

## PNP DARLINGTON POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/539

### Devices

2N6300

2N6301

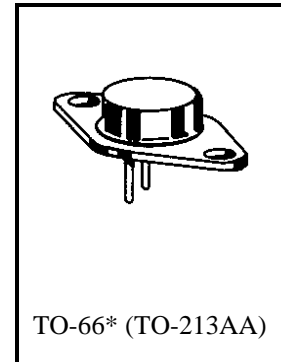
### Qualified Level

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	$P_T$	@ $T_C = 0^{\circ}C$ <sup>(1)</sup>	75	W
		@ $T_C = 100^{\circ}C$	32	W
Operating & Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +200		$^{\circ}C$

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



\*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
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#### OFF CHARACTERISTICS

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

**2N6300, 2N6301 JAN SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
<b>ON CHARACTERISTICS <sup>(2)</sup></b>				
Forward-Current Transfer Ratio I <sub>C</sub> = 1.0 Adc, V <sub>CE</sub> = 3.0 Vdc I <sub>C</sub> = 4.0 Adc, V <sub>CE</sub> = 3.0 Vdc I <sub>C</sub> = 8.0 Adc, V <sub>CE</sub> = 3.0 Vdc	h <sub>FE</sub>	500 750 100	18,000	
Collector-Emitter Saturation Voltage I <sub>C</sub> = 4.0 Adc, I <sub>B</sub> = 16 mAdc I <sub>C</sub> = 8.0 Adc, I <sub>B</sub> = 80 mAdc	V <sub>CE(sat)</sub>		2.0 3.0	Vdc
Base-Emitter Saturation Voltage I <sub>C</sub> = 8.0 Adc, I <sub>B</sub> = 80 mAdc	V <sub>BE(sat)</sub>		4.0	Vdc
Base-Emitter Voltage I <sub>C</sub> = 4.0 Adc, V <sub>CE</sub> = 3.0 Vdc	V <sub>BE(on)</sub>		2.8	Vdc

**DYNAMIC CHARACTERISTICS**

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

**SWITCHING CHARACTERISTICS**

Turn-On Time V <sub>CC</sub> = 30 Vdc; I <sub>C</sub> = 4.0 Adc; I <sub>B1</sub> = 16 mAdc	t <sub>on</sub>		2.0	μs
Turn-Off Time V <sub>CC</sub> = 30 Vdc; I <sub>C</sub> = 4.0 Adc; I <sub>B1</sub> = I <sub>B2</sub> = 16 mAdc	t <sub>off</sub>		8.0	μs

**SAFE OPERATING AREA**

<b>DC Tests</b> T <sub>C</sub> = +25°C, 1 Cycle, t = 1.0 s	
<b>Test 1</b> V <sub>CE</sub> = 8.0 Vdc, I <sub>C</sub> = 8.0 Adc	
<b>Test 2</b> V <sub>CE</sub> = 20 Vdc, I <sub>C</sub> = 2.0 Adc	
<b>Test 3</b> V <sub>CE</sub> = 60 Vdc, I <sub>C</sub> = 100 mAdc                      2N6300 V <sub>CE</sub> = 80 Vdc, I <sub>C</sub> = 100 mAdc                      2N6301	

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