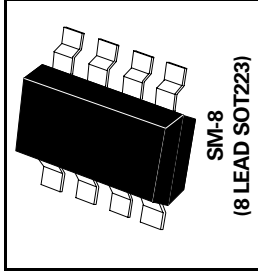
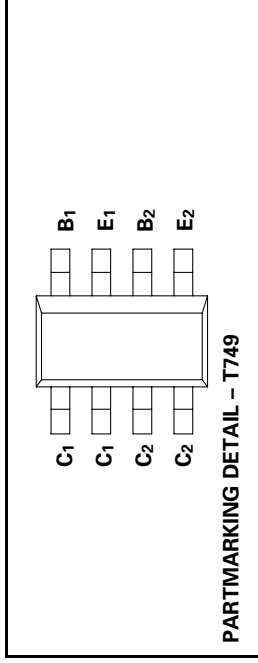


# SM-8 DUAL PNP MEDIUM POWER TRANSISTORS

ISSUE 1 - NOVEMBER 1995

## ZDT749



### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	-35	V
Collector-Emitter Voltage	$V_{CEO}$	-25	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Peak Pulse Current	$I_{CM}$	-6	A
Continuous Collector Current	$I_C$	-2	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 22	mW/ $^{\circ}C$ mW/ $^{\circ}C$
Thermal Resistance - Junction to Ambient* Any single die "on" Both die "on" equally		55.6 45.5	$^{\circ}C/W$ $^{\circ}C/W$

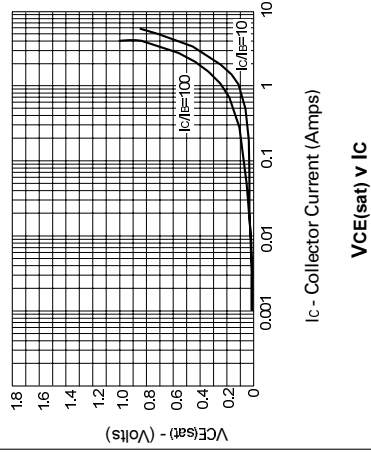
\* The power which can be dissipated assuming the device is mounted in a typical manner on a PCB with copper equal to 2 inches square.

**ELECTRICAL CHARACTERISTICS (at T<sub>amb</sub> = 25°C unless otherwise stated).**

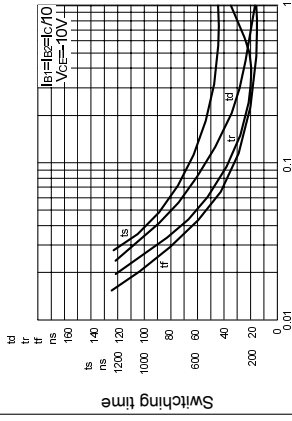
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	-35			V	I <sub>C</sub> =-100μA, I <sub>E</sub> =0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	-25			V	I <sub>C</sub> =-10mA, I <sub>B</sub> =0*
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	-5			V	I <sub>E</sub> =-100μA, I <sub>C</sub> =0
Collector Cutoff Current	I <sub>CBO</sub>			-0.1 -10	μA μA	V <sub>CB</sub> =-30V V <sub>CB</sub> =-30V, T <sub>amb</sub> =100°C
Emitter Cutoff Current	I <sub>EBO</sub>			-0.1	μA	V <sub>EB</sub> =-4V, I <sub>E</sub> =0
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>		-0.12 -0.23	-0.3 -0.5	V V	I <sub>C</sub> =1A, I <sub>B</sub> =-100mA* I <sub>C</sub> =2A, I <sub>B</sub> =-200mA*
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>		-0.9	-1.25	V	I <sub>C</sub> =1A, I <sub>B</sub> =-100mA*
Base-Emitter Turn-On Voltage	V <sub>BE(on)</sub>		-0.8	-1	V	I <sub>C</sub> =-1A, V <sub>CE</sub> =-2V*
Static Forward Current Transfer Ratio	h <sub>FE</sub>	70	200			I <sub>C</sub> =-50mA, V <sub>CE</sub> =-2V*
		100	200	300		I <sub>C</sub> =-1A, V <sub>CE</sub> =-2V*
		75	150			I <sub>C</sub> =-2A, V <sub>CE</sub> =-2V*
		15	50			I <sub>C</sub> =-6A, V <sub>CE</sub> =-2V*
Transition Frequency	f <sub>T</sub>	100	160		MHz	I <sub>C</sub> =-100mA, V <sub>CE</sub> =-5V f=100MHz
Output Capacitance	C <sub>obo</sub>		55	100	pF	V <sub>CB</sub> =-10V, f=1MHz
Switching Times	t <sub>on</sub>		40		ns	I <sub>C</sub> =-500mA, V <sub>CC</sub> =-10V I <sub>B1</sub> =I <sub>B2</sub> =-50mA
	t <sub>off</sub>		450		ns	

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

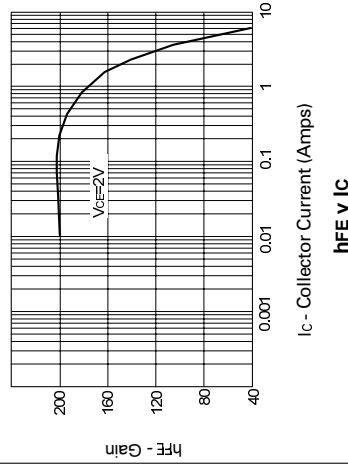
**TYPICAL CHARACTERISTICS**



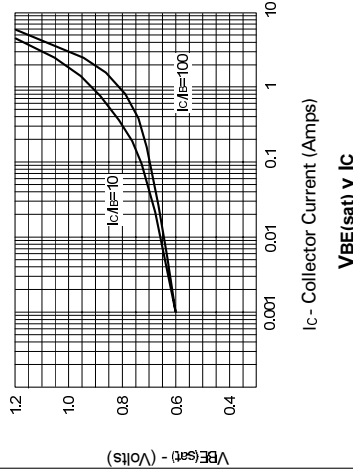
IC - Collector Current (Amps)  
**VCE(sat) v IC**



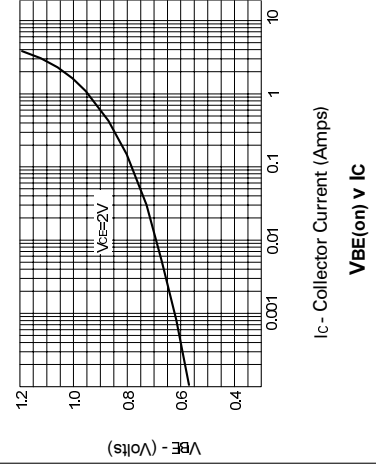
IC - Collector Current (Amps)  
**Switching Speeds**



IC - Collector Current (Amps)  
**hFE v IC**



IC - Collector Current (Amps)  
**VBE(sat) v IC**



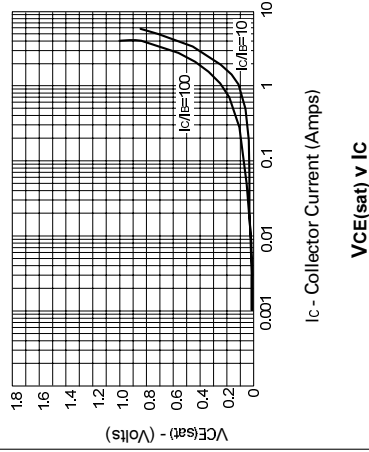
IC - Collector Current (Amps)  
**VBE(on) v IC**

**ELECTRICAL CHARACTERISTICS (at T<sub>amb</sub> = 25°C unless otherwise stated).**

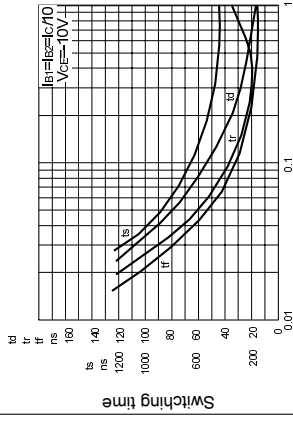
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Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	-25			V	I <sub>C</sub> =-10mA, I <sub>B</sub> =0*
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	-5			V	I <sub>E</sub> =-100μA, I <sub>C</sub> =0
Collector Cutoff Current	I <sub>CBO</sub>			-0.1 -10	μA μA	V <sub>CB</sub> =-30V V <sub>CB</sub> =-30V, T <sub>amb</sub> =100°C
Emitter Cutoff Current	I <sub>EBO</sub>			-0.1	μA	V <sub>EB</sub> =-4V, I <sub>E</sub> =0
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>		-0.12 -0.23	-0.3 -0.5	V V	I <sub>C</sub> =1A, I <sub>B</sub> =-100mA* I <sub>C</sub> =2A, I <sub>B</sub> =-200mA*
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>		-0.9	-1.25	V	I <sub>C</sub> =1A, I <sub>B</sub> =-100mA*
Base-Emitter Turn-On Voltage	V <sub>BE(on)</sub>		-0.8	-1	V	I <sub>C</sub> =-1A, V <sub>CE</sub> =-2V*
Static Forward Current Transfer Ratio	h <sub>FE</sub>	70	200			I <sub>C</sub> =-50mA, V <sub>CE</sub> =-2V*
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Transition Frequency	f <sub>T</sub>	100	160		MHz	I <sub>C</sub> =-100mA, V <sub>CE</sub> =-5V f=100MHz
Output Capacitance	C <sub>obo</sub>		55	100	pF	V <sub>CB</sub> =-10V, f=1MHz
Switching Times	t <sub>on</sub>		40		ns	I <sub>C</sub> =-500mA, V <sub>CC</sub> =-10V I <sub>B1</sub> =I <sub>B2</sub> =-50mA
	t <sub>off</sub>		450		ns	

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

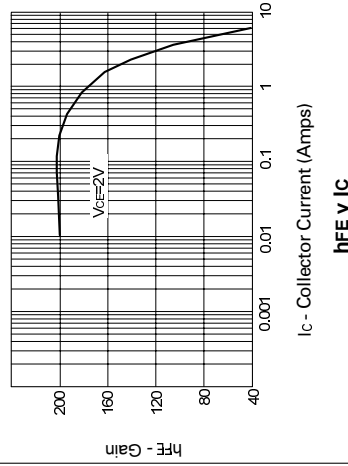
**TYPICAL CHARACTERISTICS**



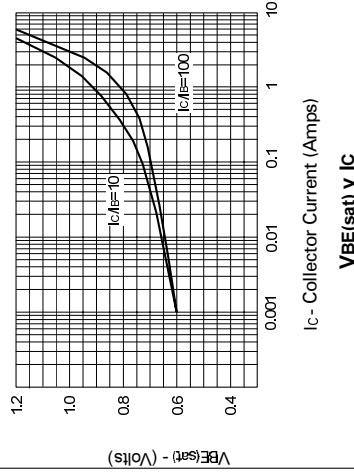
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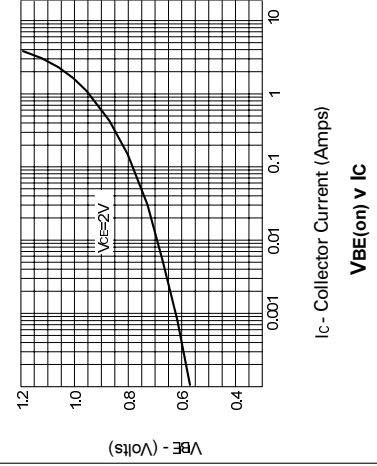
IC - Collector Current (Amps)  
**Switching Speeds**



IC - Collector Current (Amps)  
**hFE v IC**



IC - Collector Current (Amps)  
**VBE(sat) v IC**



IC - Collector Current (Amps)  
**VBE(on) v IC**