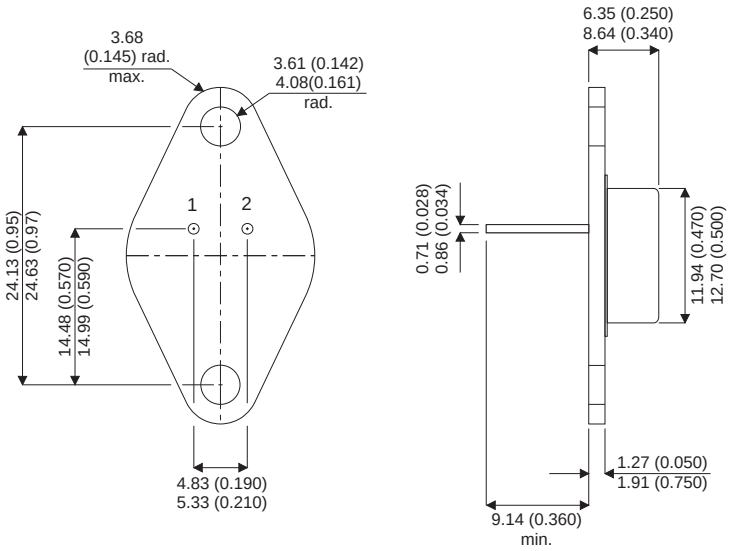
2N6300
2N6301

MECHANICAL DATA
Dimensions in mm (inches)



DARLINGTON SILICON POWER TRANSISTORS

Designed for general purpose amplifier and low frequency switching applications.

FEATURES
- **High DC Current Gain**
- **Monolithic Construction with Built-in Base–Emitter Shunt Resistors**

TO–66 (TO-213AA)

Pin 1 –Base Pin 2 –Emitter Case – Collector

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise stated)

			2N6300	2N6301
V_{CEO}	Collector – Emitter Voltage		60V	80V
V_{CBO}	Collector – Base Voltage		60V	80V
V_{EBO}	Emitter – Base Voltage		5V	
I_C	Collector Current	Continuous	8A	
		Peak	16A	
I_B	Base Current		120mA	
P_D	Total Dissipation @ T_C = 25°C		100W	75W
	Derate above 25°C		0.571W/°C	0.428W/°C
T_{STG} , T_J	Operating and Storage Junction Temperature Range		–65 to +200°C	
$T_{\theta JC}$	Thermal Resistance – Junction - Case		1.75°C/W	2.33°C/W

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Issue 1

SEME LAB

2N6300
2N6301

ELECTRICAL CHARACTERISTICS 2N6300 (T_{case} = 25°C unless otherwise stated)

	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
	OFF CHARACTERISTICS						
$V_{CEO(sus)}$	Collector – Emitter Sustaining Voltage [1]	I_C = 100mA	I_B = 0	60			V
I_{CEO}	Collector Cut–off Current	V_{CE} = 30V	I_B = 0			0.5	mA
I_{CEX}	Collector Cut–off Current	V_{CE} = Rated V_{CB}	$V_{BE(off)}$ = 1.5V			0.5	mA
			T_C = 150°C			5.0	
I_{EBO}	Emitter Cut–off Current	V_{BE} = 5V	I_C = 0			2.0	mA
	ON CHARACTERISTICS [1]						
h_{FE}	DC Current Gain	V_{CE} = 3V	I_C = 4A	750		18000	—
		V_{CE} = 3V	I_C = 8A	100			
$V_{CE(sat)}$	Collector – Emitter Saturation Voltage	I_C = 4A	I_B = 16mA			2.0	V
		I_C = 8A	I_B = 80mA			3.0	
$V_{BE(sat)}$	Base – Emitter Saturation Voltage	I_C = 8A	I_B = 80mA			4.0	V
$V_{BE(on)}$	Base – Emitter On Voltage	V_{CE} = 3V	I_C = 4A			2.8	V
	DYNAMIC CHARACTERISTICS						
C_{ob}	Output Capacitance	V_{CB} = 10V f = 0.1MHz	I_E = 0			200	pF
$\lvert h_{fe} \rvert$	Magnitude of Common Emitter Small Signal Short Circuit Current Transfer Ratio	V_{CE} = 3V I_C = 3A f = 1MHz		4.0			—
h_{fe}	Small Signal Current Gain	V_{CE} = 3V f = 1kHz	I_C = 3A	300			—

Notes

1 Pulse test: t_p = 300µs , Duty Cycle = 2%

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SEME LAB

2N6300
2N6301

ELECTRICAL CHARACTERISTICS 2N6301 (T_{case} = 25°C unless otherwise stated)

	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
	OFF CHARACTERISTICS						
$V_{CEO(sus)}$	Collector – Emitter Sustaining Voltage [1]	I_C = 100mA	I_B = 0	80			V
I_{CEO}	Collector Cut–off Current	V_{CE} = 40V	I_B = 0			0.5	mA
I_{CEX}	Collector Cut–off Current	V_{CE} = Rated V_{CB}	$V_{BE(off)}$ = 1.5V			0.5	mA
			T_C = 150°C			5.0	
I_{EBO}	Emitter Cut–off Current	V_{BE} = 5V	I_C = 0			2	mA
	ON CHARACTERISTICS [1]						
h_{FE}	DC Current Gain	V_{CE} = 3V	I_C = 4A	750		18000	—
		V_{CE} = 3V	I_C = 8A	100			
$V_{CE(sat)}$	Collector – Emitter Saturation Voltage	I_C = 4A	I_B = 16mA			2.0	V
		I_C = 8A	I_B = 80mA			3.0	
$V_{BE(sat)}$	Base – Emitter Saturation Voltage	I_C = 8A	I_B = 80mA			4.0	V
$V_{BE(on)}$	Base – Emitter On Voltage	V_{CE} = 3V	I_C = 4A			2.8	V
	DYNAMIC CHARACTERISTICS						
C_{ob}	Output Capacitance	V_{CB} = 10V f = 0.1MHz	I_E = 0			200	pF
$\lvert h_{fe} \rvert$	Magnitude of Common Emitter Small Signal Short Circuit Current Transfer Ratio	V_{CE} = 3V I_C = 3A f = 1MHz		4.0			—
h_{fe}	Small Signal Current Gain	V_{CE} = 3V f = 1kHz	I_C = 3A	300			—

Notes

1 Pulse test: t_p = 300µs , Duty Cycle = 2%

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