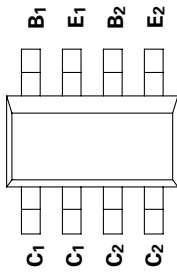
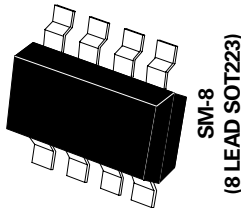


SM-8 DUAL NPN MEDIUM POWER HIGH GAIN TRANSISTORS

ISSUE 1 - NOVEMBER, 1995



PARTMARKING DETAIL - T694



SM-8
(8 LEAD SOT223)

ZDT694

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ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	120	V
Collector-Emitter Voltage	V_{CEO}	120	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	1	A
Continuous Collector Current	I_C	0.5	A
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.

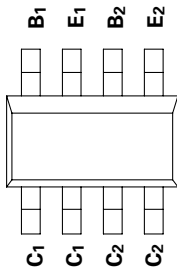
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	120			V	$I_C = 100\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	120			V	$I_C = 10mA^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E = 100\mu A$
Collector Cutoff Current	I_{CBO}			0.1	μA	$V_{CE} = 100V$
Emitter Cutoff Current	I_{EBO}			0.1	μA	$V_{EB} = 4V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.25	V	$I_C = 0.1A, I_B = 0.5mA^*$
				0.5	V	$I_C = 0.4A, I_B = 5mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			0.9	V	$I_C = 1A, I_B = 10mA^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$			0.9	V	$I_C = 1A, V_{CE} = 2V^*$
Static Forward Current Transfer Ratio	h_{FE}	500				$I_C = 100mA, V_{CE} = 2V^*$
		400				$I_C = 200mA, V_{CE} = 2V^*$
		150				$I_C = 400mA, V_{CE} = 2V^*$
Transition Frequency	f_T	130			MHz	$I_C = 50mA, V_{CE} = 5V$ $f = 50MHz$
Input Capacitance	C_{ibo}		200		pF	$V_{EB} = 0.5V, f = 1MHz$
Output Capacitance	C_{obbo}		9		pF	$V_{CE} = 10V, f = 1MHz$
Switching Times	t_{on} t_{off}		80		ns	$I_C = 100mA, I_B = 10mA$
			2900		ns	$I_B = 10mA, V_{CE} = 50V$

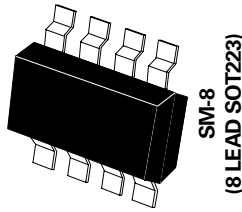
*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

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THERMAL CHARACTERISTICS

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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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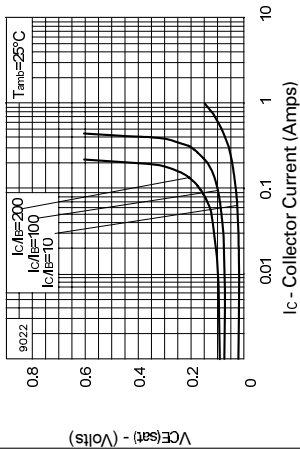
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Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E = 100\mu A$
Collector Cutoff Current	I_{CBO}			0.1	μA	$V_{CE} = 100V$
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Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.25 0.5	V V	$I_C = 0.1A, I_B = 0.5mA^*$ $I_C = 0.4A, I_B = 5mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			0.9	V	$I_C = 1A, I_B = 10mA^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$			0.9	V	$I_C = 1A, V_{CE} = 2V^*$
Static Forward Current Transfer Ratio	h_{FE}	500 400 150				$I_C = 100mA, V_{CE} = 2V^*$ $I_C = 200mA, V_{CE} = 2V^*$ $I_C = 400mA, V_{CE} = 2V^*$
Transition Frequency	f_T	130			MHz	$I_C = 50mA, V_{CE} = 5V$ $f = 50MHz$
Input Capacitance	C_{ibo}		200		pF	$V_{EB} = 0.5V, f = 1MHz$
Output Capacitance	C_{obo}		9		pF	$V_{CE} = 10V, f = 1MHz$
Switching Times	t_{on} t_{off}		80 2900		ns ns	$I_C = 100mA, I_B = 10mA$ $I_B = 10mA, V_{CE} = 50V$

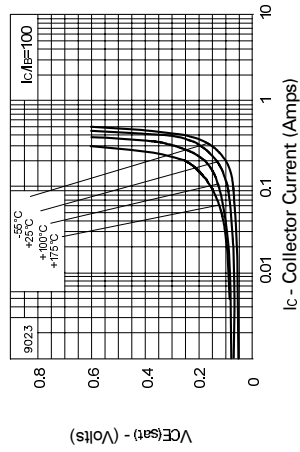
*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

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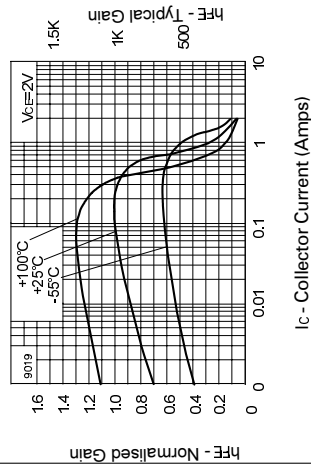
TYPICAL CHARACTERISTICS



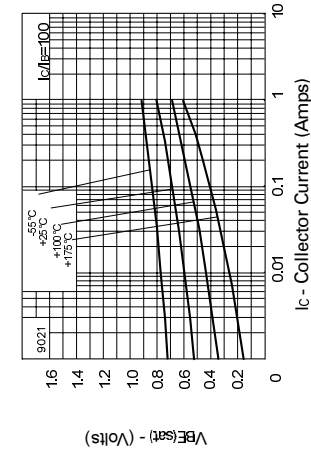
VCE(sat) v IC



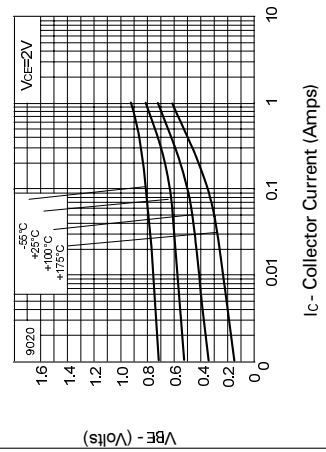
VCE(sat) v IC



hFE v IC



VBE(sat) v IC



VBE(on) v IC