PRELIMINARY DATA SHEET

Solid State Devices Incorporated
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X00219

2 AMP HIGH VOLTAGE HIGH SPEED

SPT6502

SPT6503

NPN SILICON POWER TRANSISTOR

FEATURES

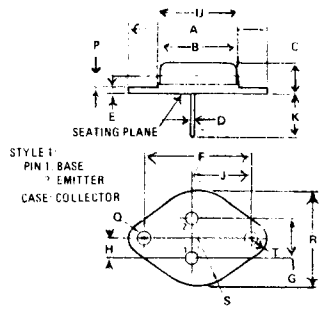
* 800V BLOCKING CAPABILITY
* $I_{S/b}$ = 75mAdc @ V_{CE} = 200Vdc
* T_f = 700ns. Max.
* USABLE DC CURRENT GAIN TO 2 ADC

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 °C Derate above 25°C	P_D	35 .2		Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		°C

PHYSICAL DIMENSIONS

In accordance with JEDEC (TO66) outline



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
B	11.94	12.70	0.470	0.500
C	6.35	8.64	0.250	0.340
D	0.71	0.86	0.028	0.034
E	1.27	1.91	0.050	0.075
F	24.33	24.43	0.958	0.962
G	4.83	5.33	0.190	0.210
H	2.41	2.67	0.095	0.105
J	14.48	14.99	0.570	0.590
K	9.14	–	0.360	–
P	–	1.27	–	0.050
Q	3.61	3.86	0.142	0.152
S	–	8.89	–	0.350
T	–	3.68	–	0.145
U	–	15.75	–	0.620

All JEDEC Dimensions and and Notes Apply

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max.	Unit
Thermal Resistance, Junction to Case	θ_{JC}	5	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Fig. No.	Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage* (I_C = .2 mAdc, I_B = 0)	SPT6502 SPT6503	BV_{CER}	700 800		Vdc
Collector Cutoff Current (V_{CE} = 300Vdc, I_B = 0) (V_{CE} = 400Vdc, I_B = 0)	SPT6502 SPT6503	I_{CEO}		10 10	uAdc
Collector Cutoff Current (V_{CE} = 700 Vdc, $V_{EB(off)}$ = 1.5 Vdc) (V_{CE} = 800 Vdc, $V_{EB(off)}$ = 1.5 Vdc) (V_{CE} = 700 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 100 °C) (V_{CE} = 800 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 100 °C)	 SPT6502 SPT6503 SPT6502 SPT6503	I_{CEX}		 50 50 1 1	 uAdc mAdc
Collector Cutoff Current (V_{CB} = Rated V_{CB}, I_E = 0)		I_{CBO}		100	uAdc
Emitter Cutoff Current (V_{BE} = 10 Vdc, I_C = 0)	ALL	I_{EBO}		50	uAdc

ELECTRICAL CHARACTERISTICS

Characteristic	Fig. No.	Symbol	Min	Max	Unit
ON CHARACTERISTICS					
DC Current Gain*		h_{FE}*			
(I_C = 50 mAdc, V_{CE} = 5 Vdc)	ALL		15	55	
(I_C = .5 Adc, V_{CE} = 5 Vdc)			10	45	
(I_C = 1 Adc, V_{CE} = 5 Vdc)			5	30	
Collector-Emitter Saturation Voltage*		$V_{CE(Sat)}$*			Vdc
(I_C = 1 Adc, I_B = .25 Adc)	ALL			1	
(I_C = 1.5 Adc, I_B = .5 Adc)				3	
Base-Emitter Saturation Voltage*		$V_{BE(Sat)}$*			Vdc
(I_C = .5 Adc, I_B = .1 Adc)	ALL			1	
(I_C = 1 Adc, I_B = .25 Adc)				1.2	
DYNAMIC CHARACTERISTICS					
Current-Gain-Bandwidth Product (I_C = 100 mAdc, V_{CE} = 10 Vdc, f = 1 MHz)	ALL	f_T	10		MHz
Output Capacitance (V_{CB} = 20 Vdc, I_E = 0, f = 1 MHz)	ALL	C_{ob}		25	pF
SWITCHING CHARACTERISTICS					
Delay Time	(V_{CC} = 125 Vdc, $V_{EB(off)}$ = Vdc,	t_d		100	ns
Rise Time	I_C = 1 Adc, I_{B1} = 200 mAdc)	t_r		700	ns
Storage Time	(V_{CC} = 125 Vdc, I_C = 1 Adc,	t_s		3	µs
Fall Time	I_{B1} = I_{B2} = 200mAdc)	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

*Pulse Test: Pulse Width 300 µs, Duty Cycle = 2 %

FORM 531

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