

NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

ZTX618

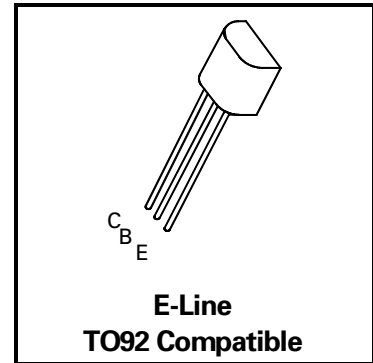
ISSUE 2 – JULY 1995

FEATURES

- * 10A Peak pulse current
- * Excellent h_{FE} characteristics up to 10A (pulsed)
- * Extremely low saturation voltage e.g. 7mV typ.
- * I_C cont 3.5A

APPLICATIONS

- * Power MOSFET gate driver in conjunction with complementary ZTX718



ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|----------------|-------------|------|
| Collector-Base Voltage | V_{CBO} | 20 | V |
| Collector-Emitter Voltage | V_{CEO} | 20 | V |
| Emitter-Base Voltage | V_{EBO} | 5 | V |
| Peak Pulse Current | I_{CM} | 10 | A |
| Continuous Collector Current | I_C | 3.5 | A |
| Base Current | I_B | 500 | mA |
| Practical Power Dissipation* | P_{totp} | 1.5 | W |
| Power Dissipation | P_{tot} | 1 | W |
| Operating and Storage Temperature Range | $T_j; T_{stg}$ | -55 to +200 | °C |

* Device mounted on P.C.B. with copper equal to 1 sq. Inch minimum.

ZTX618

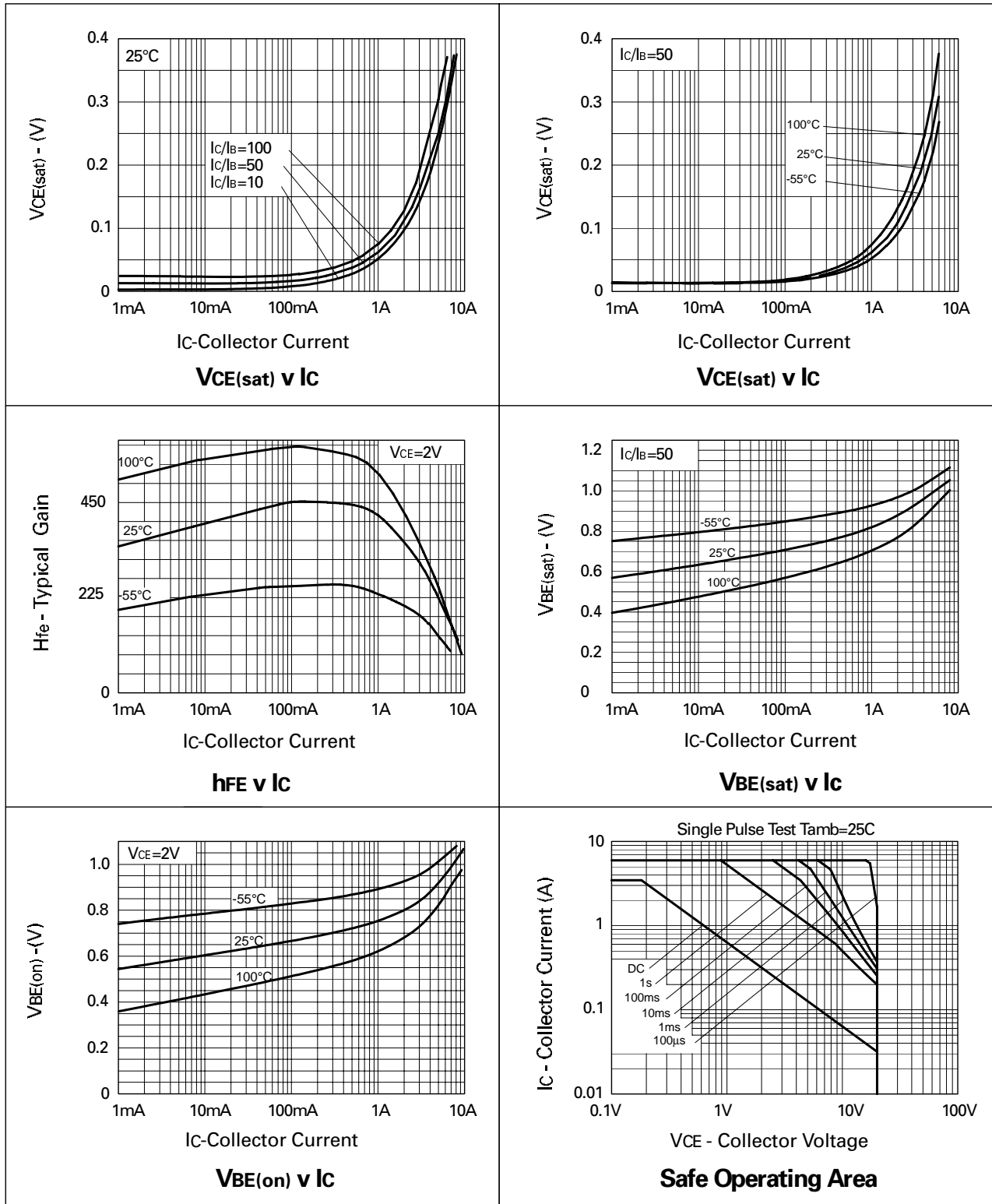
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|---------------------------------------|---------------|-------------------------|-------------------------|------------------|----------------|--|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | 20 | 100 | | V | $I_C=100\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | 20 | 27 | | V | $I_C=10\text{mA}^*$ |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 5 | 8.3 | | V | $I_E=100\mu\text{A}$ |
| Collector Cut-Off Current | I_{CBO} | | | 100 | nA | $V_{CB}=16\text{V}$ |
| Emitter Cut-Off Current | I_{EBO} | | | 100 | nA | $V_{EB}=4\text{V}$ |
| Collector Emitter Cut-Off Current | I_{CES} | | | 100 | nA | $V_{CES}=16\text{V}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | 7 80 210 | 15 150 255 | mV mV mV | $I_C=0.1\text{A}, I_B=10\text{mA}^*$ $I_C=1\text{A}, I_B=10\text{mA}^*$ $I_C=3.5\text{A}, I_B=50\text{mA}^*$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | | 0.93 | 1.05 | V | $I_C=3.5\text{A}, I_B=50\text{mA}^*$ |
| Base-Emitter Turn-On Voltage | $V_{BE(on)}$ | | 0.86 | 1.0 | V | $I_C=3.5\text{A}, V_{CE}=2\text{V}^*$ |
| Static Forward Current Transfer Ratio | h_{FE} | 200 300 170 40 | 400 450 300 85 | | | $I_C=10\text{mA}, V_{CE}=2\text{V}^*$ $I_C=200\text{mA}, V_{CE}=2\text{V}^*$ $I_C=3\text{A}, V_{CE}=2\text{V}^*$ $I_C=10\text{A}, V_{CE}=2\text{V}^*$ |
| Transition Frequency | f_T | 100 | 140 | | MHz | $I_C=50\text{mA}, V_{CE}=10\text{V}$ $f=100\text{MHz}$ |
| Output Capacitance | C_{obo} | | 23 | 30 | pF | $V_{CB}=10\text{V}, f=1\text{MHz}$ |
| Turn-On Time | $t_{(on)}$ | | 170 | | ns | $V_{CC}=10\text{V}, I_C=1\text{A}$ $I_{B1}=-I_{B2}=10\text{mA}$ |
| Turn-Off Time | $t_{(off)}$ | | 400 | | ns | |

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

ZTX618

TYPICAL CHARACTERISTICS

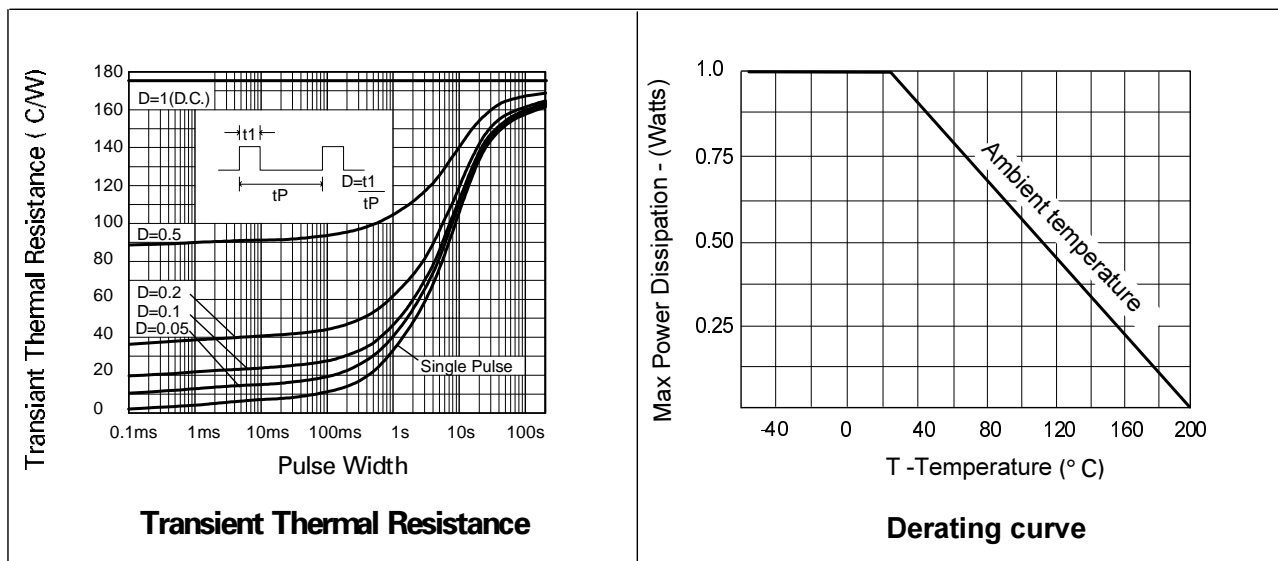


ZTX618

THERMAL CHARACTERISTICS

| PARAMETER | SYMBOL | MAX. | UNIT |
|---|--------------------|------|------|
| Thermal Resistance: Junction to Ambient ₁ | $R_{th(j-amb)1}$ | 175 | °C/W |
| Junction to Ambient ₂ | $R_{th(j-amb)2} †$ | 116 | °C/W |

† Device mounted on P.C.B. with copper equal to 1 sq. Inch minimum.



ZETEX Zetex plc.
Fields New Road, Chadderton, Oldham, OL9-8NP, United Kingdom.
Telephone: (44)161 622 4422 (Sales), (44)161 622 4444 (General Enquiries)
Fax: (44)161 622 4420

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany
Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49

Zetex Inc.
47 Mall Drive, Unit 4
Commack NY 11725
USA
Telephone: (516) 543-7100
Fax: (516) 864-7630

Zetex (Asia) Ltd.
3510 Metroplaza, Tower 2
Hing Fong Road,
Kwai Fong, Hong Kong
Telephone: (852) 26100 611
Fax: (852) 24250 494

These are supported by
agents and distributors in
major countries world-wide
©Zetex plc 1997
Internet:
<http://www.zetex.com>

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.