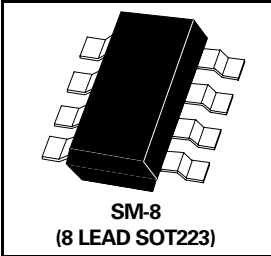
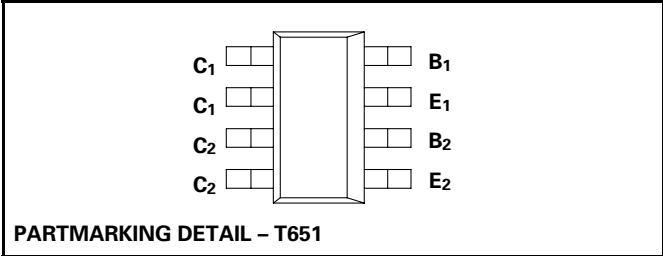


SM-8 DUAL NPN MEDIUM POWER TRANSISTORS

ISSUE 2 - AUGUST 1997

ZDT651



ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|----------------|-------------|------|
| Collector-Base Voltage | V_{CBO} | 80 | V |
| Collector-Emitter Voltage | V_{CEO} | 60 | V |
| Emitter-Base Voltage | V_{EBO} | 5 | V |
| Peak Pulse Current | I_{CM} | 6 | A |
| Continuous Collector Current | I_C | 2 | A |
| Operating and Storage Temperature Range | $T_j; T_{stg}$ | -55 to +150 | °C |

THERMAL CHARACTERISTICS

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|-----------|--------------|------------------|
| Total Power Dissipation at $T_{amb} = 25^\circ\text{C}^*$ Any single die "on" Both die "on" equally | P_{tot} | 2.25 2.75 | W W |
| Derate above 25°C^* Any single die "on" Both die "on" equally | | 18 22 | mW/ °C mW/ °C |
| Thermal Resistance - Junction to Ambient* Any single die "on" Both die "on" equally | | 55.6 45.5 | °C/ W °C/ W |

* The power which can be dissipated assuming the device is mounted in a typical manner on a PCB with copper equal to 2 inches square.

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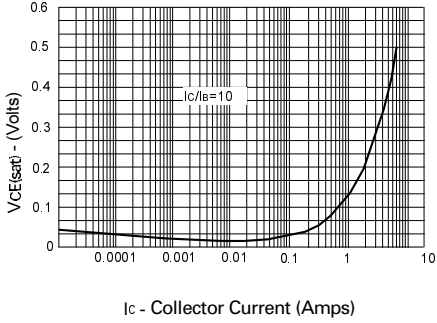
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|---------------------------------------|---------------|-----------------------|-------------------------|------------|--------------------------------|---|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | 80 | | | V | $I_C=100\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | 60 | | | V | $I_C=10\text{mA}^*$ |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 5 | | | V | $I_E=100\mu\text{A}$ |
| Collector Cutoff Current | I_{CBO} | | | 0.1 10 | μA μA | $V_{CB}=60\text{V}$ $V_{CB}=60\text{V}, T_{amb}=100^{\circ}\text{C}$ |
| Emitter Cutoff Current | I_{EBO} | | | 0.1 | μA | $V_{EB}=4\text{V}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | 0.12 0.23 | 0.3 0.5 | V V | $I_C=1\text{A}, I_B=100\text{mA}^*$ $I_C=2\text{A}, I_B=200\text{mA}^*$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | | 0.9 | 1.25 | V | $I_C=1\text{A}, I_B=100\text{mA}^*$ |
| Base-Emitter Turn-On Voltage | $V_{BE(on)}$ | | 0.8 | 1 | V | $I_C=1\text{A}, V_{CE}=2\text{V}^*$ |
| Static Forward Current Transfer Ratio | h_{FE} | 70 100 80 40 | 200 200 170 80 | 300 | | $I_C=50\text{mA}, V_{CE}=2\text{V}^*$ $I_C=500\text{mA}, V_{CE}=2\text{V}^*$ $I_C=1\text{A}, V_{CE}=2\text{V}^*$ $I_C=2\text{A}, V_{CE}=2\text{V}^*$ |
| Transition Frequency | f_T | 140 | 175 | | MHz | $I_C=100\text{mA}, V_{CE}=5\text{V}$ $f=100\text{MHz}$ |
| Output Capacitance | C_{obo} | | | 30 | pF | $V_{CB}=10\text{V}, f=1\text{MHz}$ |
| Switching Times | t_{on} | | 45 | | ns | $I_C=500\text{mA}, V_{CC}=10\text{V}$ $I_{B1}=I_{B2}=50\text{mA}$ |
| | t_{off} | | 800 | | ns | |

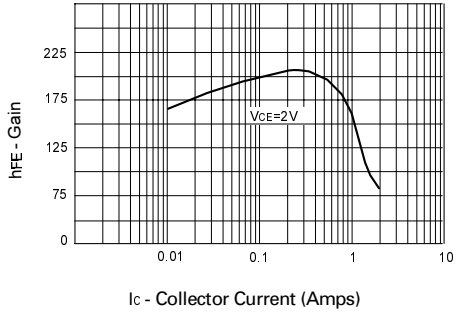
*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

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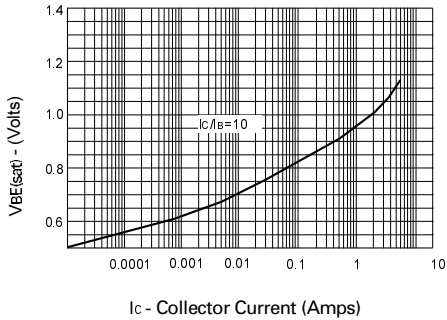
TYPICAL CHARACTERISTICS



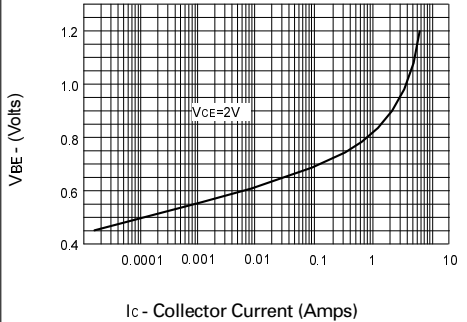
$V_{CE(sat)} \text{ v } I_C$



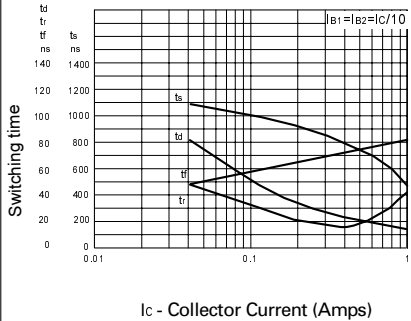
$hFE \text{ v } I_C$



$V_{BE(sat)} \text{ v } I_C$



$V_{BE(on)} \text{ v } I_C$



Switching Speeds