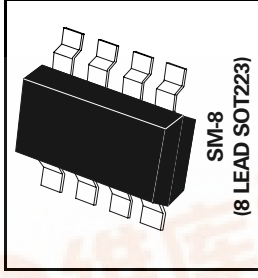
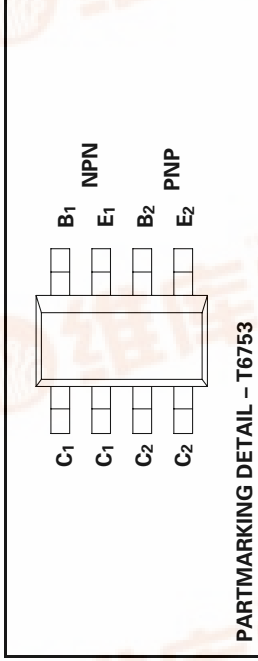


SM-8 COMPLEMENTARY MEDIUM POWER TRANSISTORS

ISSUE 1 – JANUARY 1996

ZDT6753



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ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	NPN	PNP	UNIT
Collector-Base Voltage	V_{CBO}	120	-120	V
Collector-Emitter Voltage	V_{CEO}	100	-100	V
Emitter-Base Voltage	V_{EBO}	5	-5	V
Peak Pulse Current	I_{CM}	6	-6	A
Continuous Collector Current	I_C	2	-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.

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	120			V	$I_C = 100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	100			V	$I_C = 10\text{mA}, I_B = 0^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E = 100\mu\text{A}, I_C = 0$
Collector Cutoff Current	I_{CBO}		0.1 10		μA μA	$V_{CB} = 100\text{V}$ $V_{CB} = 100\text{V}, T_{amb} = 100^{\circ}\text{C}$
Emitter Cutoff Current	I_{EBO}		0.1		μA	$V_{EB} = 4\text{V}, I_C = 0$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.13 0.23	0.3 0.5	V	$I_C = 1\text{A}, I_B = 100\text{mA}^*$ $I_C = 2\text{A}, I_B = 200\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.9	1.25	V	$I_C = 1\text{A}, I_B = 100\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.8	1	V	$I_C = 1\text{A}, V_{CE} = 2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	70	200	300		$I_C = 50\text{mA}, V_{CE} = 2\text{V}$
		100	200			$I_C = 500\text{mA}, V_{CE} = 2\text{V}^*$
		55	110			$I_C = 1\text{A}, V_{CE} = 2\text{V}^*$
		25	55			$I_C = 2\text{A}, V_{CE} = 2\text{V}^*$
Transition Frequency	f_T	140	175		MHz	$I_C = 100\text{mA}, V_{CE} = 5\text{V}$ $f = 100\text{MHz}$
Output Capacitance	C_{obo}			30	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$
Switching Times	t_{on}		80		ns	$I_C = 500\text{mA}, V_{CE} = 10\text{V}$ $I_B = I_{B2} = 50\text{mA}$
			1200		ns	

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$ or typical characteristics graphs see FZT653 datasheet.

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-120			V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{CEO(SUS)}$	-100			V	$I_C = 10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	$I_E = 100\mu\text{A}$
Collector Cutoff Current	I_{CBO}			-0.1 -10	μA μA	$V_{CB} = 100\text{V}$ $V_{CB} = 100\text{V}, T_{amb} = 100^{\circ}\text{C}$
Emitter Cutoff Current	I_{EBO}			-0.1	μA	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-0.17 -0.30	-0.3 -0.5	V V	$I_C = 1\text{A}, I_B = 100\text{mA}^*$ $I_C = 2\text{A}, I_B = 200\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-0.90	-1.25	V	$I_C = 1\text{A}, I_B = 100\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-0.8	-1.0	V	$I_C = 1\text{A}, V_{CE} = 2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	70	200	300		$I_C = 50\text{mA}, V_{CE} = 2\text{V}$
		100	200			$I_C = 500\text{mA}, V_{CE} = 2\text{V}^*$
		55	170			$I_C = 1\text{A}, V_{CE} = 2\text{V}^*$
		25	55			$I_C = 2\text{A}, V_{CE} = 2\text{V}^*$
Transition Frequency	f_T	100	140		MHz	$I_C = 100\text{mA}, V_{CE} = 5\text{V}$ $f = 100\text{MHz}$
Output Capacitance	C_{obo}			30	pF	$V_{CE} = 10\text{V}, f = 1\text{MHz}$
Switching Times	t_{on}		40		ns	$I_C = 500\text{mA}, V_{CC} = 10\text{V}$ $I_B = I_{B2} = 50\text{mA}$
			600		ns	

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$ For typical characteristics graphs see FZT753 datasheet.

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	120			V	$I_C = 100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	100			V	$I_C = 10\text{mA}, I_B = 0^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E = 100\mu\text{A}, I_C = 0$
Collector Cutoff Current	I_{CBO}		0.1 10		μA μA	$V_{CB} = 100\text{V}$ $V_{CB} = 100\text{V}, T_{amb} = 100^{\circ}\text{C}$
Emitter Cutoff Current	I_{EBO}		0.1		μA	$V_{EB} = 4\text{V}, I_C = 0$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.13 0.23	0.3 0.5	V	$I_C = 1\text{A}, I_B = 100\text{mA}^*$ $I_C = 2\text{A}, I_B = 200\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.9	1.25	V	$I_C = 1\text{A}, I_B = 100\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.8	1	V	$I_C = 1\text{A}, V_{CE} = 2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	70	200	300		$I_C = 50\text{mA}, V_{CE} = 2\text{V}$
		100	200			$I_C = 500\text{mA}, V_{CE} = 2\text{V}^*$
		55	110			$I_C = 1\text{A}, V_{CE} = 2\text{V}^*$
		25	55			$I_C = 2\text{A}, V_{CE} = 2\text{V}^*$
Transition Frequency	f_T	140	175		MHz	$I_C = 100\text{mA}, V_{CE} = 5\text{V}$ $f = 100\text{MHz}$
Output Capacitance	C_{obo}			30	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$
Switching Times	t_{on}		80		ns	$I_C = 500\text{mA}, V_{CE} = 10\text{V}$ $I_B = I_{B2} = 50\text{mA}$
			1200		ns	

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$ or typical characteristics graphs see FZT653 datasheet.

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-120			V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{CEO(SUS)}$	-100			V	$I_C = 10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	$I_E = 100\mu\text{A}$
Collector Cutoff Current	I_{CBO}			-0.1 -10	μA μA	$V_{CB} = 100\text{V}$ $V_{CB} = 100\text{V}, T_{amb} = 100^{\circ}\text{C}$
Emitter Cutoff Current	I_{EBO}			-0.1	μA	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-0.17 -0.30	-0.3 -0.5	V V	$I_C = 1\text{A}, I_B = 100\text{mA}^*$ $I_C = 2\text{A}, I_B = 200\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-0.90	-1.25	V	$I_C = 1\text{A}, I_B = 100\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-0.8	-1.0	V	$I_C = 1\text{A}, V_{CE} = 2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	70	200	300		$I_C = 50\text{mA}, V_{CE} = 2\text{V}$
		100	200			$I_C = 500\text{mA}, V_{CE} = 2\text{V}^*$
		55	170			$I_C = 1\text{A}, V_{CE} = 2\text{V}^*$
		25	55			$I_C = 2\text{A}, V_{CE} = 2\text{V}^*$
Transition Frequency	f_T	100	140		MHz	$I_C = 100\text{mA}, V_{CE} = 5\text{V}$ $f = 100\text{MHz}$
Output Capacitance	C_{obo}			30	pF	$V_{CE} = 10\text{V}, f = 1\text{MHz}$
Switching Times	t_{on}		40		ns	$I_C = 500\text{mA}, V_{CC} = 10\text{V}$ $I_B = I_{B2} = 50\text{mA}$
			600		ns	

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$ For typical characteristics graphs see FZT753 datasheet.