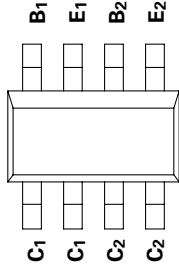
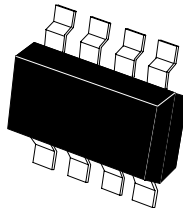


SM-8 DUAL NPN MEDIUM POWER HIGH GAIN TRANSISTORS

ISSUE 2 - APRIL 2000



PARTMARKING DETAIL - T1053



SM-8
(8 LEAD SOT223)

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	$^{\circ}C$

THERMAL CHARACTERISTICS

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

* 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

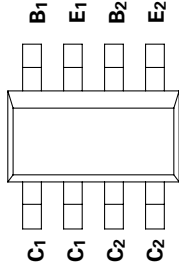
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	150	245		V	$I_C = 100\mu A$
Collector-Emitter Breakdown Voltage	V_{CES}	150	245		V	$I_C = 100\mu A$
Collector-Emitter Breakdown Voltage	V_{CEO}	75	100		V	$I_C = 10mA$
Collector-Emitter Breakdown Voltage	V_{CEV}	150	245		V	$I_C = 100\mu A, V_{EB} = 1V$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.8		V	$I_E = 100\mu A$
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 70 120 150 200 300	25 100 150 200 350	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	$I_C = 2A, I_B = \pm 20mA, V_{CC} = 50V$

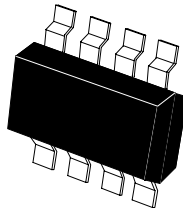
* Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

SM-8 DUAL NPN MEDIUM POWER HIGH GAIN TRANSISTORS

ISSUE 1 - NOVEMBER 1995



PARTMARKING DETAIL - T1053



SM-8
(8 LEAD SOT223)

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	$^{\circ}C$

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	VALUE	UNIT
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Derate above $25^{\circ}C$ * Any single die "on" Both die "on" equally		18 22	mW/ $^{\circ}C$ mW/ $^{\circ}C$
Thermal Resistance - Junction to Ambient* Any single die "on" Both die "on" equally		55.6 45.5	$^{\circ}C/W$ $^{\circ}C/W$

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ZDT1053

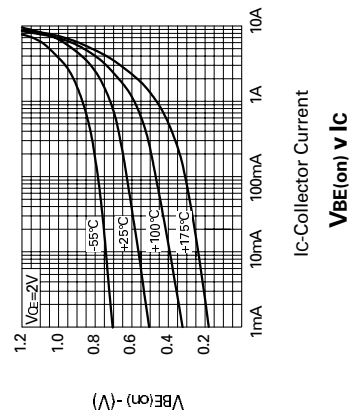
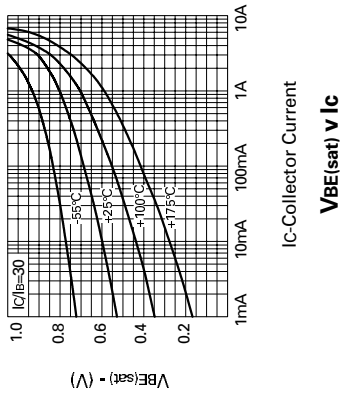
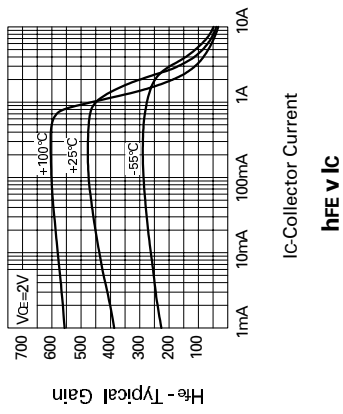
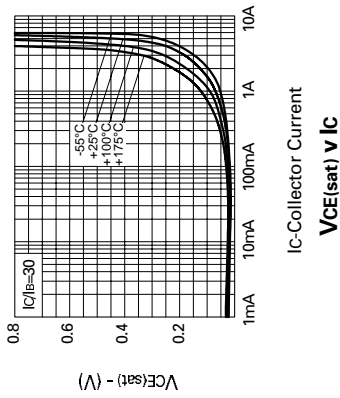
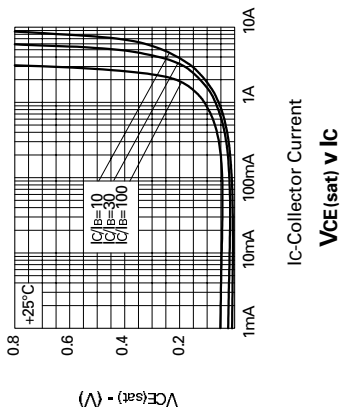
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
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Collector-Emitter Breakdown Voltage	V_{CES}	150	245		V	$I_C = 100\mu A$
Collector-Emitter Breakdown Voltage	V_{CEO}	75	100		V	$I_C = 10mA$
Collector-Emitter Breakdown Voltage	V_{CEV}	150	245		V	$I_C = 100\mu A, V_{EB} = 1V$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.8		V	$I_E = 100\mu A$
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 70 120 150 200 300	25 100 150 200 440	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	$I_C = 2A, I_B = \pm 20mA, V_{CC} = 50V$

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

ZDT1053

TYPICAL CHARACTERISTICS



$V_{BE(sat)}$ v I_C

h_{FE} v I_C

$V_{BE(on)}$ v I_C