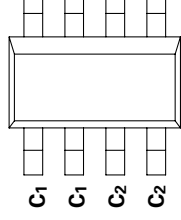




# THE DATASHEET OF ZDT1049TA



**SM-8 DUAL NPN MEDIUM  
HIGH GAIN TRANSISTORS**  
ISSUE 1 - JANUARY 1996



**PARTMARKING DETAIL - T1049**

**ABSOLUTE MAXIMUM RATINGS**

PARAMETER
Collector-Base Voltage
Collector-Emitter Voltage
Emitter-Base Voltage
Peak Pulse Current
Continuous Collector Current
Base Current
Operating and Storage Temperature F

**THERMAL CHARACTERISTICS**

PARAMETER
Total Power Dissipation at T <sub>amb</sub> = 25°C Any single die "on" Both die "on" equally
Derate above 25°C* Any single die "on" Both die "on" equally
Thermal Resistance - Junction to Ambient Any single die "on" Both die "on" equally

\* The power which can be dissipated on a PCB with copper equal to 2 inches

ZDT1049

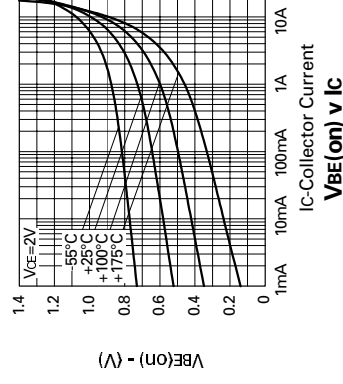
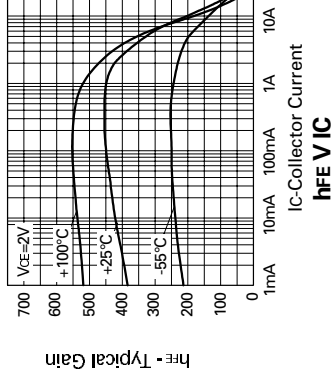
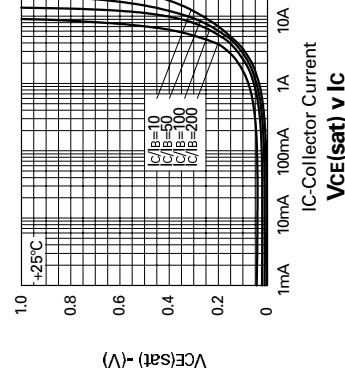
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**ELECTRICAL CHARACTERISTICS (at  $T_{amb} = 25^{\circ}\text{C}$  unless otherwise stated).**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	80	120		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{CES}$	80	120		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{CEO}$	25	35		V	$I_C=10\text{mA}$
Collector-Emitter Breakdown Voltage	$V_{CEV}$	80	120		V	$I_C=100\mu\text{A}$ , $V_{EB}=1\text{V}$
Emitter-Base Breakdown Voltage	$V_{(BRE)BO}$	5	8.75		V	$I_E=100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$		0.3	10	nA	$V_{CB}=50\text{V}$
Emitter Cut-Off Current	$I_{EBO}$		0.3	10	nA	$V_{EB}=4\text{V}$
Collector Emitter Cut-Off Current	$I_{CES}$		0.3	10	nA	$V_{CES}=50\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	30 60 125 155	30 60 125 155	45 80 180 220	mV	$I_C=0.5\text{A}$ , $I_B=10\text{mA}^*$ $I_C=1\text{A}$ , $I_B=10\text{mA}^*$ $I_C=2\text{A}$ , $I_B=10\text{mA}^*$ $I_C=4\text{A}$ , $I_B=50\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		890	950	mV	$I_C=4\text{A}$ , $I_B=50\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		820	900	mV	$I_C=4\text{A}$ , $V_{CE}=2\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	250 300 300 200 35	430 450 450 350 70			$I_C=10\text{mA}$ , $V_{CE}=2\text{V}^*$ $I_C=0.5\text{A}$ , $V_{CE}=2\text{V}^*$ $I_C=1\text{A}$ , $V_{CE}=2\text{V}^*$ $I_C=4\text{A}$ , $V_{CE}=2\text{V}^*$ $I_C=20\text{A}$ , $V_{CE}=2\text{V}^*$
Transition Frequency	$f_T$		180		MHz	$I_C=50\text{mA}$ , $V_{CE}=10\text{V}$ $f=50\text{MHz}$
Output Capacitance	$C_{obo}$		45	60	pF	$V_{CB}=10\text{V}$ , $f=1\text{MHz}$
Turn - On Time	$t_{on}$		125		ns	$I_C=4\text{A}$ , $I_B=40\text{mA}$ , $V_{CC}=10\text{V}$
Turn -Off Time	$t_{off}$		380		ns	$I_C=4\text{A}$ , $I_B=\pm 40\text{mA}$ , $V_{CC}=10\text{V}$

\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

**TYPICAL CHARACTERISTICS**



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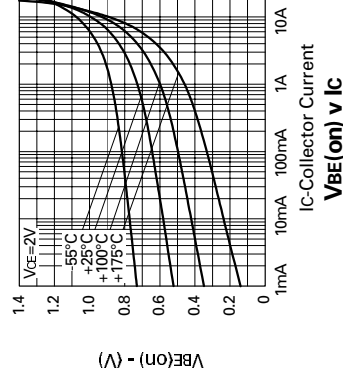
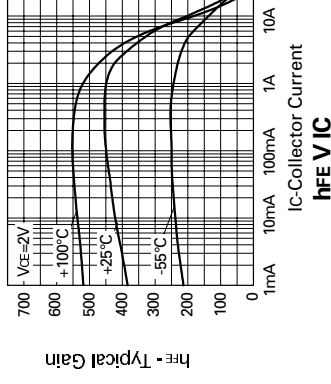
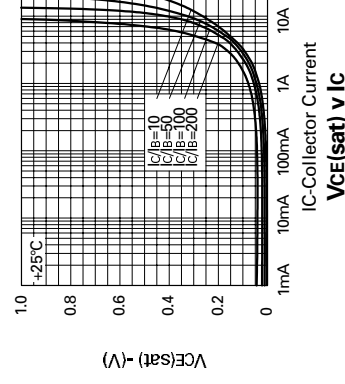
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Collector Emitter Cut-Off Current	$I_{CES}$		0.3	10	nA	$V_{CES}=50\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	30 60 125 155	30 60 125 155	45 80 180 220	mV	$I_C=0.5\text{A}$ , $I_B=10\text{mA}^*$ $I_C=1\text{A}$ , $I_B=10\text{mA}^*$ $I_C=2\text{A}$ , $I_B=10\text{mA}^*$ $I_C=4\text{A}$ , $I_B=50\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		890	950	mV	$I_C=4\text{A}$ , $I_B=50\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		820	900	mV	$I_C=4\text{A}$ , $V_{CE}=2\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	250 300 300 200 35	430 450 450 350 70			$I_C=10\text{mA}$ , $V_{CE}=2\text{V}^*$ $I_C=0.5\text{A}$ , $V_{CE}=2\text{V}^*$ $I_C=1\text{A}$ , $V_{CE}=2\text{V}^*$ $I_C=4\text{A}$ , $V_{CE}=2\text{V}^*$ $I_C=20\text{A}$ , $V_{CE}=2\text{V}^*$
Transition Frequency	$f_T$		180		MHz	$I_C=50\text{mA}$ , $V_{CE}=10\text{V}$ $f=50\text{MHz}$
Output Capacitance	$C_{obo}$		45	60	pF	$V_{CB}=10\text{V}$ , $f=1\text{MHz}$
Turn - On Time	$t_{on}$		125		ns	$I_C=4\text{A}$ , $I_B=40\text{mA}$ , $V_{CC}=10\text{V}$
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**TYPICAL CHARACTERISTICS**



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