

PNP DARLINGTON POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/539

Devices

2N6300

2N6301

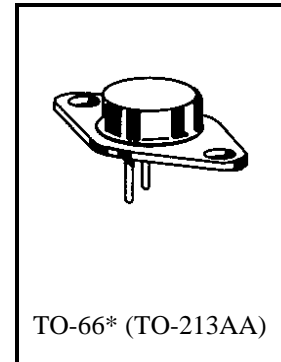
Qualified Level

JANTX
JANTXV

MAXIMUM RATINGS

Ratings	Symbol	2N6300	2N6301	Units
Collector-Emitter Voltage	V_{CEO}	60	80	Vdc
Collector-Base Voltage	V_{CBO}	60	80	Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Base Current	I_B	120		mAdc
Collector Current	I_C	8.0		Adc
Total Power Dissipation	P_T	@ $T_C = 0^{\circ}\text{C}$ ⁽¹⁾	75	W
		@ $T_C = 100^{\circ}\text{C}$	32	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-55 to +200		$^{\circ}\text{C}$

1) Derate linearly 0.428 W/ $^{\circ}\text{C}$ above $T_C > 0^{\circ}\text{C}$



*See appendix A for package outline

ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}\text{C}$ unless otherwise noted)

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 100 \text{ mAdc}$	2N6300 2N6301	$V_{(BR)CEO}$	60 80	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 30 \text{ Vdc}$ $V_{CE} = 40 \text{ Vdc}$	2N6300 2N6301	I_{CEO}	0.5 0.5	mAdc
Collector-Emitter Cutoff Current $V_{CE} = 60 \text{ Vdc}, V_{BE} = -1.5 \text{ Vdc}$ $V_{CE} = 80 \text{ Vdc}, V_{BE} = -1.5 \text{ Vdc}$	2N6300 2N6301	I_{CEX}	0.5 0.5	mAdc
Emitter-Base Cutoff Current $V_{EB} = 5.0 \text{ Vdc}$		I_{EBO}	2.0	mAdc

2N6300, 2N6301 JAN SERIES

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽²⁾				
Forward-Current Transfer Ratio I _C = 1.0 Adc, V _{CE} = 3.0 Vdc I _C = 4.0 Adc, V _{CE} = 3.0 Vdc I _C = 8.0 Adc, V _{CE} = 3.0 Vdc	h _{FE}	500 750 100	18,000	
Collector-Emitter Saturation Voltage I _C = 4.0 Adc, I _B = 16 mAdc I _C = 8.0 Adc, I _B = 80 mAdc	V _{CE(sat)}		2.0 3.0	Vdc
Base-Emitter Saturation Voltage I _C = 8.0 Adc, I _B = 80 mAdc	V _{BE(sat)}		4.0	Vdc
Base-Emitter Voltage I _C = 4.0 Adc, V _{CE} = 3.0 Vdc	V _{BE(on)}		2.8	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I _C = 3.0 Adc, V _{CE} = 3.0 Vdc, f = 1.0 MHz	h _{fe}	25	350	
Small-Signal Short-Circuit Forward Current Transfer Ratio I _C = 3.0 Adc, V _{CE} = 3.0 Vdc, f = 1.0 kHz	h _{fe}	300		
Output Capacitance V _{CB} = 10 Vdc, I _E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C _{obo}		200	pF

SWITCHING CHARACTERISTICS

Turn-On Time V _{CC} = 30 Vdc; I _C = 4.0 Adc; I _{B1} = 16 mAdc	t _{on}		2.0	μs
Turn-Off Time V _{CC} = 30 Vdc; I _C = 4.0 Adc; I _{B1} = I _{B2} = 16 mAdc	t _{off}		8.0	μs

SAFE OPERATING AREA

DC Tests T _C = +25°C, 1 Cycle, t = 1.0 s	
Test 1 V _{CE} = 8.0 Vdc, I _C = 8.0 Adc	
Test 2 V _{CE} = 20 Vdc, I _C = 2.0 Adc	
Test 3 V _{CE} = 60 Vdc, I _C = 100 mAdc	2N6300
V _{CE} = 80 Vdc, I _C = 100 mAdc	2N6301

(2) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.