

## PNP DARLINGTON POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/501

### Devices

2N6051

2N6052

### Qualified Level

JAN  
JANTX  
JANTXV

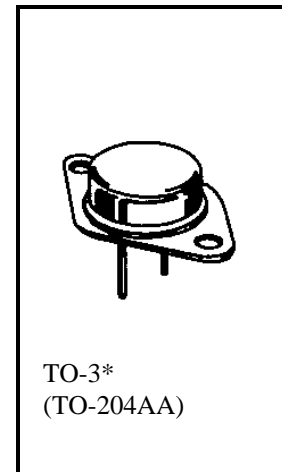
### MAXIMUM RATINGS

Ratings	Symbol	2N6051	2N6052	Unit
Collector-Emitter Voltage	$V_{CEO}$	80	100	Vdc
Collector-Base Voltage	$V_{CBO}$	80	100	Vdc
Emitter-Base Voltage	$V_{EBO}$	5.0		Vdc
Base Current	$I_B$	0.2		Adc
Collector Current	$I_C$	12		Adc
Total Power Dissipation <sup>(1)</sup>	$P_T$	@ $T_C = +25^{\circ}C$	150	W
		@ $T_C = +100^{\circ}C$	75	W
Operating & Storage Junction Temperature Range	$T_{op}, T_{stg}$	-55 to +175		$^{\circ}C$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.0	$^{\circ}C/W$

1) Derate linearly at 1.0 W/ $^{\circ}C$  above  $T_C > +25^{\circ}C$



\*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	2N6051 2N6052	$V_{(BR)CEO}$	80 100	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 40$ Vdc $V_{CE} = 50$ Vdc	2N6051 2N6052	$I_{CEO}$	1.0 1.0	mAdc
Collector-Emitter Cutoff Current $V_{CE} = 80$ Vdc, $V_{BE} = 1.5$ Vdc $V_{CE} = 100$ Vdc, $V_{BE} = 1.5$ Vdc	2N6051 2N6052	$I_{CEX}$	0.5 0.5	mAdc
Emitter-Base Cutoff Current $V_{EB} = 5.0$ Vdc		$I_{EBO}$	2.0	mAdc

**2N6051, 2N6052 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> = 6.0 Adc, V <sub>CE</sub> = 3.0 Vdc I <sub>C</sub> = 12 Adc, V <sub>CE</sub> = 3.0 Vdc	h <sub>FE</sub>	1,000 1,000 150	18,000	
Collector-Emitter Saturation Voltage I <sub>C</sub> = 12 Adc, I <sub>B</sub> = 120 mAdc I <sub>C</sub> = 6.0 Adc, I <sub>B</sub> = 24 mAdc	V <sub>CE(sat)</sub>		3.0 2.0	Vdc
Base-Emitter Saturation Voltage I <sub>C</sub> = 12 Adc, I <sub>B</sub> = 120 mAdc	V <sub>BE(sat)</sub>		4.0	Vdc
Base-Emitter Voltage I <sub>C</sub> = 6.0 Adc, V <sub>CE</sub> = 3.0 Vdc	V <sub>BE</sub>		2.8	Vdc

**DYNAMIC CHARACTERISTICS**

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I <sub>C</sub> = 5.0 Adc, V <sub>CE</sub> = 3.0 Vdc, f = 1.0 MHz	h <sub>fe</sub>	10	250	
Small-Signal Short-Circuit Forward Current Transfer Ratio I <sub>C</sub> = 5.0 Adc, V <sub>CE</sub> = 3.0 Vdc, f = 1.0 kHz	h <sub>fe</sub>		1,000	
Output Capacitance V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz	C <sub>obo</sub>		300	pF

**SWITCHING CHARACTERISTICS**

Turn-On Time V <sub>CC</sub> = 30 Vdc; I <sub>C</sub> = 5.0 Adc; I <sub>B</sub> = 20 mAdc	t <sub>on</sub>		2.0	μs
Turn-Off Time V <sub>CC</sub> = 30 Vdc; I <sub>C</sub> = 5.0 Adc; I <sub>B1</sub> = I <sub>B2</sub> = 20 mAdc	t <sub>off</sub>		10	μs

**SAFE OPERATING AREA**

<b>DC Tests</b> T <sub>C</sub> = +25°C + 10°C -0°, 1 Cycle, t ≥ 1.0 s	
<b>Test 1</b> V <sub>CE</sub> = 12.5 Vdc, I <sub>C</sub> = 12 Adc	All Types
<b>Test 2</b> V <sub>CE</sub> = 30 Vdc, I <sub>C</sub> = 5.0 Adc	All Types
<b>Test 3</b> V <sub>CE</sub> = 70 Vdc, I <sub>C</sub> = 200 mAdc	2N6051
V <sub>CE</sub> = 90 Vdc, I <sub>C</sub> = 155 mAdc	2N6052

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