



Solid State Devices, Inc.

14701 Firestone Blvd * La Mirada, Ca 90638
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DESIGNER'S DATA SHEET

Part Number / Ordering Information ^{1/}

SPT5006 _ _ _
 SPT5008 _ _ _

Screening ^{2/} _ = Not Screened
 TX = TX Level
 TXV = TXV Level
 S = S Level

Lead Bend ^{3/ 4/} _ = Straight Leads
 UB = Up Bend
 DB = Down Bend

Package ^{3/} /61 = TO-61
 /3 = TO-3
 M = TO-254
 S1 = SMD1

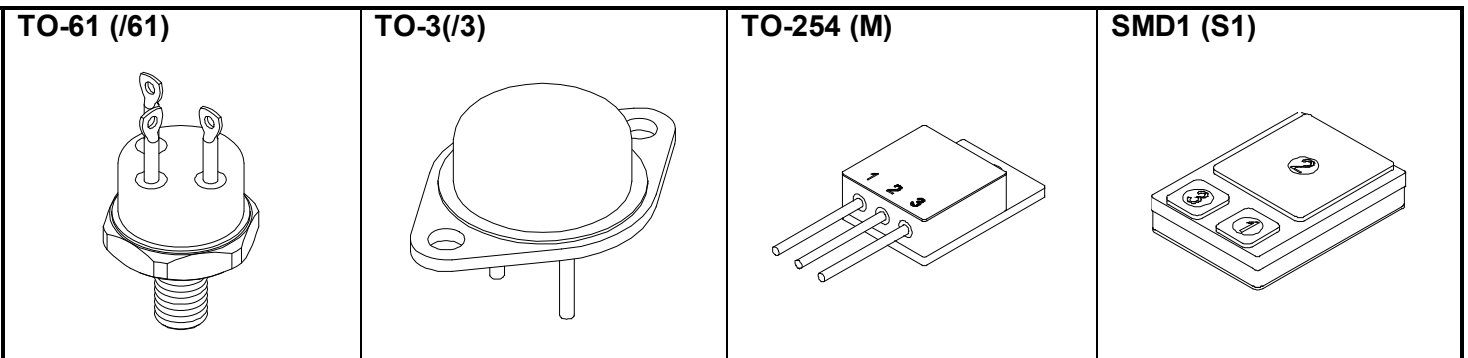
SPT5006 and SPT5008 Series

**10 AMPS
 100 Volts
 High Power - High Speed
 NPN Transistors**

Features:

- Radiation Tolerant
- Fast Switching, 100 ns Maximum t_d
- High Frequency, $f_T > 30\text{MHz}$
- BV_{CEO} 80 Volts Minimum
- High Linear Gain, Low Saturation Voltage
- 200°C Operating Temperature
- Designed for Complementary Use With SPT5007 and SPT5009
- TX, TXV, S-Level Screening Available. Consult Factory.

Maximum Ratings	Symbol	Value	Units
Collector – Emitter Voltage	V_{CEO}	80	Volts
Collector – Base Voltage	V_{CBO}	100	Volts
Emitter – Base Voltage	V_{EBO}	6	Volts
Collector Current	I_C	10	Amps
Base Current	I_B	3	Amps
Total Power Dissipation @ $T_C = 50^\circ\text{C}$ Derate Above 50°C	P_D	100 0.667	Watts W/°C
Operating & Storage Temperature	T_J & T_{STG}	-65 to +200	°C
Maximum Thermal Resistance (Junction to Case)	$R_{\theta JC}$	1.5	°C/W



NOTE: All specifications are subject to change without notification.
 SSD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: TR0113A

DOC



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SPT5006 and SPT5008 Series

Electrical Characteristics		Symbol	Min	Max	Units	
Collector – Emitter Blocking Voltage *	(I _C = 200 mA)	BV _{CEO}	80	—	Volts	
Collector – Base Blocking Voltage	(I _C = 200 μA)	BV _{CBO}	100	—	Volts	
Emitter – Base Blocking Voltage	(I _E = 200 μA)	BV _{EBO}	6	—	Volts	
Collector Cutoff Current	(V _{CE} = 40 V)	I _{CEO}	—	50	μA	
	(V _{CE} = 60 V)	I _{CES}	—	1.0	μA	
Collector Cutoff Current	(V _{CE} = 100 V)	I _{CEX}	—	1.0	mA	
	(V _{CE} = 60 V, V _{BE} = 2 V, T _C = 150°C)	I _{CES}	—	500	μA	
Emitter Cutoff Current	(V _{EB} = 4 V)	I _{EBO}	—	1.0	μA	
	(V _{EB} = 5.5 V)	I _{EBO}	—	1.0	mA	
DC Current Gain *	(I _C = 100 mA, V _{CE} = 5 V)	h _{FE}	2N5006	20	—	
			2N5008	50	—	
	(I _C = 5 A, V _{CE} = 5 V)		2N5006	30	90	
			2N5008	70	200	
(I _C = 10 A, V _{CE} = 5 V)	2N5006	20	—			
	2N5008	45	—			
Collector-Emitter Saturation Voltage *	(I _C = 5 A, I _B = 500 mA)	V _{CE (SAT)}	—	0.9	Volts	
	(I _C = 10 A, I _B = 500 mA)		—	1.5		
Base-Emitter Saturation Voltage *	(I _C = 5 A, I _B = 500 mA)	V _{BE (SAT)}	—	1.8	Volts	
Base – Emitter Voltage*	(I _C = 10 A, I _B = 1 A)	V _{BE (ON)}	—	2.2		
	(V _{CE} = 5 V, I _C = 5 A)		—	1.8		
Current Gain – Bandwidth Product	(V _{CE} = 5 V, I _C = 0.5 A, f = 20 MHz)	f _T	2N5006	30	—	MHz
			2N5008	40	—	
Output Capacitance	V _{CB} = 10 V, I _E = 0 A, f = 1.0MHz	C _{ob}	—	275	pF	
Delay Time	(V _{CC} = 40 V, I _C = 2 A, V _{EB (OFF)} = 3.0 V, I _{B1} = I _{B2} = 200 mA)	t _(on)	t _d	—	100	ns
Rise Time			t _r	—	100	ns
Storage Time		t _(off)	t _s	—	2.0	μs
Fall Time			t _f	—	200	ns

NOTES:

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

1/ For Ordering Information, Price, and Availability Contact Factory.

2/ Screening based on MIL-PRF-19500. Screening flows are available on request.

3/ For Package Outlines Contact Factory.

4/ Up and Down Bend Configurations are Available for 'M' (TO-254) Packages Only.

5/ Unless Otherwise Specified, All Electrical Characteristics @25°C.

Available Part Numbers:
 SPT5006/61, SPT5006/3, SPT5006M, SPT5006MUB, SPT5006MDB, SPT5006S1,
 SPT5008/61, SPT5008/3, SPT5008M, SPT5008MUB, SPT5008MDB, SPT5008S1

PIN ASSIGNMENT (Standard)			
Package	Collector	Emitter	Base
TO-61 (/61)	Pin 3	Pin 1	Pin 2
TO-3 (/3)	Case	Pin 2	Pin 3
TO-254 (M)	Pin 1	Pin 2	Pin 3
SMD1(S1)	Pin 2	Pin 1	Pin 3