

Silicon Diffused Power Transistor

BU2532AL

GENERAL DESCRIPTION

New generation, high-voltage, high-speed switching npn transistor in a plastic envelope intended for use in horizontal deflection circuits of high resolution monitors up to 82 kHz.

QUICK REFERENCE DATA

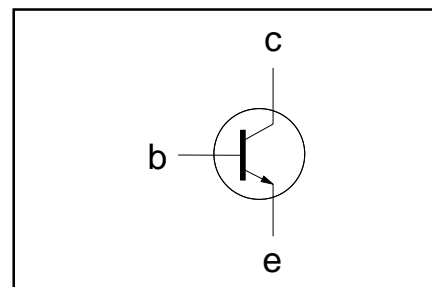
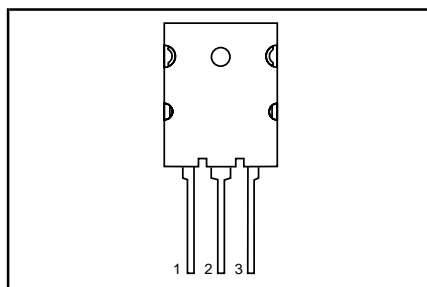
| SYMBOL | PARAMETER | CONDITIONS | TYP. | MAX. | UNIT |
|-------------|---------------------------------------|--|------|------|---------------|
| V_{CESM} | Collector-emitter voltage peak value | $V_{BE} = 0$ | - | 1500 | V |
| V_{CEO} | Collector-emitter voltage (open base) | | - | 800 | V |
| I_C | Collector current (DC) | | - | 16 | A |
| I_{CM} | Collector current peak value | | - | 40 | A |
| P_{tot} | Total power dissipation | $T_{mb} \leq 25\text{ }^{\circ}\text{C}$ | - | 125 | W |
| V_{CEsat} | Collector-emitter saturation voltage | $I_C = 7.0\text{ A}; I_B = 1.17\text{ A}$ | - | 5.0 | V |
| I_{Csat} | Collector saturation current | | 7 | - | A |
| t_s | Storage time | $I_{Csat} = 7.0\text{ A}; I_{B(end)} = 1\text{ A}$ | 1.4 | 1.8 | μs |

PINNING - SOT430

PIN CONFIGURATION

SYMBOL

| PIN | DESCRIPTION |
|-----------|-------------|
| 1 | base |
| 2 | collector |
| 3 | emitter |
| heat sink | collector |



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum Rating System (IEC 134)

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|--------------|--|--|------|------|--------------------|
| V_{CESM} | Collector-emitter voltage peak value | $V_{BE} = 0\text{ V}$ | - | 1500 | V |
| V_{CEO} | Collector-emitter voltage (open base) | | - | 800 | V |
| I_C | Collector current (DC) | | - | 16 | A |
| I_{CM} | Collector current peak value | | - | 40 | A |
| I_B | Base current (DC) | | - | 10 | A |
| I_{BM} | Base current peak value | | - | 15 | A |
| $-I_{B(AV)}$ | Reverse base current | average over any 20 ms period | - | 200 | mA |
| $-I_{BM}$ | Reverse base current peak value ¹ | | - | 10 | A |
| P_{tot} | Total power dissipation | $T_{mb} \leq 25\text{ }^{\circ}\text{C}$ | - | 125 | W |
| T_{stg} | Storage temperature | | -55 | 150 | $^{\circ}\text{C}$ |
| T_j | Junction temperature | | - | 150 | $^{\circ}\text{C}$ |

THERMAL RESISTANCES

| SYMBOL | PARAMETER | CONDITIONS | TYP. | MAX. | UNIT |
|----------------|---------------------------|-------------|------|------|------|
| $R_{th\ j-mb}$ | Junction to mounting base | - | - | 1.0 | K/W |
| $R_{th\ j-a}$ | Junction to ambient | in free air | 35 | - | K/W |

¹ Turn-off current.

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STATIC CHARACTERISTICS

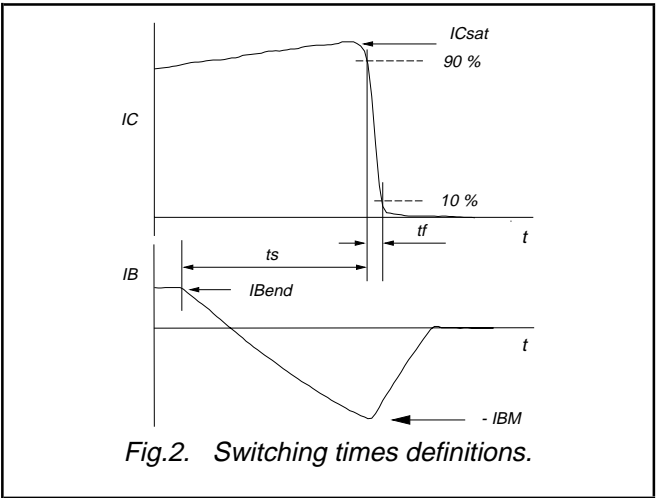
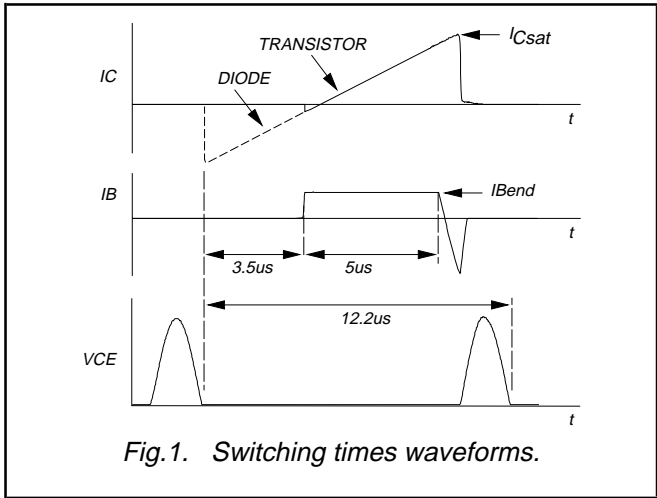
T_{mb} = 25 °C unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|--------------------|--|--|------|------|------|------|
| I _{CES} | Collector cut-off current ² | V _{BE} = 0 V; V _{CE} = V _{CESMmax} | - | - | 1.0 | mA |
| I _{CES} | | V _{BE} = 0 V; V _{CE} = V _{CESMmax} T _j = 125 °C | - | - | 2.0 | mA |
| I _{EBO} | Emitter cut-off current | V _{EB} = 7.5 V; I _C = 0 A | - | - | 1.0 | mA |
| BV _{EBO} | Base-emitter breakdown voltage | I _B = 1 mA | 7.5 | 14 | - | V |
| V _{CEsat} | Collector-emitter saturation voltage | I _C = 7.0 A; I _B = 1.17 A | - | - | 5.0 | V |
| V _{BEsat} | Base-emitter saturation voltage | I _C = 7.0 A; I _B = 1.17 A | - | - | 1.0 | V |
| h _{FE} | DC current gain | I _C = 1 A; V _{CE} = 5 V | - | 17 | - | |
| h _{FE} | | I _C = 7 A; V _{CE} = 5 V | 6 | 9 | 12.5 | |

DYNAMIC CHARACTERISTICS

T_{mb} = 25 °C unless otherwise specified

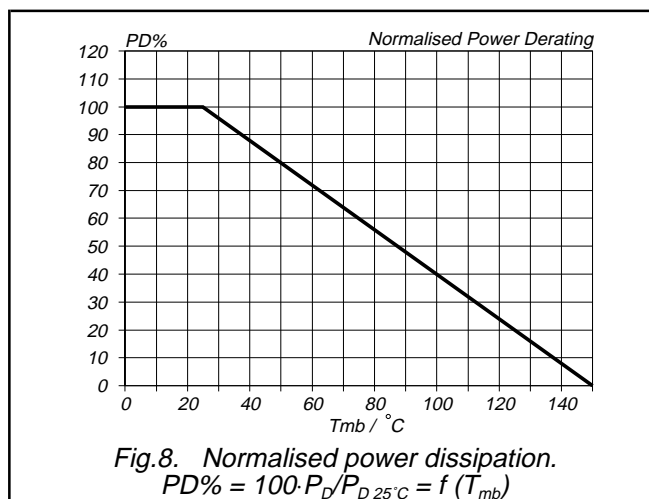
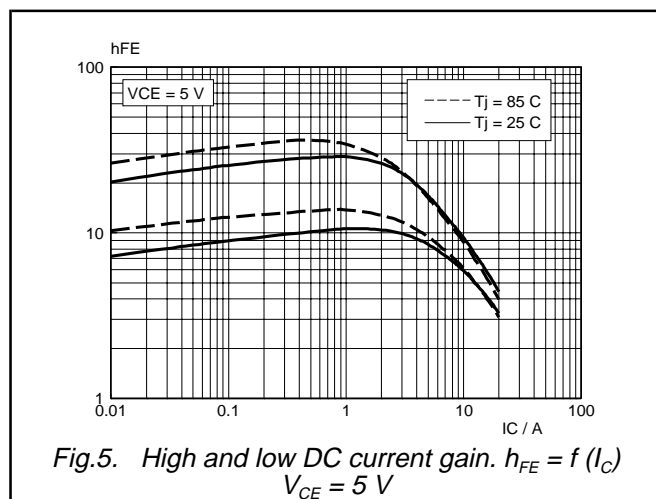
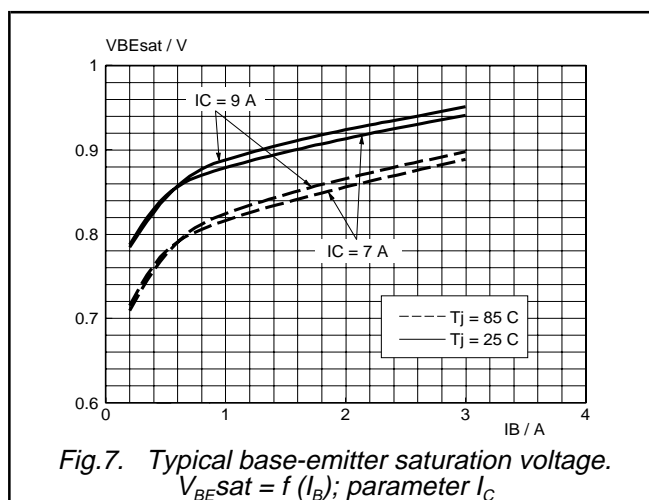
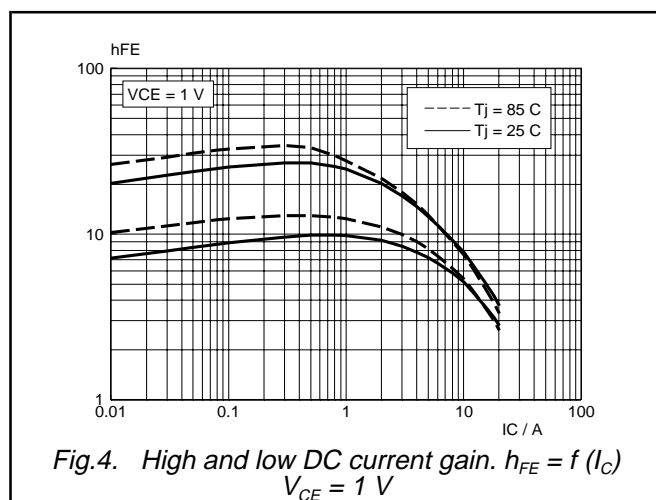
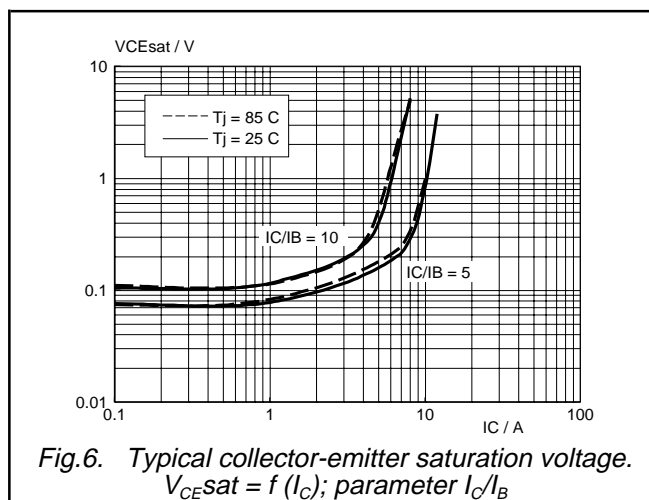
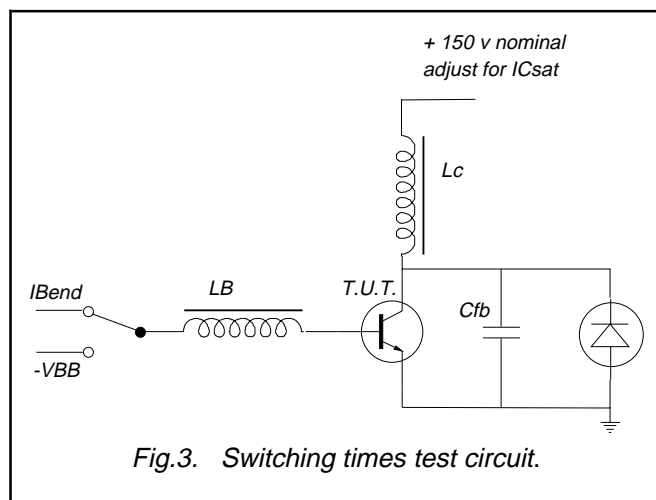
| SYMBOL | PARAMETER | CONDITIONS | TYP. | MAX. | UNIT |
|----------------|---|---|------|------|------|
| t _s | Switching times (82 kHz line deflection dynamic test circuit). Turn-off storage time | I _{Csat} = 7.0 A; L _C = 100 μH; C _{fb} = 3 nF; V _{CC} = 138 V; I _{B(end)} = 1.0 A | 1.4 | 1.8 | μs |
| t _f | | | 0.06 | 0.1 | μs |



2 Measured with half sine-wave voltage (curve tracer).

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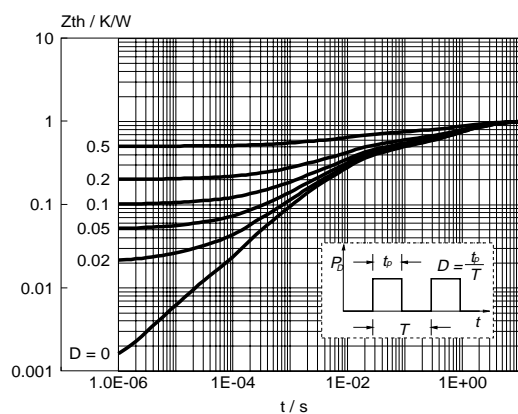


Fig.9. Transient thermal impedance.
 $Z_{th\ j-mb} = f(t)$; parameter $D = t_p/T$

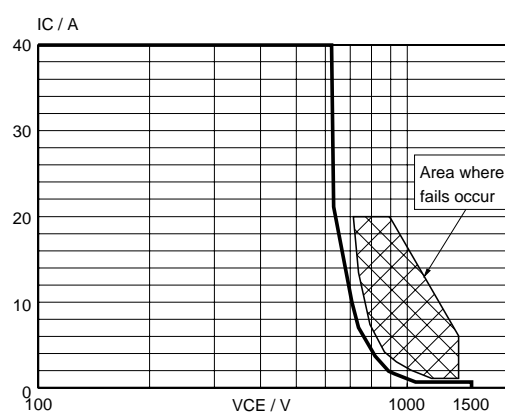


Fig.11. Reverse bias safe operating area. $T_j \leq T_{jmax}$

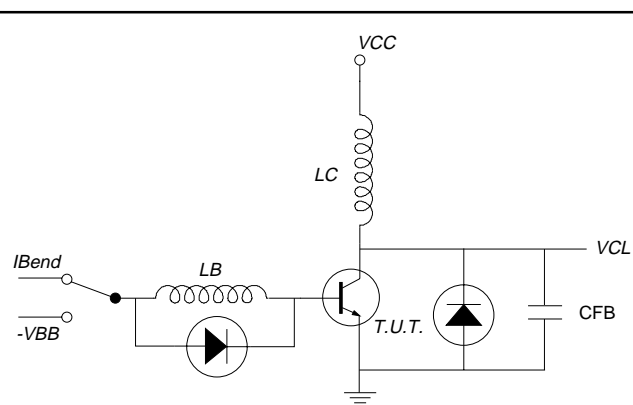
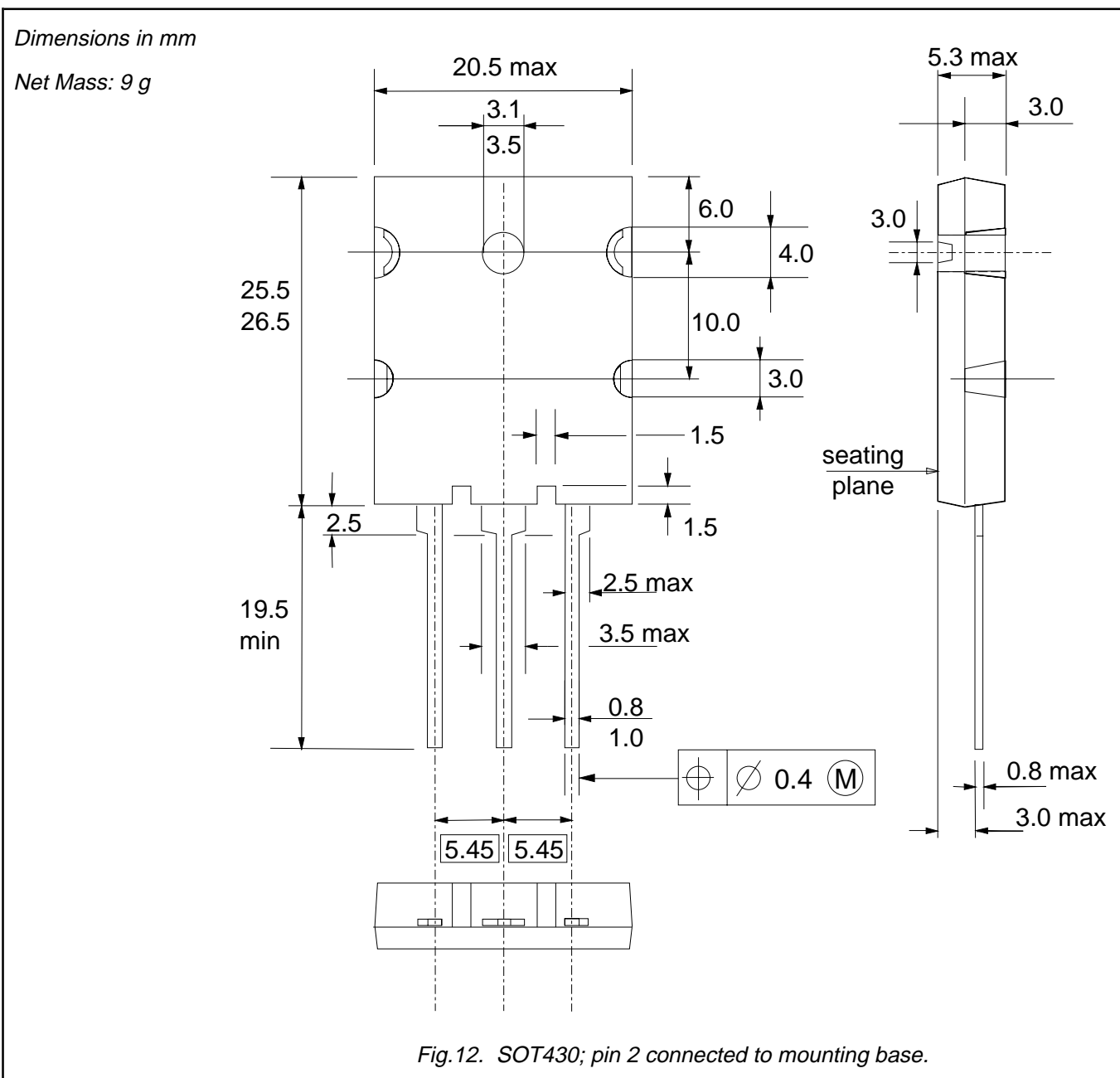


Fig.10. Test Circuit RBSOA. $V_{CC} = 150\text{ V}$;
 $-V_{BB} = 1 - 5\text{ V}$;
 $L_C = 1.5\text{ mH}$; $V_{CL} = 1450\text{ V}$; $L_B = 0.3 - 2\text{ }\mu\text{H}$;
 $C_{FB} = 1 - 10\text{ nF}$; $I_{B(end)} = 1.0 - 2.0\text{ A}$

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MECHANICAL DATA



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DEFINITIONS

| | |
|--|---|
| Data sheet status | |
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |
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