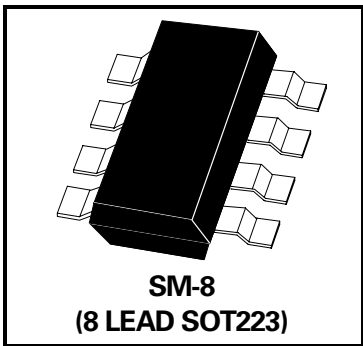
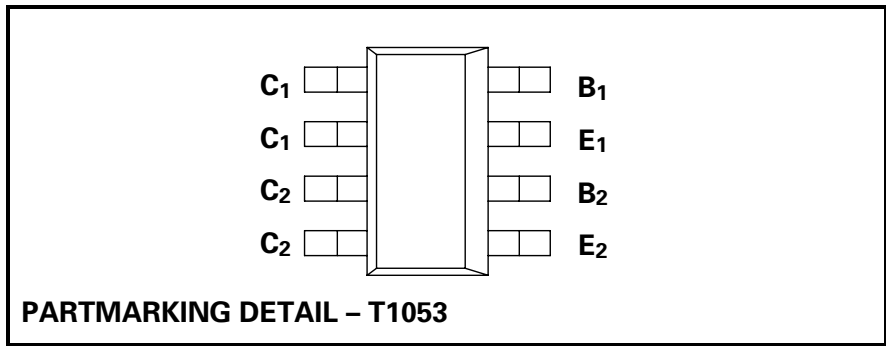


SM-8 DUAL NPN MEDIUM POWER HIGH GAIN TRANSISTORS

ISSUE 2 - APRIL 2000

ZDT1053



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	75	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	20	A
Continuous Collector Current	I_C	5	A
Base Current	I_B	500	mA
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°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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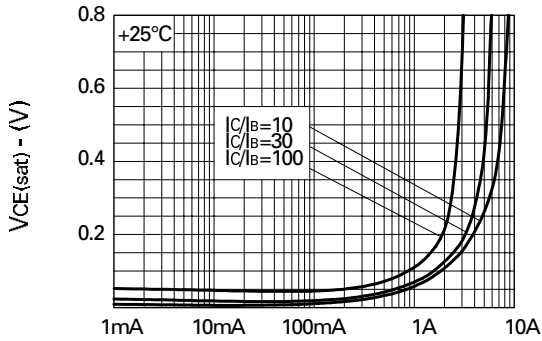
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	150	245		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	V_{CES}	150	245		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	V_{CEO}	75	100		V	$I_C=10\text{mA}$
Collector-Emitter Breakdown Voltage	V_{CEV}	150	245		V	$I_C=100\mu\text{A}, V_{EB}=1\text{V}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.8		V	$I_E=100\mu\text{A}$
Collector Cutoff Current	I_{CBO}		0.3	10	nA	$V_{CB}=120\text{V}$
Emitter Cutoff Current	I_{EBO}		0.3	10	nA	$V_{EB}=4\text{V}$
Collector Emitter Cutoff Current	I_{CES}		0.3	10	nA	$V_{CES}=120\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		17 70 120 150 300	25 100 150 200 440	mV mV mV mV mV	$I_C=0.2\text{A}, I_B=20\text{mA}^*$ $I_C=1\text{A}, I_B=50\text{mA}^*$ $I_C=1\text{A}, I_B=10\text{mA}^*$ $I_C=2\text{A}, I_B=50\text{mA}^*$ $I_C=5\text{A}, I_B=250\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		1100	1200	mV	$I_C=5\text{A}, I_B=250\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		1000	1100	mV	$I_C=5\text{A}, V_{CE}=2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	260 300 150 30	420 450 220 50 15	1200		$I_C=10\text{mA}, V_{CE}=2\text{V}^*$ $I_C=1\text{A}, V_{CE}=2\text{V}^*$ $I_C=2\text{A}, V_{CE}=2\text{V}^*$ $I_C=5\text{A}, V_{CE}=2\text{V}^*$ $I_C=10\text{A}, V_{CE}=2\text{V}^*$
Transition Frequency	f_T		140		MHz	$I_C=50\text{mA}, V_{CE}=10\text{V}$ $f=100\text{MHz}$
Output Capacitance	C_{obo}		21	30	pF	$V_{CB}=10\text{V}, f=1\text{MHz}$
Switching Times	t_{on}		90		ns	$I_C=2\text{A}, I_B=20\text{mA}, V_{CC}=50\text{V}$
	t_{off}		750		ns	$I_C=2\text{A}, I_B=\pm 20\text{mA}, V_{CC}=50\text{V}$

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

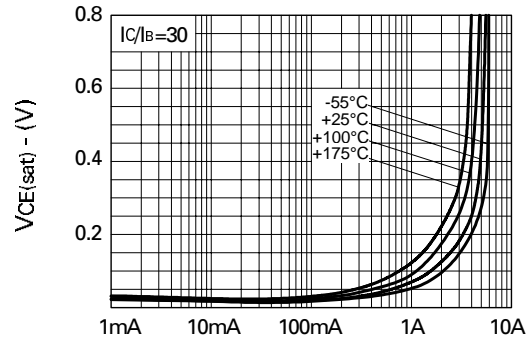
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TYPICAL CHARACTERISTICS



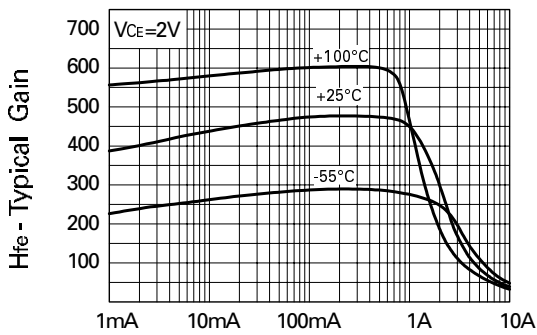
I_C -Collector Current

$V_{CE(sat)}$ v I_C



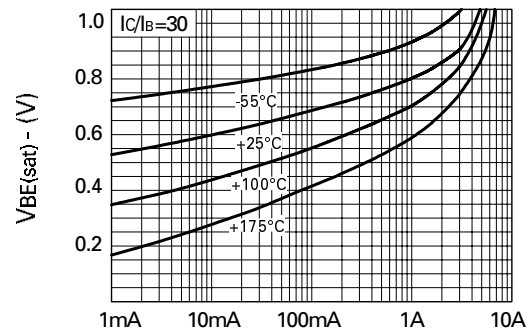
I_C -Collector Current

$V_{CE(sat)}$ v I_C



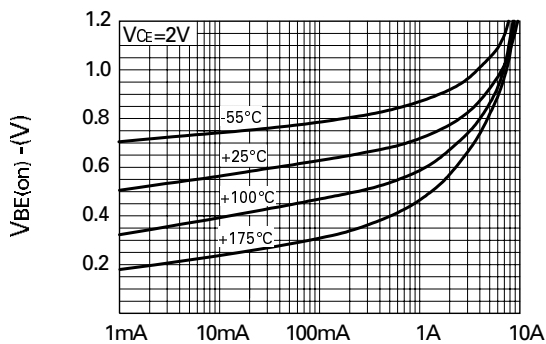
I_C -Collector Current

h_{FE} v I_C



I_C -Collector Current

$V_{BE(sat)}$ v I_C



I_C -Collector Current

$V_{BE(on)}$ v I_C