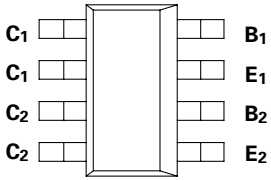
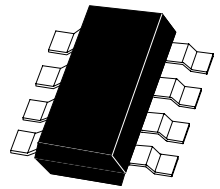
SM-8 DUAL NPN MEDIUM POWER HIGH GAIN TRANSISTORS

ISSUE 2 - APRIL 2000

ZDT1053



PARTMARKING DETAIL – T1053



SM-8
(8 LEAD SOT223)

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°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.

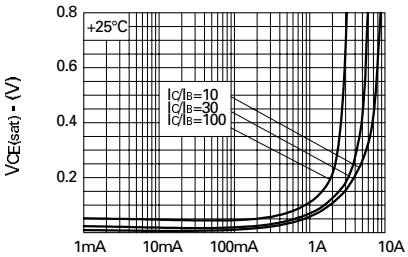
ZDT1053

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

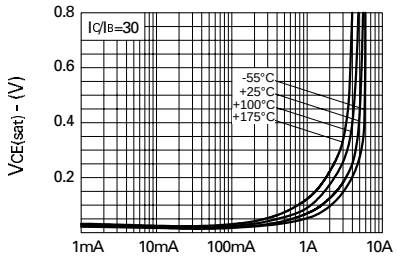
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	150	245		V	I_C=100μA
Collector-Emitter Breakdown Voltage	V_{CES}	150	245		V	I_C=100μA
Collector-Emitter Breakdown Voltage	V_{CEO}	75	100		V	I_C=10mA
Collector-Emitter Breakdown Voltage	V_{CEV}	150	245		V	I_C=100μA,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

*Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤2%

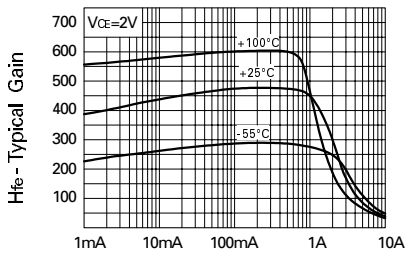
TYPICAL CHARACTERISTICS



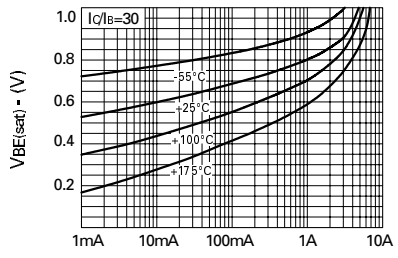
$V_{CE(sat)}$ v I_C



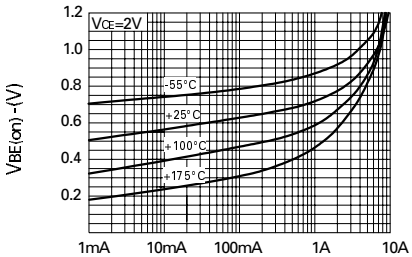
$V_{CE(sat)}$ v I_C



h_{FE} v I_C



$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C