 5. Normalized collector-base photo current vs. LED current

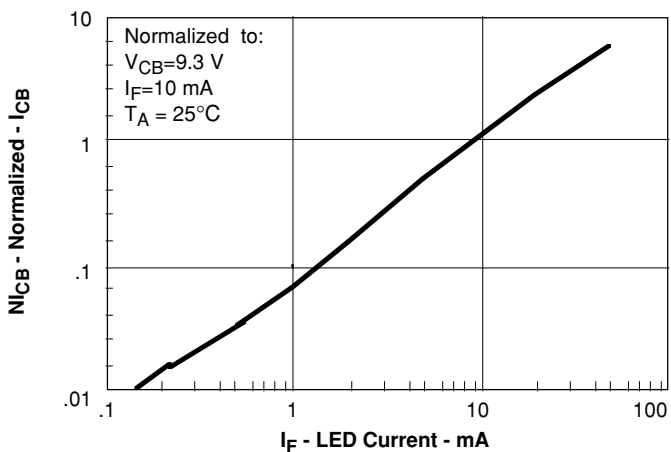


Figure 6. Collector-emitter photo current vs. LED current

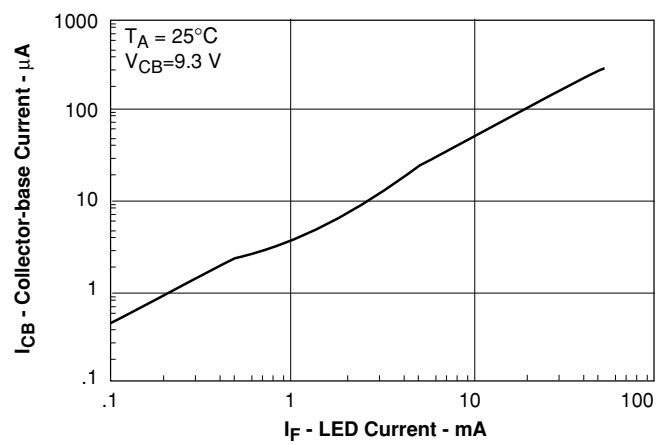


Figure 7. Collector-emitter photo current vs. LED current

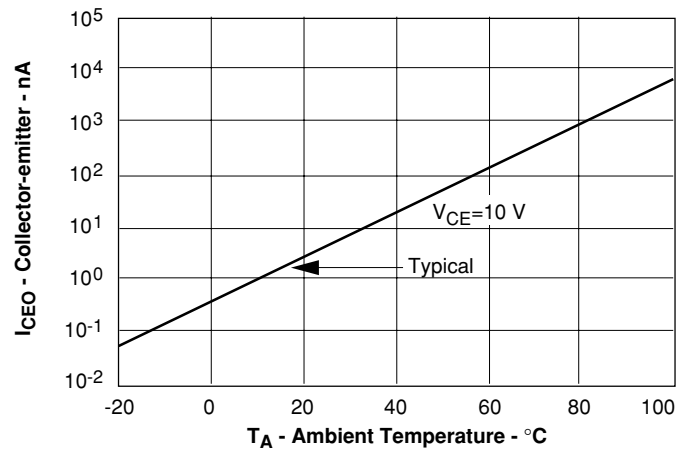
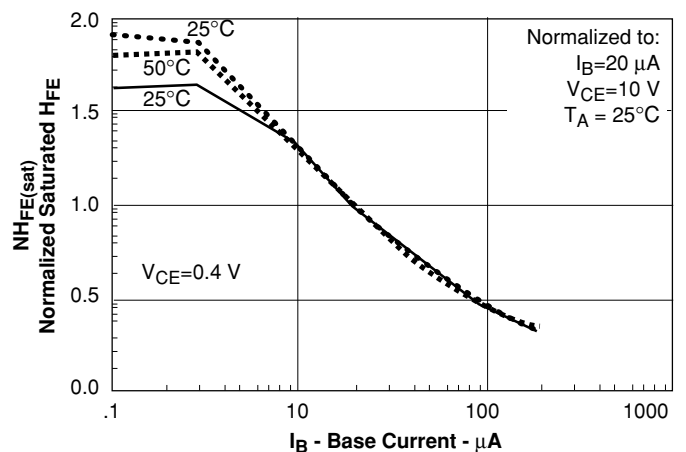
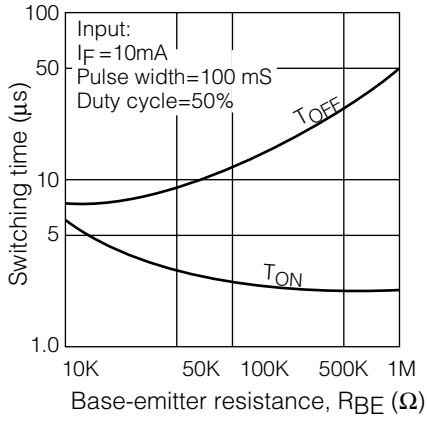


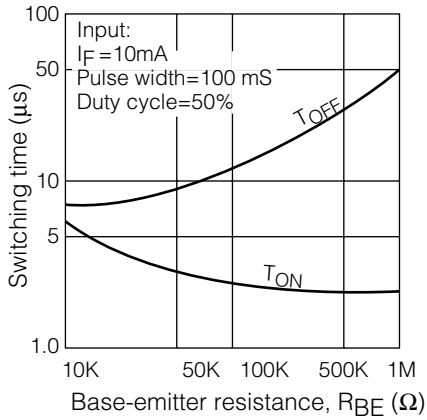
Figure 8. Base current vs. IF and HFE



**Figure 9. Typical switching characteristics vs. base resistance (saturated operation)**



**Figure 10. Typical switching times vs. load resistance**



**Figure 11. Switching time test schematic and waveform**

