NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

**FEATURES**
- 160 Volt $V_{CEO}$
- 1 Amp continuous current
- Gain of 5K at $I_C=1$ Amp
- $P_{tot}=1$ Watt

**ABSOLUTE MAXIMUM RATINGS.**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>ZTX600</th>
<th>ZTX601</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector-Base Voltage</td>
<td>$V_{CBO}$</td>
<td>160</td>
<td>180</td>
<td>V</td>
</tr>
<tr>
<td>Collector-Emitter Voltage</td>
<td>$V_{CEO}$</td>
<td>140</td>
<td>160</td>
<td>V</td>
</tr>
<tr>
<td>Emitter-Base Voltage</td>
<td>$V_{EBO}$</td>
<td>10</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Peak Pulse Current</td>
<td>$I_{CM}$</td>
<td>4</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Continuous Collector Current</td>
<td>$I_C$</td>
<td>1</td>
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<td>A</td>
</tr>
<tr>
<td>Power Dissipation at $T_{amb}=25°C$ derate above 25°C</td>
<td>$P_{tot}$</td>
<td>1</td>
<td></td>
<td>W</td>
</tr>
<tr>
<td>Operating and Storage Temperature Range</td>
<td>$T_J/T_{stg}$</td>
<td>-55 to +200</td>
<td></td>
<td>°C</td>
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**ELECTRICAL CHARACTERISTICS (at $T_{amb}=25°C$ unless otherwise stated).**

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<td>Collector-Base Breakdown Voltage</td>
<td>$V_{BRCBO}$</td>
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<td>$V_{BREBO}$</td>
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<tr>
<td>Collector Cut-Off Current</td>
<td>$I_{CEO}$</td>
<td>0.01</td>
<td>0.01</td>
<td>μA</td>
</tr>
<tr>
<td>Emitter Cut-Off Current</td>
<td>$I_{EBO}$</td>
<td>0.1</td>
<td>0.1</td>
<td>μA</td>
</tr>
<tr>
<td>Collector-Emitter Cut-Off Current</td>
<td>$I_{CES}$</td>
<td>10</td>
<td>10</td>
<td>μA</td>
</tr>
<tr>
<td>Collector-Emitter Saturation Current</td>
<td>$I_{CE(sat)}$</td>
<td>0.75</td>
<td>0.85</td>
<td>μA</td>
</tr>
<tr>
<td>Base-Emitter Saturation Voltage</td>
<td>$V_{BE(sat)}$</td>
<td>1.7</td>
<td>1.9</td>
<td>V</td>
</tr>
<tr>
<td>Base-Emitter Turn-On Voltage</td>
<td>$V_{BE(on)}$</td>
<td>1.5</td>
<td>1.7</td>
<td>V</td>
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The maximum permissible operational temperature can be obtained from this graph using the following equation:

$$T_{amb(min)} = \frac{Power(max) - Power(act)}{0.0057} - 25°C$$

$T_{amb(max)}$ = Maximum operating ambient temperature
$Power(max)$ = Maximum power dissipation figure, obtained from the above graph for a given $V_{CE}$ and source resistance ($R_S$)
Power(actual) = Actual power dissipation in users circuit

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<td>Power Derating Graph</td>
<td>DC Conditions</td>
<td>Maximum Power Dissipation (W)</td>
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Voltage Derating Graph

The maximum permissible operational temperature can be obtained from this graph using the following equation:

$$T_{amb(min)} = \frac{Power(max) - Power(act)}{0.0057} - 25°C$$

$T_{amb(max)}$ = Maximum operating ambient temperature
$Power(max)$ = Maximum power dissipation figure, obtained from the above graph for a given $V_{CE}$ and source resistance ($R_S$)
Power(actual) = Actual power dissipation in users circuit
NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

FEATURES
* 160 Volt VCEO
* 1 Amp continuous current
* Gain of 5K at IC=1 Amp
* Ptot=1 Watt

ABSOLUTE MAXIMUM RATINGS.

PARAMETER SYMBOL UNIT CONDITIONS.
Collector-Base Voltage VCEO 160 V
Collector-Emitter Voltage VCEO 160 V
Emitter-Base Voltage VEB 10 V
Peak Pulse Current IC=1A
Continuous Collector Current IC 1 A
Power Dissipation at Tamb=25°C Ptot 1 W
Operating and Storage Temperature Range Tj>Tstg -55 to +200 °C

ELECTRICAL CHARACTERISTICS (at Tamb = 25°C unless otherwise stated).

PARAMETER SYMBOL UNIT CONDITIONS.
Collector-Base Breakdown Voltage V(BR)CEO 140 V IC=10mA
Collector-Emitter Breakdown Voltage V(BR)CEO 160 V IC=10mA
Emitter-Base Breakdown Voltage V(BR)EBO 10 V IE=100µA
Collector Cut-Off Current ICBO 100µA
Emitter Cut-Off Current ICEBO 100µA
Collector Emitter Saturation Voltage VCE(sat) IC=0.5A, IB=5mA
Base Emitter Saturation Voltage VBE(sat) IB=5mA IC=0.5A
Base Emitter Turn-On Voltage VBE(on) IC=0.5A

ELECTRICAL CHARACTERISTICS (at Tamb = 25°C unless otherwise stated).

PARAMETER SYMBOL UNIT CONDITIONS.
Collector-Base Voltage VIBRCEBO 160 V IC=0.5A, VCE=10V
Collector-Emitter Voltage VIBRCEO 160 V IC=0.5A, VCE=10V
Emitter-Base Voltage VIBEBO 10 V IC=0.5A, VCE=10V
Peak Pulse Current IC 100µA
Continuous Collector Current IC 100µA
Power Dissipation at Tamb=25°C Ptot 0.01 W
Operating and Storage Temperature Range Tj>Tstg -55 to +200 °C

The maximum permissible operational temperature can be obtained from this graph using the following equation

\[ T_{\text{amb(max)}} = \frac{\text{Power(max)} - \text{Power(act)}}{0.0057} - 25°C \]

where
- Power(max) = Maximum power dissipation figure, obtained from the above graph for a given VCE
- Power(act) = Actual power dissipation in users circuit

ZTX600
ZTX601

E Line
TO92 Compatible
TYPICAL CHARACTERISTICS

**VCE(sat) v Ic**

**Ic** - Collector Current (Amps)

**VCE(sat)** - Collector Voltage (Volts)

**Safe Operating Area**

**VBE(sat) v Ic**

**VBE(on) v Ic**

**hFE v Ic**

**VCE = 10V**

**VCE = 5V**

**D.C.**

**1s**

**100ms**

**10ms**

**1.0ms**

**0.1ms**

**0.001**

**IC/IB = 100**

**IC/IB = 1000**

**Group A**

**Group B**