Texas Photonics, Inc.

**TXPI 1043**
**4N23A Solid State Opto-Electronic**
**Medium Gain Silicon NPN Coupler**

## DESCRIPTION

This is a Silicon NPN Opto-Electronic coupler designed for applications requiring medium CTR gain at low operating currents and high voltage isolation.

## FEATURES

- ❒ Medium CTR Gain, typically 60 % CTR
- ❒ High Isolation, $10^{11}$ Ohms minimum
- ❒ High Reliability
- ❒ Hermetic TO-5, 6-Lead Package
- ❒ Military level screened devices available
- ❒ Isolated package

## ABSOLUTE MAXIMUM RATINGS

- ❒ Storage temperature..... -65°C to +125°C
- ❒ Operating temperature..... -55°C to +100°C
- ❒ Lead solder temperature..... 260°C, 10 seconds
- ❒ Input/Output Voltage..... 1,000 Volts

## LIGHT EMITTING DIODE MAXIMUM RATINGS

- ❒ Reverse Voltage..... 2 Volts
- ❒ Forward Current ..... 40 mA dc
- ❒ Pulsed Current ..... 1 A (pk)
  (1.0 µs Pulse Width, 300 pps)

## PHOTO TRANSISTOR MAXIMUM RATINGS

- ❒ Collector-Emitter Breakdown Voltage...35 V dc
- ❒ Collector-Base Breakdown Voltage.....35 V dc
- ❒ Emitter-Base Breakdown Voltage..... 4 V dc
- ❒ Power Dissipation.....300 mW
- ❒ Collector Current..... 50 mA

ELECTRO-OPTICAL CHARACTERISTICS (Case T = 25°C)

| PARAMETER | TEST CONDITION | SYMBOL | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Collector Emitter Breakdown | $I_C$ = 1 $m_A$ | $V_{BRCEO}$ | 35 | | | Volts |
| Emitter - Base Breakdown | $I_E$ = 100 $\mu_A$ | $V_{BRECO}$ | 4 | | | Volts |
| Collector - Base Breakdown | $I_C$ = 100 $\mu_A$ | $V_{BRCBO}$ | 35 | | | Volts |
| Collector - Emitter Dark Current | VCE = 20V | IC(off) | | | 100 | nA |
| Collector-Emitter Saturation | IC = 5 mA, If = 20 $m_A$ | VCE(sat) | | | 0.3 | Volts |
| Capacitance | V = 0 V, $f$ = 1 MHz | CIO | | | 5 | pF |
| Response Time | 10%-90%, If = 10 mA<br>VCE = 20 V, RL=100 Ω | $t_r$<br>$t_f$ | | | 15<br>15 | µsec<br>µsec |
| Current Gain | IC = 10 mA, VCE = 5 V | $H_{fe}$ | 300 | | | |
| Collector Current (On state) | IF = 10 mA, VCE = 5 V | IC (on) | 6.0 | | | mA |
| Collector Current (On state) | IF = 2 mA, VCE = 5 V | IC (on) | 0.2 | | | mA |
| Reverse Current (LED) | VR = 2 V | IR | | | 100 | $\mu_A$ |
| Forward Voltage (LED) | IF = 10 mA | VF | 0.8 | | 1.5 | Volts |