



Solid State Devices Incorporated
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2N5301 2N5302

200 WATT NPN SILICON POWER TRANSISTOR

X00255

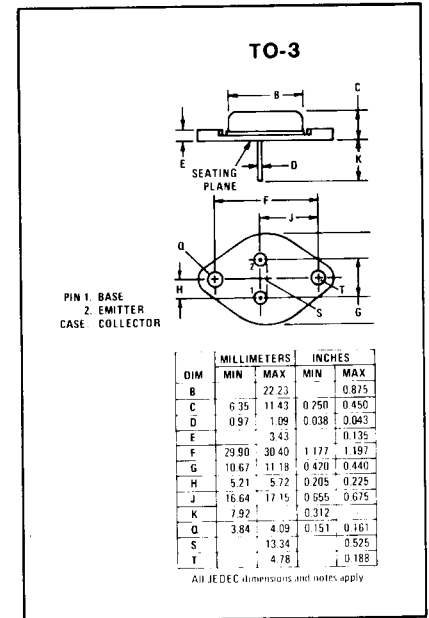
- FEATURES**
- HFE 15-60 @ 15 Amps
 - VCE (sat) 2.0 V @ 20 Amps
 - Fast Switching 1 μsec Rise Time
 - Excellent Safe Operating Area

MAXIMUM RATINGS

Rating	Symbol	2N5301	2N5302	Unit
Collector-Emitter Voltage	V_{CE0}	40	60	Vdc
Collector-Base Voltage	V_{CB}	40	60	Vdc
Emitter-Base Voltage	V_{EB}	5		Vdc
Collector Current - Continuous	I_C	30		Adc
Base Current	I_B	7.5		Adc
Total Device Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	200		Watts
		1.14		W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ C$

PHYSICAL DIMENSIONS

In accordance with JEDEC (TO-3) outline



THERMAL CHARACTERISTICS

Characteristic	Symbol	Max.	Unit
Thermal Resistance, Junction to Case	θ_{JC}	.875	$^\circ C/W$

ELECTRICAL CHARACTERISTICS

Characteristic	Fig. No.	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage* ($I_C = 200$ mAdc, $I_B = 0$)	2N5301 2N5302	$V_{CE0}(sus)^*$	40 60		Vdc
Collector Cutoff Current ($V_{CE} = 40$ Vdc, $I_B = 0$) ($V_{CE} = 60$ Vdc, $I_B = 0$)	2N5301 2N5302	I_{CE0}		5 5	mAdc
Collector Cutoff Current ($V_{CE} = 40$ Vdc, $V_{EB(off)} = 1.5$ Vdc) ($V_{CE} = 60$ Vdc, $V_{EB(off)} = 1.5$ Vdc) ($V_{CE} = 40$ Vdc, $V_{EB(off)} = 1.5$ Vdc, $T_C = 150^\circ C$) ($V_{CE} = 60$ Vdc, $V_{EB(off)} = 1.5$ Vdc, $T_C = 150^\circ C$)	2N5301 2N5302 2N5301 2N5302	I_{CEX}		1 10 10	mAdc
Collector Cutoff Current ($V_{CB} = \text{Rated } V_{CB}, I_E = 0$)	All Types	I_{CBO}		1	mAdc
Emitter Cutoff Current ($V_{BE} = 5$ Vdc, $I_C = 0$)	All Types	I_{EBO}		5	mAdc

ELECTRICAL CHARACTERISTICS

Characteristic	Fig. No.	Symbol	Min	Max	Unit
ON CHARACTERISTICS					
DC Current Gain* ($I_C = 1000 \text{ mAdc}, V_{CE} = 2 \text{ Vdc}$) ($I_C = 15 \text{ Adc}, V_{CE} = 2 \text{ Vdc}$) ($I_C = 30 \text{ Adc}, V_{CE} = 4 \text{ Vdc}$)		h_{FE}^*	40 15 5	60	
Collector-Emitter Saturation Voltage* ($I_C = 10 \text{ Adc}, I_B = 1 \text{ Adc}$) ($I_C = 20 \text{ Adc}, I_B = 2 \text{ Adc}$)	All Types	$V_{CE(Sat)}^*$.75 2	Vdc
Base-Emitter Saturation Voltage* ($I_C = 10 \text{ Adc}, I_B = 1 \text{ Adc}$) ($I_C = 20 \text{ Adc}, I_B = 2 \text{ Adc}$)	All Types	$V_{BE(Sat)}^*$		1.7 2.5	Vdc

DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product ($I_C = 1000 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 1 \text{ MHz}$)	All Types	f_T	2		MHz
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SWITCHING CHARACTERISTICS

Delay Time	$(V_{CC} = 30 \text{ Vdc}, I_C = 10 \text{ Adc}, I_{B1} = 1000 \text{ mAdc})$	All Types	t_r		1000	ns
Rise Time						
Storage Time	$(V_{CC} = 30 \text{ Vdc}, I_C = 10 \text{ Adc}, I_{B1} = I_{B2} = 1000 \text{ mAdc})$	All Types	t_s t_f		2 1000	μs ns
Fall Time						

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

TYPICAL OPERATING CURVES

