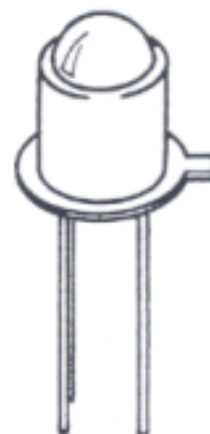


DESCRIPTION

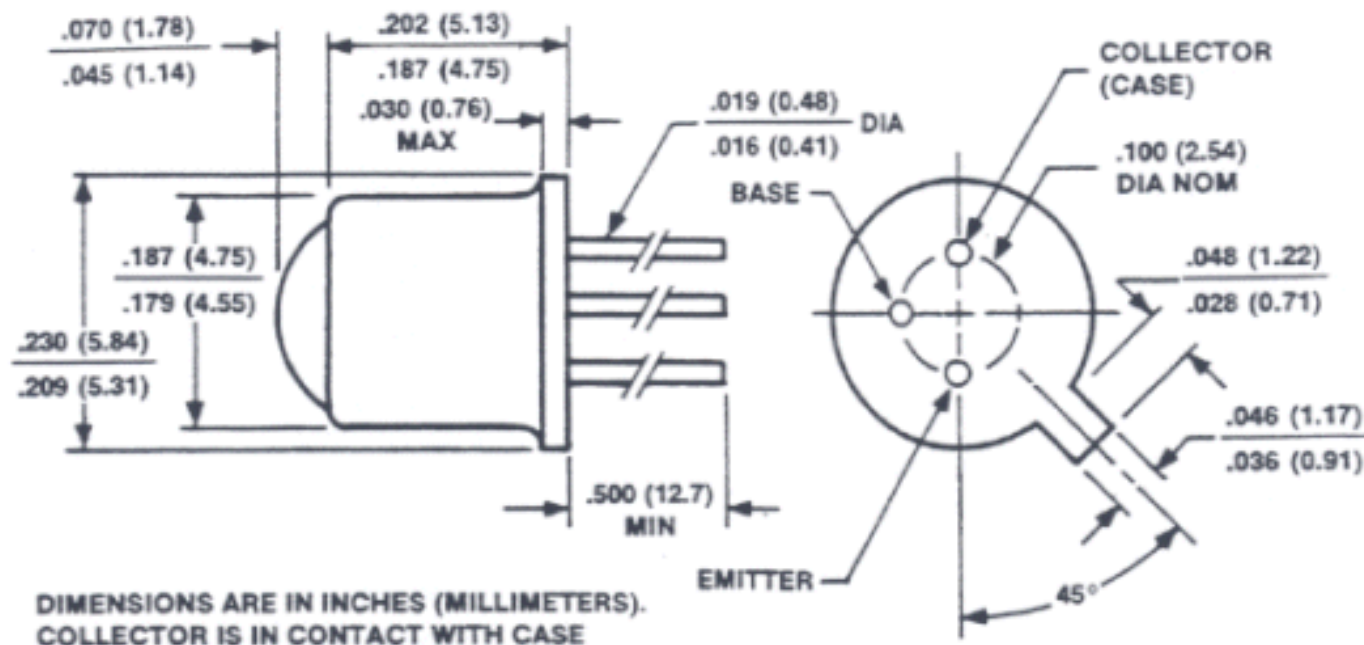
The TOX 9106 is an NPN silicon phototransistor mounted in a lensed hermetically sealed TO-18 package. The lensing effect allows an acceptance half angle of typically 10° measured from the optical axis to the half power point.

FEATURES

- Lensed for high sensitivity
- Spectrally and mechanically compatible with TOX 9004 thru TOX 9007 Series IR emitters.
- TO-18 hermetically sealed package
- Base lead available for transistor biasing
- TX and TXV screening available upon request.



OUTLINE DIMENSIONS



ABSOLUTE MAXIMUM RATINGS AT 25°C FREE-AIR TEMPERATURE (unless otherwise noted)

Collector-base voltage.....	50 V
Collector-emitter voltage.....	30 V
Emitter-base voltage.....	7 V
Emitter-collector voltage.....	7 V
Continuous collector current.....	50 mA
Continuous device dissipation at (or below) 25° C free-air temperature (See Note 1).....	250 mW
Operating free-air temperature range.....	-55° C to 125° C
Storage temperature range.....	-65° C to 150° C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds.....	240° C

NOTE: 1. Derate linearly to 125° C free-air temperature at the rate of 2.5 mW/° C.

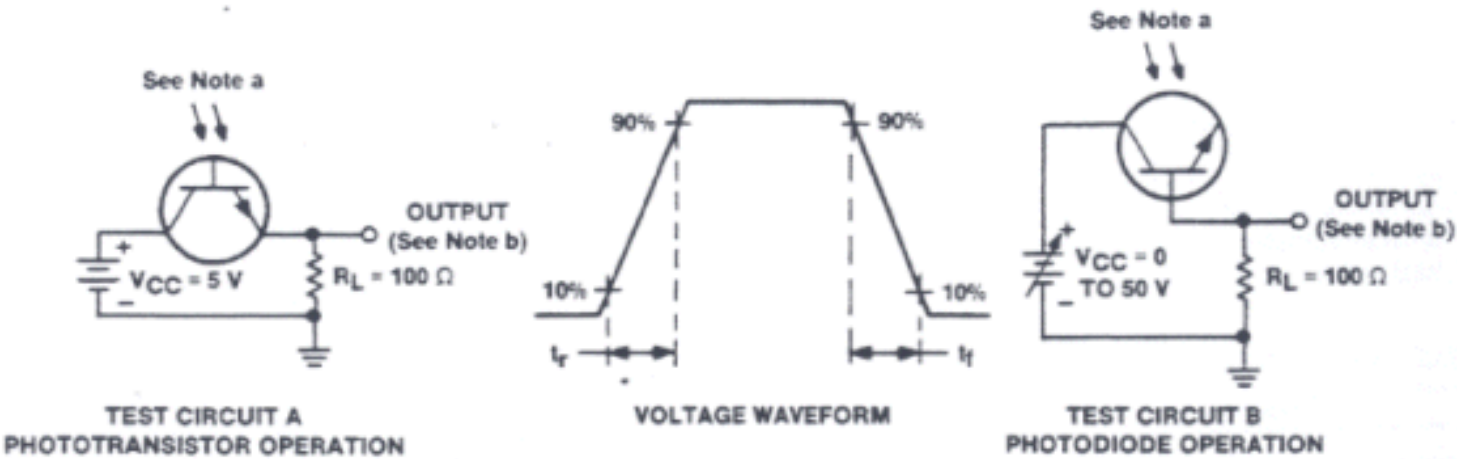
ELECTRO-OPTICAL CHARACTERISTICS (T _{CASE} = 25 °C UNLESS OTHERWISE SPECIFIED)							
PARAMETER		TEST CONDITION	SYMBOL	MIN	TYP	MAX	UNITS
Collector-Base Breakdown Voltage		I _C = 100 ¼A, I _E = 0, E _e = 0	V _{(BR)CBO}	50			V
Collector-Emitter Breakdown Voltage		I _C = 100 ¼A, I _B = 0, E _e = 0	V _{(BR)CEO}	30			V
Emitter-Base Breakdown Voltage		I _E = 100 ¼A, I _C = 0, E _e = 0	V _{(BR)EBO}	7			V
Emitter-Collector Breakdown Voltage		I _E = 100 ¼A, I _B = 0, E _e = 0	V _{(BR)ECO}	7			V
Dark Current	Phototransistor Operation	V _{CE} = 10 V, I _B = 0, E _e = 0	I _D			0.1	¼A
		V _{CE} = 10 V, I _B = 0, E _e = 0, T _A = 100 °C			20		
	Photodiode Operation	V _{CB} = 10 V, I _E = 0, E _e = 0				0.01	¼A
Light Current	Phototransistor Operation	V _{CE} = 5 V, I _B = 0, E _e = 5 mW/cm ² , see Note 2	I _L	5	22		mA
	Photodiode Operation	V _{CB} = 0 to 50 V, I _E = 0, E _e = 20 mW/cm ² , see Note 2			170		¼A
Static Forward Current Transfer Ratio		V _{CE} = 5 V, I _C = 1 mA, E _e = 0	h _{FE}		200		
Collector-Emitter Saturation Voltage		I _C = 2 mA, I _B = 0, E _e = 20 mW/cm ² , see Note 2	V _{CE(sat)}		0.2		V

NOTE 2: Irradiance (E_e is the radiant power per unit area incident upon a surface. For these measurements the source is an unfiltered tungsten linear-filament lamp operating at a color temperature of 2870 K).

SWITCHING CHARACTERISTICS AT 25 °C FREE-AIR TEMPERATURE

PARAMETER		TEST CONDITION	SYMBOL	TYPICAL	UNITS
Rise Time	Phototransistor Operation	$V_{CC} = 5\text{ V}$, $I_L = 800\text{ }\mu\text{A}$, $R_L = 100\text{ }\Omega$, See Test Circuit A of Figure 1	t_r	8	μs
Fall Time			t_f	6	
Rise Time	Photodiode Operation	$V_{CC} = 5\text{ V}$, $I_L = 800\text{ }\mu\text{A}$, $R_L = 100\text{ }\Omega$, See Test Circuit B of Figure 1	t_r	350	ns
Fall Time			t_f	500	

PARAMETER MEASUREMENT INFORMATION



- NOTES: a. Input irradiance is supplied by a pulsed gallium arsenide infrared emitter with rise and fall times less than 50 ns. Incident irradiance is adjusted for specified I_L .
- b. Output waveform is monitored on an oscilloscope with the following characteristics: $t_r \leq 25\text{ ns}$, $R_{in} \geq 1\text{ M}\Omega$, $C_{in} \leq 20\text{ pF}$.