



Solid State Devices Incorporated
14830 Valley View Avenue
La Mirada, California 90638
Telephone (213) 921-9660
TWX-910-583-4807

2 AMP

X00219

HIGH VOLTAGE HIGH SPEED

SPT6502

SPT6503

NPN SILICON POWER TRANSISTOR

- FEATURES**
- * 800V BLOCKING CAPABILITY
 - * $I_S/b = 75\text{mA}/\text{dc}$ @ $V_{CE} = 200\text{Vdc}$
 - * $T_f = 700\text{ns}$. Max.
 - * USABLE DC CURRENT GAIN TO 2 ADC

MAXIMUM RATINGS

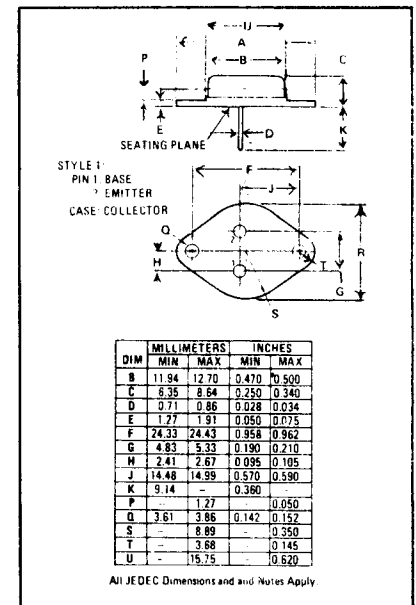
Rating	Symbol	SPT6502	SPT6503	Unit
Collector-Emitter Voltage	V_{CER}	700	800	Vdc
Collector-Base Voltage	V_{CB}	700	800	Vdc
Emitter-Base Voltage	V_{EB}	10		Vdc
Collector Current – Continuous	I_C	2		Adc
Base Current	I_B	1		Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	35 .2		Watts $\text{mW}/^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max.	Unit
Thermal Resistance, Junction to Case	θ_{JC}	5	$^\circ\text{C}/\text{W}$

PHYSICAL DIMENSIONS

In accordance with JEDEC (T066) outline

**ELECTRICAL CHARACTERISTICS**

Characteristic	Fig. No.	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage* ($I_C = .2 \text{ mA}/\text{dc}, I_B = 0$)	SPT6502 SPT6503	V_{CER}	700 800		Vdc
Collector Cutoff Current ($V_{CE} = 300\text{Vdc}, I_B = 0$) ($V_{CE} = 400\text{Vdc}, I_B = 0$)	SPT6502 SPT6503	I_{CEO}		10 10	μAdc
Collector Cutoff Current ($V_{CE} = 700 \text{ Vdc}, V_{EB(\text{off})} = 1.5 \text{ Vdc}$) ($V_{CE} = 800 \text{ Vdc}, V_{EB(\text{off})} = 1.5 \text{ Vdc}$) ($V_{CE} = 700 \text{ Vdc}, V_{EB(\text{off})} = 1.5 \text{ Vdc}, T_C = 100^\circ\text{C}$) ($V_{CE} = 800 \text{ Vdc}, V_{EB(\text{off})} = 1.5 \text{ Vdc}, T_C = 100^\circ\text{C}$)	SPT6502 SPT6503 SPT6502 SPT6503	I_{CEX}		50 50 1 1	μAdc mAdc
Collector Cutoff Current ($V_{CB} = \text{Rated } V_{CB}, I_E = 0$)		I_{CBO}		100	μAdc
Emitter Cutoff Current ($V_{BE} = 10 \text{ Vdc}, I_C = 0$)	ALL	I_{EBO}		50	μAdc

ELECTRICAL CHARACTERISTICS

Characteristic	Fig. No.	Symbol	Min	Max	Unit
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ON CHARACTERISTICS

DC Current Gain* $(I_C = 50 \text{ mAdc}, V_{CE} = 5 \text{ Vdc})$ $(I_C = .5 \text{ Adc}, V_{CE} = 5 \text{ Vdc})$ $(I_C = 1 \text{ Adc}, V_{CE} = 5 \text{ Vdc})$	ALL	h_{FE}^*	15 10 5	55 45 30	
Collector-Emitter Saturation Voltage* $(I_C = 1 \text{ Adc}, I_B = .25 \text{ Adc})$ $(I_C = 1.5 \text{ Adc}, I_B = .5 \text{ Adc})$	ALL	$V_{CE(Sat)}^*$		1 3	Vdc
Base-Emitter Saturation Voltage* $(I_C = .5 \text{ Adc}, I_B = .1 \text{ Adc})$ $(I_C = 1 \text{ Adc}, I_B = .25 \text{ Adc})$	ALL	$V_{BE(Sat)}^*$		1 1.2	Vdc

DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product $(I_C = 100 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 1 \text{ MHz})$	ALL	f_T	10		MHz
Output Capacitance $(V_{CB} = 20 \text{ Vdc}, I_E = 0, f = 1 \text{ MHz})$	ALL	C_{ob}		25	pF

SWITCHING CHARACTERISTICS

Delay Time	$(V_{CC} = 125 \text{ Vdc}, V_{EB(off)} = \text{Vdc}, I_C = 1 \text{ Adc}, I_{B1} = 200 \text{ mAdc})$	t_d		100	ns
Rise Time		t_r		700	ns
Storage Time	$(V_{CC} = 125 \text{ Vdc}, I_C = 1 \text{ Adc}, I_{B1} = I_{B2} = 200 \text{ mAdc})$	t_s		3	μs
Fall Time		t_f		700	ns

SECOND BREAKDOWN

*Second Breakdown Collector Current With Base Forward Biased $t = 1s$ (Non-Repetitive) ($V_{CE} = 200V$)	1	$I_{S/B}$	75		mAdc
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*Pulse Test: Pulse Width 300 μs , Duty Cycle = 2 %

FORM 531

SSDI **SOLID STATE DEVICES, INC.**

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