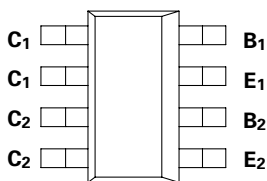


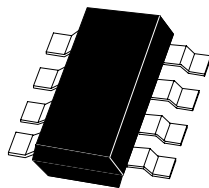
# SM-8 DUAL NPN MEDIUM POWER HIGH GAIN TRANSISTORS

ISSUE 1 - NOVEMBER 1995

## ZDT617



PARTMARKING DETAIL — T617



SM-8  
(8 LEAD SOT223)

### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	15	V
Collector-Emitter Voltage	$V_{CEO}$	15	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Peak Pulse Current	$I_{CM}$	12	A
Continuous Collector Current	$I_C$	3	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 2.5	W W
Derate above $25^\circ\text{C}^*$ Any single die "on" Both die "on" equally		16 20	mW/°C mW/°C
Thermal Resistance - Junction to Ambient* Any single die "on" Both die "on" equally		62.5 50	°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	$V_{(BR)CBO}$	15	70		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	15	18		V	$I_C=10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.2		V	$I_E=100\mu\text{A}$
Collector Cutoff Current	$I_{CBO}$			100	nA	$V_{CB}=10\text{V}$
Emitter Cutoff Current	$I_{EBO}$			100	nA	$V_{EB}=4\text{V}$
Collector-Emitter Cutoff Current	$I_{CES}$			100	nA	$V_{CES}=10\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		8 70 150	14 100 200	mV mV mV	$I_C=0.1\text{A}, I_B=10\text{mA}^*$ $I_C=1\text{A}, I_B=10\text{mA}^*$ $I_C=3\text{A}, I_B=50\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.9	1.0	V	$I_C=3\text{A}, I_B=50\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.84	1.0	V	$I_C=3\text{A}, V_{CE}=2\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	200 300 200 150	415 450 320 240 80			$I_C=10\text{mA}, V_{CE}=2\text{V}^*$ $I_C=200\text{mA}, V_{CE}=2\text{V}^*$ $I_C=3\text{A}, V_{CE}=2\text{V}^*$ $I_C=5\text{A}, V_{CE}=2\text{V}^*$ $I_C=12\text{A}, V_{CE}=2\text{V}^*$
Transition Frequency	$f_T$	80	120		MHz	$I_C=50\text{mA}, V_{CE}=10\text{V}$ $f=100\text{MHz}$
Output Capacitance	$C_{obo}$		30	40	pF	$V_{CB}=10\text{V}, f=1\text{MHz}$
Turn-On Time	$t_{on}$		120		ns	$V_{CC}=10\text{V}, I_C=3\text{A}$
Turn-Off Time	$t_{off}$		160		ns	$I_{B1}=I_{B2}=50\text{mA}$

\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

## TYPICAL CHARACTERISTICS

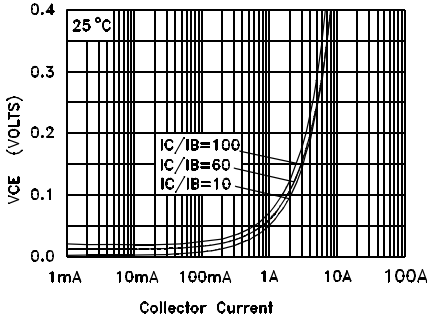


FIG. 1  $V_{CE(SAT)}$  vs  $I_C$

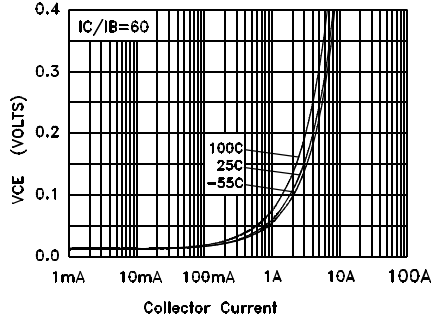


FIG. 2  $V_{CE(SAT)}$  vs  $I_C$

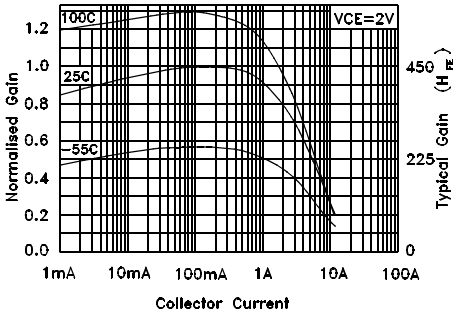


FIG. 3  $H_{FE}$  vs  $I_C$

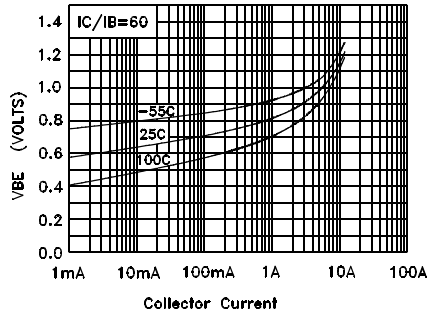


FIG. 4  $V_{BE(SAT)}$  vs  $I_C$

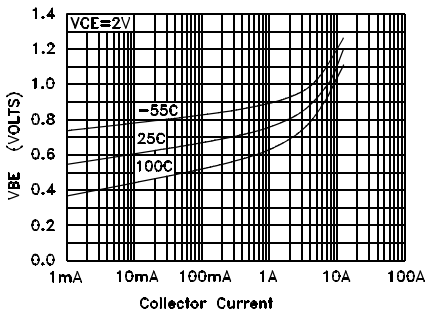


FIG. 5  $V_{BE(ON)}$  vs  $I_C$