

SFT6900

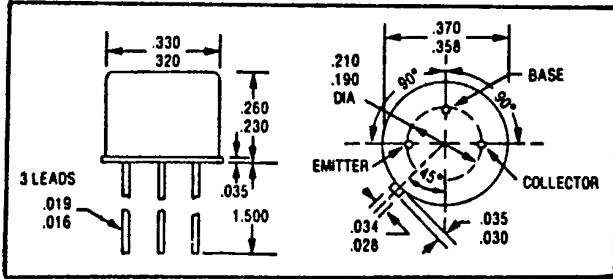
3 AMP

HIGH VOLTAGE PNP TRANSISTOR

500 VOLTS

14830 Valley View Avenue
La Mirada, California 90638
(213) 921-9660
TWX 910-583-4807
FAX 213-921-2396

**CASE STYLE W
JEDEC TO-5**



FEATURES

- BV_{CEO} TO 400 VOLTS
- LOW SATURATION VOLTAGE
- VERY LOW LEAKAGE
- 200°C OPERATING, GOLD EUTECTIC DIE ATTACH
- HIGH LINEAR GAIN FROM 1 mA TO 1 AMP
- DESIGNED FOR COMPLEMENTARY USE WITH SFT6800 (NPN) AND 2N5663 SERIES

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage $R_{BE} = 1 \text{ K Ohms}$	V_{CEO} V_{CER}	400 500	Volts
Collector - Base Voltage	V_{CBO}	500	Volts
Emitter - Base Voltage	V_{EBO}	9	Volts
Collector Current	I_C	3	Amps
Base Current	I_B	1	Amps
Total Device Dissipation @ $T_C = 25^\circ \text{C}$ Derate above 25 °C	P_D	5 160	Watts mW/°C
Operating and Storage Temperature	T_j, T_{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	6	°C/W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min.	Max.	Unit
Collector - Emitter Breakdown Voltage* $(I_C = 50 \text{ mA}, I_{Adc}, T_p = 300 \text{ usec})$ $(I_C = 100 \text{ uAdc}, R_{BE} = 1 \text{ K Ohms})$	BV_{CEO} BV_{CER}	400 500		Vdc
Collector - Base Breakdown Voltage $(I_C = 100 \text{ uAdc})$	BV_{CBO}	500		Vdc
Emitter - Base Breakdown Voltage $(I_E = 20 \text{ uAdc})$	BV_{EBO}	9		Vdc

ELECTRICAL CHARACTERISTICS

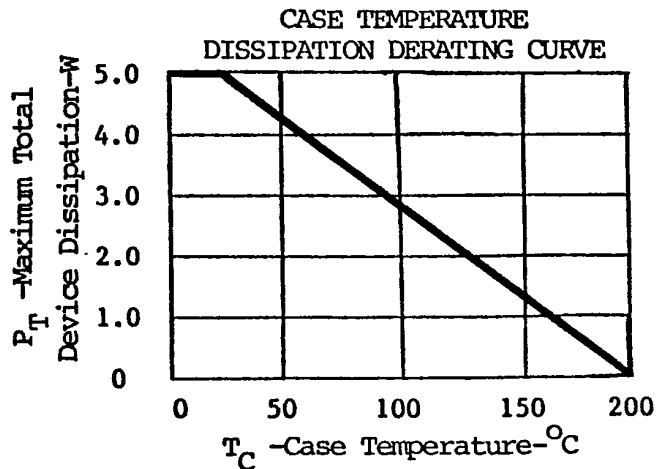
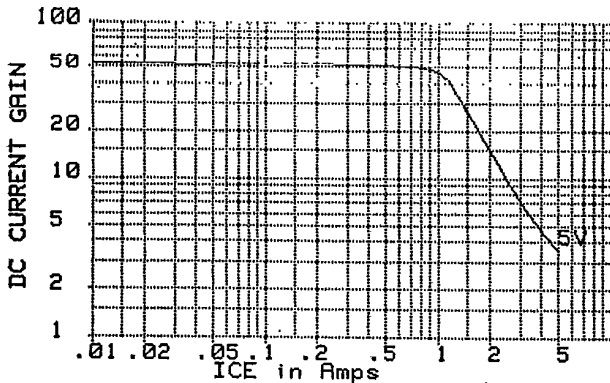
Characteristics	Symbol	Min.	Max.	Unit
Collector Cutoff Current ($V_{CE} = 400 \text{ Vdc}, V_{BE} = -1.5 \text{ Vdc}$)	I_{CEV}		200	n Adc
Collector Cutoff Current ($V_{CB} = 400 \text{ Vdc}$)	I_{CBO}		200	n Adc
Emitter Cutoff Current ($V_{EB} = 6.0 \text{ Vdc}$)	I_{EBO}		200	n Adc
DC Current Gain* ($I_C = 50 \text{ mAdc}, V_{CE} = 5 \text{ Vdc}$) ($I_C = 500 \text{ mAdc}, V_{CE} = 5 \text{ Vdc}$) ($I_C = 1.0 \text{ Adc}, V_{CE} = 5 \text{ Vdc}$)	h_{FE}	40 35 25	200 250	
Collector - Emitter Saturation Voltage* ($I_C = 500 \text{ mAdc}, I_B = 50 \text{ mAdc}$) ($I_C = 1.0 \text{ Adc}, I_B = 100 \text{ mAdc}$)	$V_{CE (SAT)}$		400 500	m Vdc.
Base - Emitter Saturation Voltage* ($I_C = 500 \text{ mAdc}, I_B = 50 \text{ mAdc}$) ($I_C = 1.0 \text{ Adc}, I_B = 100 \text{ mAdc}$)	$V_{BE (SAT)}$		0.9 1.0	Vdc
Current - Gain - Bandwith Product ($I_C = 50 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 20 \text{ MHz}$)	f_T	25		MHz
Output Capacitance ($V_{CB} = 30 \text{ Vdc}, I_E = 0, f = 1.0 \text{ Hz}$)	C_{ob}		150	pf

SWITCHING TIMES

Delay Time	($I_C = 1.0 \text{ Adc},$ $V_{CC} = 150 \text{ Vdc},$ $I_{B1} = I_{B2} = 100 \text{ mAdc}$)	t_d				
Rise Time		t_r	+	450	ns	
Storage Time		t_s				
Fall Time		t_f	+	1.8	us	

*Pulse Test: Pulse width = 300 us, DutyCycle = 2%

TYPICAL OPERATING CURVES



2N5151 AND 2N5153

5 AMP

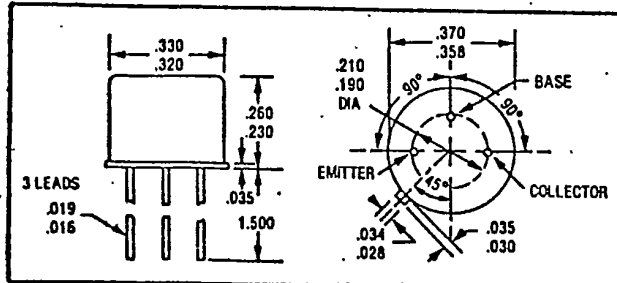
HIGH SPEED PNP TRANSISTOR

100 VOLTS



14830 Valley View Avenue
La Mirada, California 90638
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CASE STYLE W
JEDEC TO-5



FEATURES

- RADIATION TOLERANT
- FAST SWITCHING, 500 NSEC MAX t_{on}
- HIGH FREQUENCY, TYPICAL f_T 100 MHZ
- V_{CE0} 80 VOLTS MIN
- HIGH LINEAR GAIN, LOW SATURATION VOLTAGE
- 200°C OPERATING, GOLD EUTECTIC DIE ATTACH
- DESIGNED FOR COMPLEMENTARY USE WITH 2N5152 AND 2N5154

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	V_{CE0}	80	Volts
Collector - Base Voltage	V_{CB0}	100	Volts
Emitter - Base Voltage	V_{EB0}	5.5	Volts
Collector Current	I_C	5	Amps
Base Current	I_B	2.5	Amps
Total Device Dissipation @ $T_C = 50^\circ\text{C}$ Derate above 50 °C	P_D	10 66.6	Watts mW/°C
Operating and Storage Temperature	T_j, T_{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	15	°C/W

ELECTRICAL CHARACTERISTICS

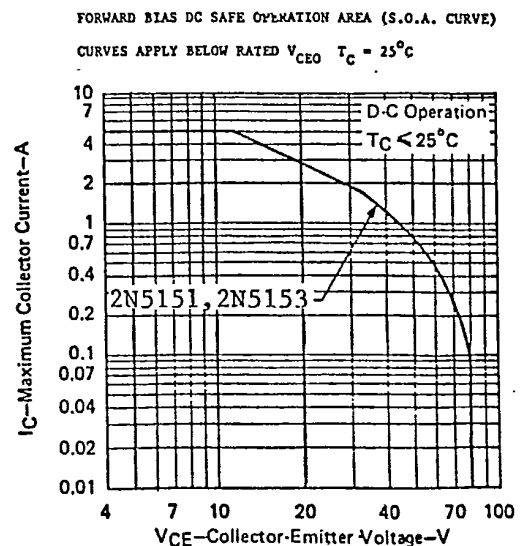
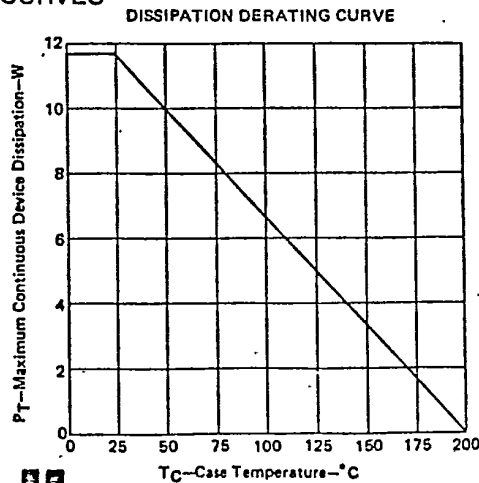
Characteristics	Symbol	Min.	Max.	Unit
Collector - Emitter Breakdown Voltage* ($I_C = 100$ mA dc)	BV_{CE0}	80		Vdc
Collector - Base Breakdown Voltage ($I_C = 200$ uA dc)	BV_{CB0}	100		Vdc
Emitter - Base Breakdown Voltage ($I_E = 200$ uA dc)	BV_{EB0}	5.5		Vdc

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min.	Max.	Unit
Collector Cutoff Current (VCE = 40 Vdc) (VCE = 60 Vdc, VBE = 2 Vdc, TC = 150°C)	ICEO ICEV		50 500	uAdc uAdc
Collector Cutoff Current (VCE = 60 Vdc) (VCE = 100 Vdc)	ICES		1.0 1.0	uAdc mAdc
Emitter Cutoff Current (VEB = 4 Vdc) (VEB = 5.5 Vdc)	IEBO		1.0 1.0	uAdc mAdc
DC Current Gain* (IC = 50 mAdc, VCE = 5 Vdc) (IC = 2.5 Adc, VCE = 5 Vdc) (IC = 5 Adc, VCE = 5 Vdc)	hFE	20 50 30 70 20 40	90 200	
Collector - Emitter Saturation Voltage* (IC = 2.5 Adc, IB = 250 mAdc) (IC = 5 Adc, IB = 500 mAdc)	VCE (SAT)		0.75 1.5	Vdc
Base - Emitter Saturation Voltage* (IC = 2.5 Adc, IB = 250 mAdc) (IC = 5 Adc, IB = 500 mAdc)	VBE (SAT)		1.45 2.2	Vdc
Current - Gain - Bandwidth Product (IC = 500 mAdc, VCE = 5 Vdc, f = 20 MHz)	fT	60 70		MHz
Output Capacitance (VCE = 10 Vdc, IE = 0.1 = 1 MHz)	Cob		250	pf
Base - Emitter Voltage* (VCE = 5 Vdc, IC = 2.5 Adc)	VBE (ON)*		1.45	Vdc
Delay Time (VCC = 30 Vdc, VEB (Off) = 3.7 Vdc)	td			
Rise Time (IC = 5 Adc, (ton))	tr +		500	ns
Storage Time (VEB (off) = 3.7 Vdc, (toff))	ts +			
Fall Time (IB1 = IB2 = 500 mAdc, RL = 6 Ohms)	tf +		1.3	us

*Pulse Test: Pulse width = 300 us, DutyCycle = 2%

TYPICAL OPERATING CURVES



SOLID STATE DEVICES, INC.

PRELIMINARY DATA SHEET



SFT501 AND SFT503

5 AMP

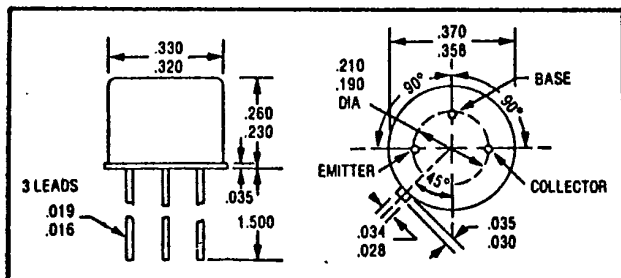
HIGH SPEED PNP TRANSISTOR

200 VOLTS

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CASE STYLE W

JEDEC TO-5



FEATURES

- RADIATION TOLERANT
- FAST SWITCHING
- HIGH FREQUENCY, 100 MHZ TYPICAL
- BV_{CEO} 150 VOLTS MIN.
- HIGH LINEAR GAIN
- VERY LOW LEAKAGE AND SATURATION
- 200°C OPERATING, GOLD EUTECTIC DIE ATTACH
- DESIGNED FOR COMPLEMENTARY USE WITH SFT502 AND SFT504

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	V _{CEO}	150	Volts
Collector - Base Voltage	V _{CBO}	200	Volts
Emitter - Base Voltage	V _{EBO}	7	Volts
Collector Current	I _C	5	Amps
Base Current	I _B	1	Amps
Total Device Dissipation @ TC = 50°C	P _D	10	Watts
Derate above 50 °C		66.6	W/°C
Operating and Storage Temperature	T _j , T _{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Thermal Resistance, Junction to Case	R _{θJC}	15	°C/W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min.	Max.	Unit
Collector - Emitter Breakdown Voltage* (I _C = 50 mA _{dc})	BV _{CEO} *	150		V _{dc}
Collector - Base Breakdown Voltage (I _C = 200 μA _{dc})	BV _{CBO}	200		V _{dc}
Emitter - Base Breakdown Voltage (I _E = 200 μA _{dc})	BV _{EBO}	10		V _{dc}

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min.	Max.	Unit
Collector Cutoff Current $V_{CE} = 100 \text{ Vdc}$	I_{CEO}		1	μA
Collector Cutoff Current $V_{CB} = 100 \text{ Vdc}$	I_{CBO}		500	$n\text{A}$
Emitter Cutoff Current $V_{EB} = 6 \text{ Vdc}$	I_{EBO}		500	$n\text{A}$
DC Current Gain* ($I_C = 50 \text{ mA}$, $V_{CE} = 5 \text{ Vdc}$) ($I_C = 2.5 \text{ mA}$, $V_{CE} = 5 \text{ Vdc}$) ($I_C = 5 \text{ mA}$, $V_{CE} = 5 \text{ Vdc}$)	h_{FE}		20 50 30 50 20 40	
Collector - Emitter Saturation Voltage* ($I_C = 2.5 \text{ mA}$, $I_B = 250 \text{ mA}$) ($I_C = 5 \text{ mA}$, $I_B = 500 \text{ mA}$)	$V_{CE(SAT)}$		0.75 1.5	Vdc
Base - Emitter Saturation Voltage* ($I_C = 2.5 \text{ mA}$, $I_B = 250 \text{ mA}$) ($I_C = 5 \text{ mA}$, $I_B = 500 \text{ mA}$)	$V_{BE(SAT)}$		1.3 1.5	Vdc
Current - Gain - Bandwidth Product ($I_C = 500 \text{ mA}$, $V_{CE} = 5 \text{ Vdc}$, $f = 10 \text{ MHz}$)	f_T	80		MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 1 \text{ MHz}$)	C_{ob}		225	pf
Input Capacitance ($V_{BE} = 10 \text{ Vdc}$, $I_C = 0$, $f = 1 \text{ MHz}$)	C_{ib}		600	pf
Delay Time	t_d		50	ns
Rise Time	t_r		250	ns
Storage Time	t_s		900	ns
Fall Time	t_f		300	ns

$(V_{CC} = 50 \text{ Vdc}, I_C = 5 \text{ mA}, I_{B1} = I_{B2} = 500 \text{ mA})$

*Pulse Test: Pulse width = 300 us, DutyCycle = 2%

TYPICAL OPERATING CURVES

