

## NPN HIGH POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/408

### Devices

2N3715

2N3716

### Qualified Level

JAN  
JANTX  
JANTXV

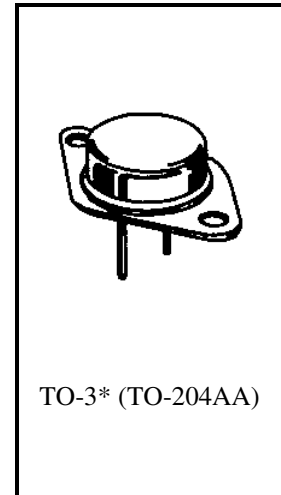
### MAXIMUM RATINGS

Ratings	Symbol	2N3715	2N3716	Units
Collector-Emitter Voltage	$V_{CEO}$	60	80	Vdc
Collector-Base Voltage	$V_{CBO}$	80	100	Vdc
Emitter-Base Voltage	$V_{EBO}$	7.0		Vdc
Base Current	$I_B$	4.0		Adc
Collector Current	$I_C$	10		Adc
Total Power Dissipation	$P_T$	@ $T_A = 25^{\circ}C$	5.0	W
		@ $T_C = 100^{\circ}C$	85.7	W
Operating & Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200		$^{\circ}C$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.17	$^{\circ}C/W$

- 1) Derate linearly 28.57 mW/ $^{\circ}C$  for  $T_A > 25^{\circ}C$
- 2) Derate linearly 0.857 W/ $^{\circ}C$  for  $T_C > 100^{\circ}C$



\*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 Current $I_C = 10$ mAdc	2N3715 2N3716	$V_{(BR)CEO}$	60 80	Vdc
Collector-Base Cutoff Current $V_{CB} = 80$ Vdc $V_{CB} = 100$ Vdc	2N3715 2N3716	$I_{CBO}$	10 10	$\mu$ Adc
Emitter-Base Breakdown Voltage $V_{EB} = 7.0$ Vdc		$I_{EBO}$	1.0	mAdc
Collector-Emitter Cutoff Current $V_{BE} = 1.5$ Vdc, $V_{CE} = 60$ Vdc $V_{BE} = 1.5$ Vdc, $V_{CE} = 80$ Vdc	2N3715 2N3716	$I_{CEX}$	1.0 1.0	mAdc

**2N3715, 2N3716 JAN SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
Collector-Emitter Cutoff Current V <sub>CE</sub> = 60 Vdc V <sub>CE</sub> = 80 Vdc	I <sub>CES</sub>		1.0 1.0	mAdc

**ON CHARACTERISTICS <sup>(3)</sup>**

Forward-Current Transfer Ratio I <sub>C</sub> = 1.0 Adc, V <sub>CE</sub> = 2.0 Vdc I <sub>C</sub> = 3.0 Adc, V <sub>CE</sub> = 2.0 Vdc I <sub>C</sub> = 5.0 Adc, V <sub>CE</sub> = 2.0 Vdc I <sub>C</sub> = 10 Adc, V <sub>CE</sub> = 4.0 Vdc	h <sub>FE</sub>	50 30 10 5.0	150 120	
Collector-Emitter Saturation Voltage I <sub>C</sub> = 5.0 Adc, I <sub>B</sub> = 0.5 Adc I <sub>C</sub> = 10 Adc, I <sub>B</sub> = 2.0 Adc	V <sub>CE(sat)</sub>		1.0 2.5	Vdc
Base-Emitter Saturation Voltage I <sub>C</sub> = 5.0 Adc, I <sub>B</sub> = 0.5 Adc I <sub>C</sub> = 10 Adc, I <sub>B</sub> = 2.0 Adc	V <sub>BE(sat)</sub>		1.5 3.0	Vdc

**DYNAMIC CHARACTERISTICS**

Magnitude of Common Emitter Small-Signal Short Circuit Forward Current Transfer Ratio I <sub>C</sub> = 0.5 Adc, V <sub>CE</sub> = 10 Vdc, f = 100 kHz – 1.0 MHz	h <sub>fc</sub>	4.0	20	
Forward Current Transfer Ratio I <sub>C</sub> = 0.5 Adc, V <sub>CE</sub> = 10 Vdc, f = 1.0 kHz	h <sub>fc</sub>	30	300	
Output Capacitance V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, f = 1.0 MHz	C <sub>obo</sub>		500	pF

**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> = 15 Vdc, I <sub>C</sub> = 10 Adc				
<b>Test 2</b> V <sub>CE</sub> = 40 Vdc, I <sub>C</sub> = 3.75 Adc				
<b>Test 3</b>				
V <sub>CE</sub> = 55 Vdc, I <sub>C</sub> = 0.9 Adc		2N3715		
V <sub>CE</sub> = 65 Vdc, I <sub>C</sub> = 0.9 Adc		2N3716		

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