

1N5722 THRU 1N5725
N-P-N PLANAR SILICON PHOTOTRANSISTORS

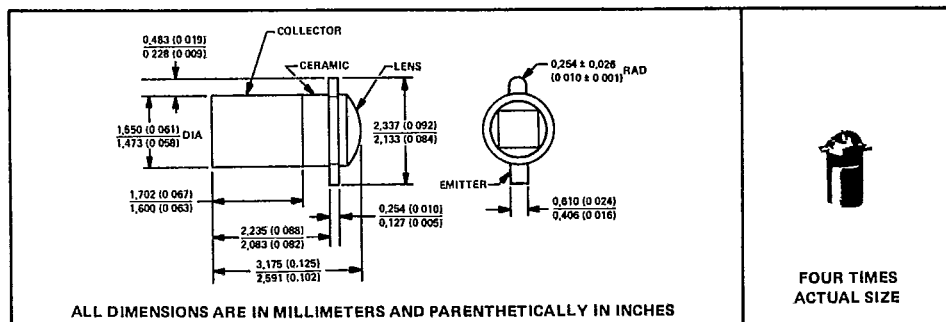
D974, MARCH 1972—REVISED APRIL 1987

JEDEC-REGISTERED VERSIONS OF TIL601 THRU TIL604

T-41-61

- Recommended for Application in Character Recognition, Tape and Card Readers, Velocity Indicators, and Encoders
- Unique Package Design Allows for Assembly into Printed Circuit Boards

*mechanical data



*absolute maximum ratings at 25°C case temperature (unless otherwise noted)

Collector-Emitter Voltage	50 V
Emitter-Collector Voltage	7 V
Continuous Device Dissipation at (or below) 25°C Case Temperature (See Note 1)	50 mW
Operating Case Temperature Range	-65°C to 125°C
Storage Temperature Range	-65°C to 150°C
Soldering Temperature (10 seconds)	240°C

*electrical characteristics at 25°C case temperature (unless otherwise noted)

PARAMETER	TEST CONDITIONS	TYPE	MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-Emitter Breakdown Voltage	$I_C = 100 \mu A$, $E_a = 0$	ALL	50			V
$V_{(BR)ECO}$ Emitter-Collector Breakdown Voltage	$I_E = 100 \mu A$, $E_a = 0$	ALL	7			V
I_D Dark Current	$V_{CE} = 30 V$, $E_a = 0$ $V_{CE} = 30 V$, $E_a = 0$, $T_C = 100^\circ C$	ALL		1	25	μA
I_L Light Current	$V_{CE} = 5 V$, $E_a = 20 mW/cm^2$, See Note 2	1N5722 1N5723 1N5724 1N5725	0.5 2 4 7	3 5 8		mA
$V_{CE(sat)}$ Collector-Emitter Saturation Voltage	$I_C = 0.4 mA$, $E_a = 20 mW/cm^2$, See Note 2	ALL	0.15			V

NOTES: 1. Derate linearly to 125°C at the rate of 0.5 mW/°C.

2. Irradiance (E_a) is the radiant power per unit area incident upon a surface. For this measurement the source is an unfiltered tungsten linear filament lamp operating at a color temperature of 2870 K.

*JEDEC registered data. This data sheet contains all applicable JEDEC registered data in effect at the time of publication.

PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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Infrared Emitters and Phototransistors

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*switching characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_r Rise Time	$V_{CC} = 30\text{ V}$, $I_L = 800\text{ }\mu\text{A}$,		1.5	2.5	
t_f Fall Time	$R_L = 1\text{ k}\Omega$, See Figure 1		15	25	μs

*PARAMETER MEASUREMENT INFORMATION

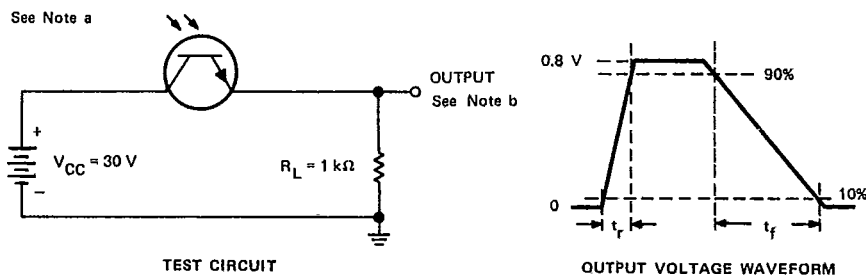


FIGURE 1

NOTES: a. Input irradiance is supplied by a pulsed xenon bulb source. Incident irradiance is adjusted for $I_L = 800\text{ }\mu\text{A}$.
 b. Output waveform is monitored on an oscilloscope with the following characteristics: $t_r \leq 25\text{ ns}$, $R_{in} \geq 1\text{ M}\Omega$, $C_{in} \leq 20\text{ pF}$.

*JEDEC registered data

TYPICAL CHARACTERISTICS

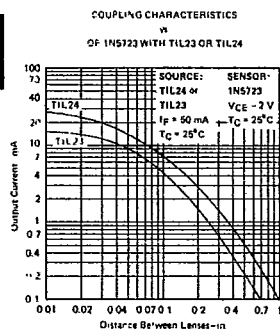


FIGURE 2

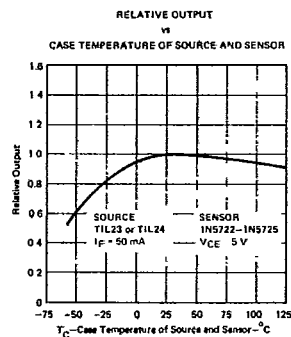


FIGURE 3

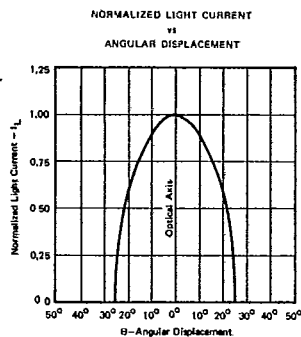


FIGURE 4

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TYPICAL CHARACTERISTICS

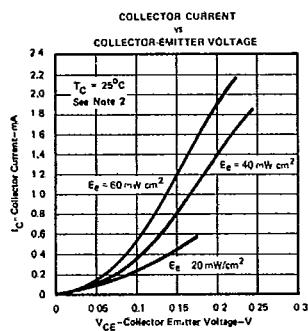


FIGURE 5

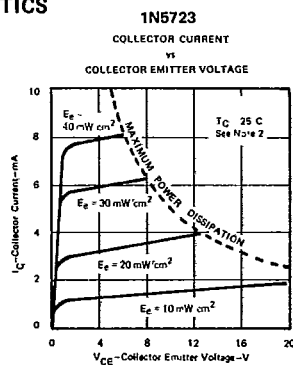


FIGURE 6

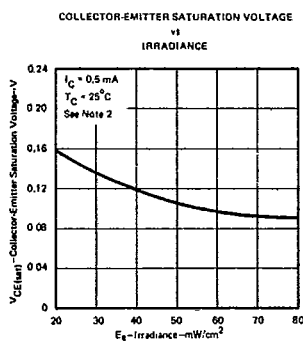


FIGURE 7

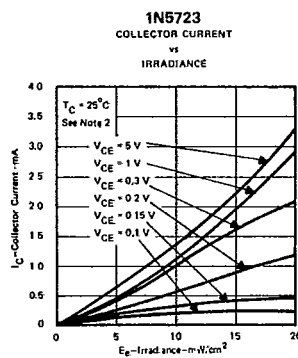


FIGURE 8

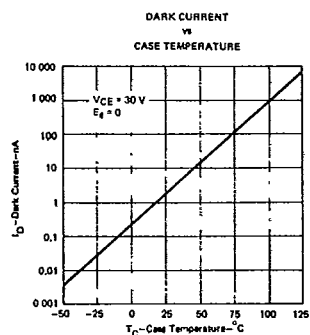


FIGURE 9

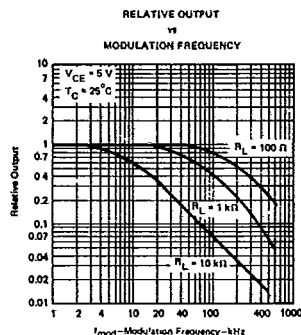


FIGURE 10

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

Infrared Emitters and Phototransistors

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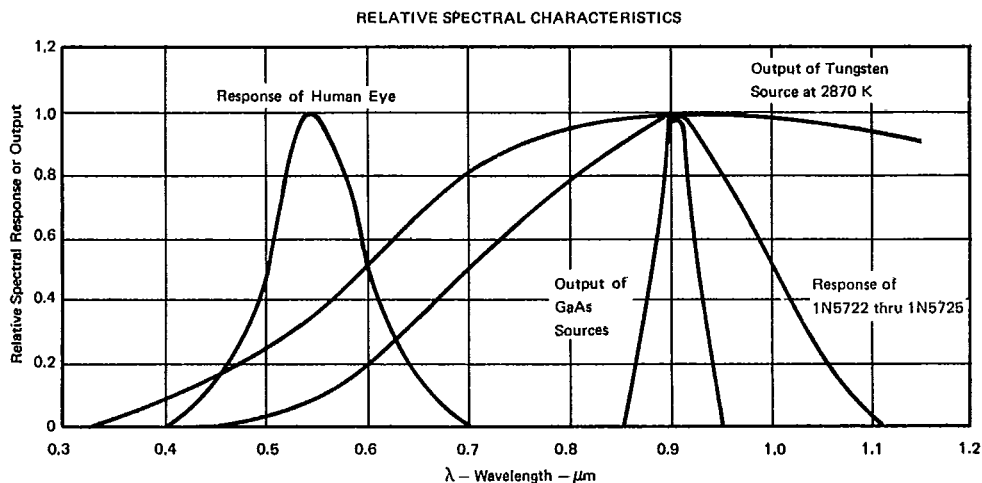


FIGURE 11

TEXAS INSTRUMENTS CUSTOMIZED OPTOELECTRONIC ARRAYS

The 1N5722 through 1N5725 series is available mounted in printed circuit boards for custom-designed array or matrix applications. The array is a complete unit, without the problems associated with small, difficult-to-handle components. These arrays can be designed for punched-card or tape readers, position indicators, pattern and character recognition, shaft encoders, and many other special applications.

Texas Instruments custom-array techniques offer many advantages:

- The arrays are pre-assembled and tested, ready for installation.
- Custom arrays can be manufactured in almost any configuration to allow maximum design flexibility.
- Sensitivity across an entire array will be matched to within 50%.
- GaAs sources can be furnished to give complete solid-state matched sets for specific applications.
- Arrays with components firmly soldered into place on both sides of a printed circuit board are more rugged than individually wired sensing devices.

Specifying optoelectronic arrays is easy; all that is required is a print of the array and the desired specifications.

TI sales engineers will assist in developing specifications for special applications.


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