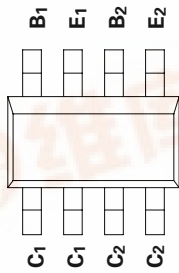
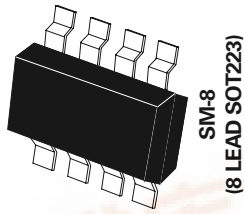


SM-8 DUAL NPN MEDIUM POWER HIGH GAIN TRANSISTORS

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	mW/ $^{\circ}C$
		22	mW/ $^{\circ}C$
Thermal Resistance - Junction to Ambient* Any single die "on" Both die "on" equally		55.6	$^{\circ}C/W$
		45.5	$^{\circ}C/W$

* 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).

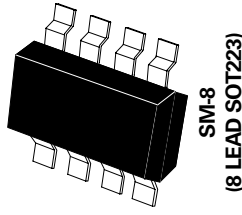
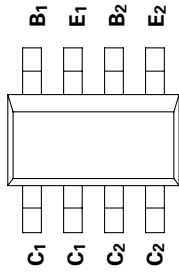
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	150	245		V	$I_C = 100\mu A$
Collector-Emitter Breakdown Voltage	V_{CES}	150	245		V	$I_C = 100\mu A$
Collector-Emitter Breakdown Voltage	V_{CEO}	75	100		V	$I_C = 10mA$
Collector-Emitter Breakdown Voltage	V_{CEV}	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		25	mV	$I_C = 0.2A, I_E = 20mA^*$
		70		100	mV	$I_C = 1A, I_E = 50mA^*$
		120		150	mV	$I_C = 1A, I_B = 10mA^*$
		150		200	mV	$I_C = 2A, I_B = 50mA^*$
		300		350	mV	$I_C = 5A, I_B = 250mA^*$
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	420	1200		$I_C = 10mA, V_{CE} = 2V^*$
		300	450	1200		$I_C = 1A, V_{CE} = 2V^*$
		150	220			$I_C = 2A, V_{CE} = 2V^*$
		30	50			$I_C = 5A, V_{CE} = 2V^*$
			15			$I_C = 10A, V_{CE} = 2V^*$
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	$I_C = 2A, I_B = 20mA, V_{CC} = 50V$
			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

ZDT1053



PARTMARKING DETAIL - T1053

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.

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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	25 100	mV	$I_C=0.2A, I_E=20mA^*$ $I_C=1A, I_E=50mA^*$
			120	150	mV	$I_C=1A, I_B=10mA^*$
			150	200	mV	$I_C=2A, I_B=50mA^*$
			300	440	mV	$I_C=5A, I_B=250mA^*$
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

