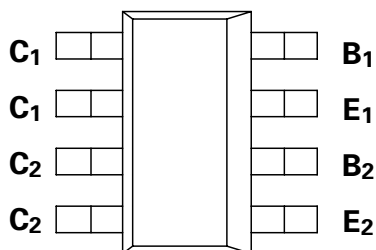


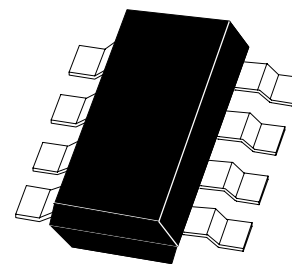
# SM-8 DUAL PNP MEDIUM POWER DARLINGTON TRANSISTORS

ISSUE 1 - NOVEMBER 1995

## ZDT705



PARTMARKING DETAIL - T705



SM-8  
(8 LEAD SOT223)

### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	-140	V
Collector-Emitter Voltage	$V_{CEO}$	-120	V
Emitter-Base Voltage	$V_{EBO}$	-10	V
Peak Pulse Current	$I_{CM}$	-4	A
Continuous Collector Current	$I_C$	-1	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	W
		2.75	W
Derate above $25^\circ\text{C}^*$ Any single die "on" Both die "on" equally		18	mW/°C
		22	mW/°C
Thermal Resistance - Junction to Ambient* Any single die "on" Both die "on" equally		55.6	°C/W
		45.5	°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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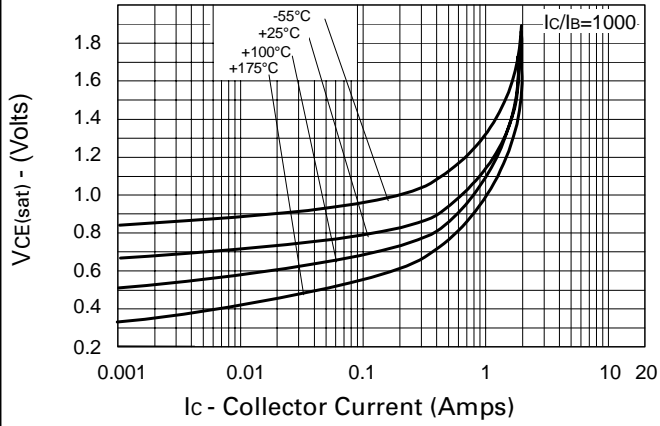
## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-140		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{CEO(SUS)}$	-120		V	$I_C = -10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-10		V	$I_E = -100\mu\text{A}$
Collector Cutoff Current	$I_{CBO}$		-0.1 -10	$\mu\text{A}$ $\mu\text{A}$	$V_{CB} = -120\text{V}$ $V_{CB} = -120\text{V}, T_{amb} = 100^{\circ}\text{C}$
Collector Cutoff Current	$I_{CES}$		-10	$\mu\text{A}$	$V_{CE} = -80\text{V}$
Emitter Cutoff Current	$I_{EBO}$		-0.1	$\mu\text{A}$	$V_{EB} = -8\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-1.3 -2.5	V V	$I_C = -1\text{A}, I_B = -1\text{mA}^*$ $I_C = -2\text{A}, I_B = -2\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-1.8	V	$I_C = -1\text{A}, I_B = -10\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-1.7	V	$I_C = -1\text{A}, V_{CE} = -5\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	3K 3K 3K 2K	30K		$I_C = -10\text{mA}, V_{CE} = -5\text{V}^*$ $I_C = -100\text{mA}, V_{CE} = -5\text{V}^*$ $I_C = -1\text{A}, V_{CE} = -5\text{V}^*$ $I_C = -2\text{A}, V_{CE} = -5\text{V}^*$
Transition Frequency	$f_T$	160 Typical		MHz	$I_C = -100\text{mA}, V_{CE} = -10\text{V}$ $f = 20\text{MHz}$
Input Capacitance	$C_{ibo}$	90 Typical		pF	$V_{EB} = -0.5\text{V}, f = 1\text{MHz}$
Output Capacitance	$C_{obo}$	15 Typical		pF	$V_{CE} = -10\text{V}, f = 1\text{MHz}$
Switching Times	$t_{on}$	0.6 Typical		$\mu\text{s}$	$I_C = -0.5\text{A}, V_{CE} = -10\text{V}$ $I_{B1} = I_{B2} = -0.5\text{mA}$
	$t_{off}$	0.8 Typical		$\mu\text{s}$	

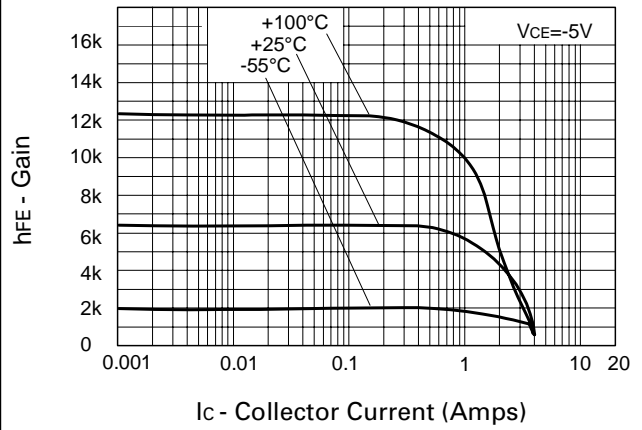
\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

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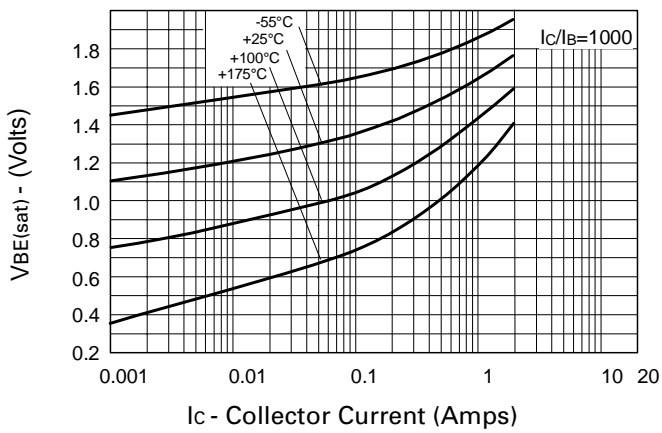
## TYPICAL CHARACTERISTICS



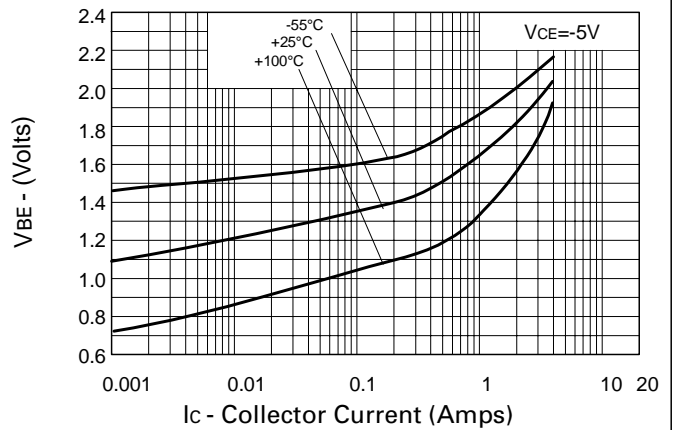
**$V_{CE(sat)}$  v  $I_C$**



**$h_{FE}$  v  $I_C$**



**$V_{BE(sat)}$  v  $I_C$**



**$V_{BE(on)}$  v  $I_C$**