# GaAlAs 880 nm IREDs - General Characteristics

## FEATURES

- *Nine standard packages in hermetic and low cost epoxy*
- *End and side radiating packages*
- *Graded output*
- *High efficiency GaAlAs 880 nm LPE process delivers twice the power of conventional GaAs 940 nm emitters*

## PRODUCT DESCRIPTION

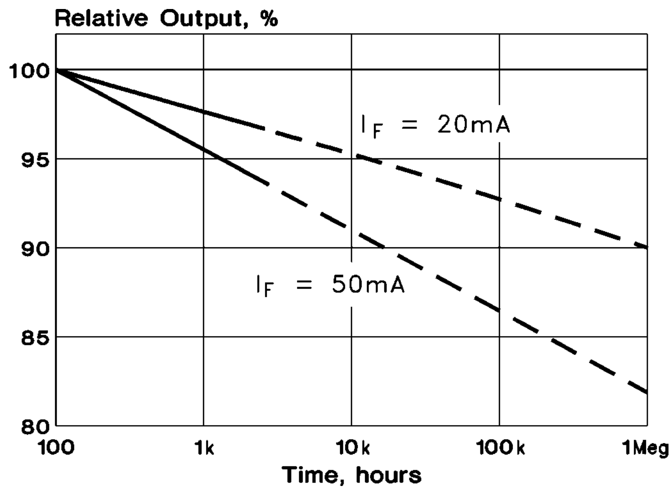
This series of infrared emitting diodes (IREDs) consists of three standard chips in nine different packages, providing a broad range of mounting, lens, and power output options. Both end and side radiating cases, as well as narrow and wide angle emitters, are part of this series. All devices use high efficiency GaAlAs liquid phase epitaxial chips mounted P side down for highest output. TO-46 and some T-1¾ (5 mm) devices are double bonded for increased reliability in pulse applications.

These IREDs are ideally suited for use with PerkinElmer's silicon photodiodes or phototransistors.

## Typical Characteristic Curves

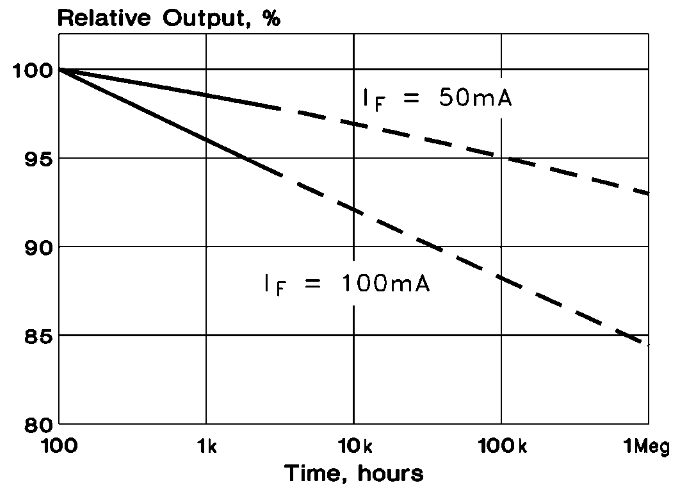
### Power Output vs. Time (@25°C) Small IRED Chip

**Coax, T-1 & Lateral Packages**

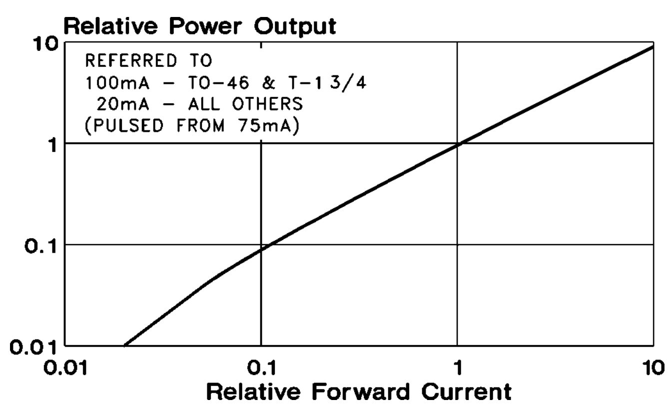



### Power Output vs. Time (@25°C) Large IRED Chip

**TO-46 & T-1¾ Packages**




### Power Output vs. Forward Current



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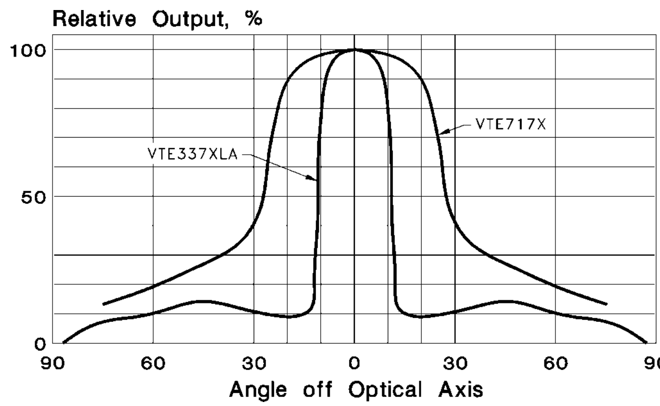
## Typical Characteristic Curves (cont.)

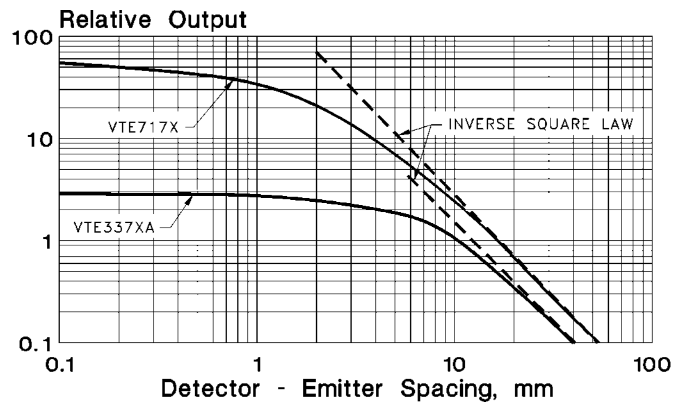
### Angular Emission

#### T-1 Lateral Packages



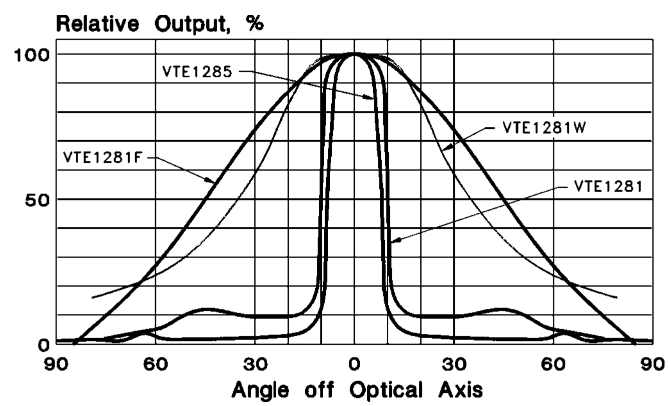

### On Axis Relative Irradiance

#### T-1 & Lateral Packages



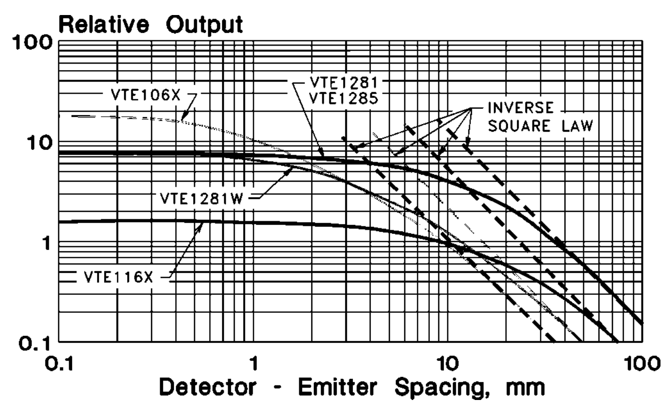

### Angular Emission

#### T-1¾ Packages



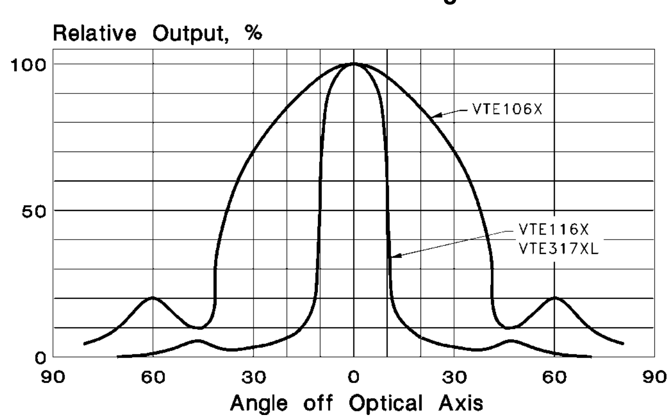

### On Axis Relative Irradiance

#### TO-46 & T-1¾ Packages



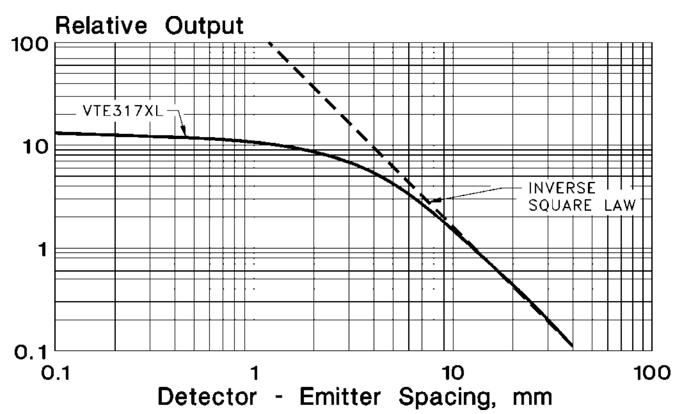

### Angular Emission

#### TO-46 & Coax Packages




### On Axis Relative Irradiance

#### Coax Packages

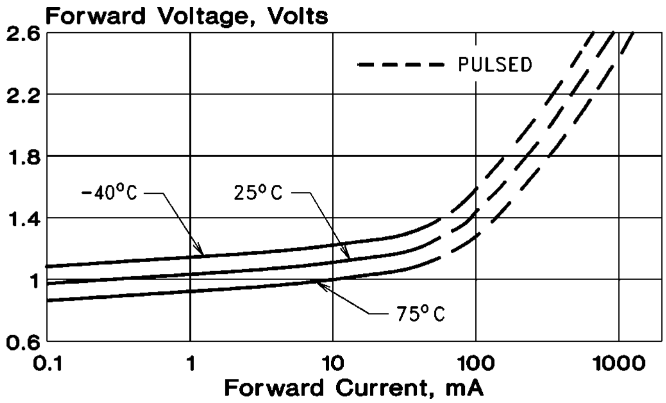


# GaAlAs 880 nm IREDs - General Characteristics

## Typical Characteristic Curves (cont.)

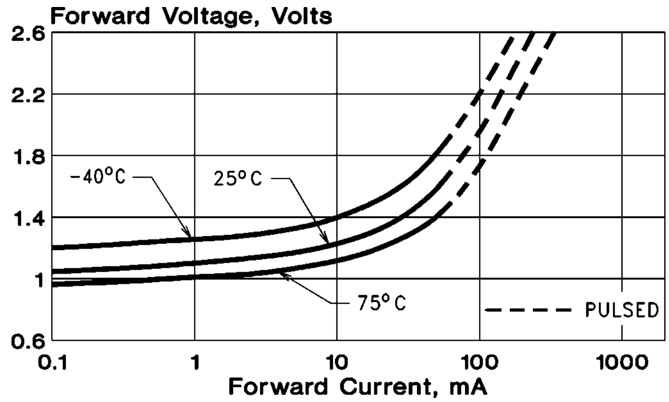
### Forward Voltage vs. Forward Current

**TO-46 & T-1¾ Packages**




### Forward Voltage vs. Forward Current

**T-1, Lateral & Coax Packages**




## NOTES:

1. While the output of any series of IREDs is selected by the parameters shown as a minimum, devices may be selected by any of the three parameters shown on special order. For any series, there is a direct relationship between all three methods of specifying output; however, variations in lens and chip placements from unit to unit prevent perfect correlation between parameters. Thus, a unit which has high total power output may have a much lower than expected on axis radiant intensity and therefore produce a lower irradiance.

   *Total Power* ($P_O$) is measured at the forward test current. All energy emitted in the forward direction is included.

   *Irradiance* ($E_e$) is the average irradiance in milliwatts per square centimeter on a surface of diameter (D) at a distance (d). The irradiance will in general not be uniform over this whole surface, and may be more or less intense on the optical axis. When this is the characterizing parameter, irradiance at other distances may be determined from the graphs showing irradiance vs. separation.

   *Radiant Intensity* ($I_e$) has the dimensions of milliwatts per steradian. To calculate the irradiance at any distance, the following formula is applicable: $E_e = I_e / d^2$ mW/cm$^2$
   For example, a device with a radiant intensity of 150 mW/sr would produce an irradiance of 0.6 µW/cm$^2$ at a 5 meter distance.

   $I_e$ is measured on axis at 36.3 mm from flange of the device. The detector is 6.35 mm dia. For near field irradiance where the inverse square law does not apply, see the graphs showing relative irradiance vs. separation.

2. $I_{FT}$ is the steady state forward current unless otherwise specified. When pulse conditions are specified, the forward drop is the peak value.
3. $\theta_{1/2}$ is the angle between the optical axis and the half intensity point of the IRED's output beam pattern.
4. Pulse test current is 1.0 A peak. Pulse width is 100 µsec, pulse repetition rate is 10 pps.