

2N3715 & 2N3716



NPN High Power Silicon Transistor

Rev. V1

Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/408
- TO-3 (TO-204AA) Package



Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Off Characteristics					
Collector - Emitter Breakdown Voltage	$I_C = 10 \text{ mAdc}$, 2N3715 $I_C = 10 \text{ mAdc}$, 2N3716	$V_{(BR)CEO}$	Vdc	60 80	—
Collector - Base Cutoff Current	$V_{CE} = 60 \text{ Vdc}$, 2N3715 $V_{CE} = 80 \text{ Vdc}$, 2N3716	I_{CEO}	μAdc	—	10 10
Emitter - Base Cutoff Current	$V_{EB} = 7 \text{ Vdc}$	I_{EBO}	mAdc	—	1
Collector - Emitter Cutoff Current	$V_{CE} = 60 \text{ Vdc}$, $V_{BE} = 1.5 \text{ Vdc}$, 2N3715 $V_{CE} = 80 \text{ Vdc}$, $V_{BE} = 1.5 \text{ Vdc}$, 2N3716	I_{CEX}	μAdc	—	10 10
Collector - Emitter Cutoff Current	$V_{CE} = 50 \text{ Vdc}$, 2N3715 $V_{CE} = 70 \text{ Vdc}$, 2N3716	I_{CEO}	μAdc	—	10 10
On Characteristics¹					
Forward Current Transfer Ratio	$I_C = 1 \text{ Adc}$, $V_{CE} = 2 \text{ Vdc}$ $I_C = 3 \text{ Adc}$, $V_{CE} = 2 \text{ Vdc}$ $I_C = 5 \text{ Adc}$, $V_{CE} = 2 \text{ Vdc}$ $I_C = 10 \text{ Adc}$, $V_{CE} = 4 \text{ Vdc}$	H_{FE}	-	50 30 10 5	150 120 — —
Collector - Emitter Saturation Voltage	$I_C = 5 \text{ Adc}$, $I_B = 0.5 \text{ Adc}$ $I_C = 10 \text{ Adc}$, $I_B = 2.0 \text{ Adc}$	$V_{CE(SAT)}$	Vdc	—	1.0 2.5
Emitter - Base Saturation Voltage	$I_C = 5 \text{ Adc}$, $I_B = 0.5 \text{ Vdc}$ $I_C = 10 \text{ Adc}$, $I_B = 2.0 \text{ Vdc}$	$V_{BE(SAT)}$	Vdc	—	1.5 3.0
Dynamic Characteristics					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 4 \text{ Adc}$, $V_{CE} = 4 \text{ Vdc}$, $f = 100 \text{ kHz}$	$ H_{FE} $		4	20
Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 0.5 \text{ Adc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1 \text{ kHz}$	H_{FE}		30	300
Output Capacitance	$V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $100 \text{ kHz} \leq f \leq 1 \text{ MHz}$	C_{OBO}	pF	—	500
Safe Operating Area					
DC Tests:	$T_C = +25 \text{ }^\circ\text{C}$, 1 Cycle, $t = 1.0 \text{ s}$				
Test 1:	$V_{CE} = 15 \text{ Vdc}$, $I_C = 10 \text{ Adc}$				
Test 2:	$V_{CE} = 40 \text{ Vdc}$, $I_C = 3.75 \text{ Adc}$				
Test 3:	$V_{CE} = 55 \text{ Vdc}$, $I_C = 0.9 \text{ Adc}$, 2N3715				
	$V_{CE} = 65 \text{ Vdc}$, $I_C = 0.9 \text{ Adc}$, 2N3716				

1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

1

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Absolute Maximum Ratings

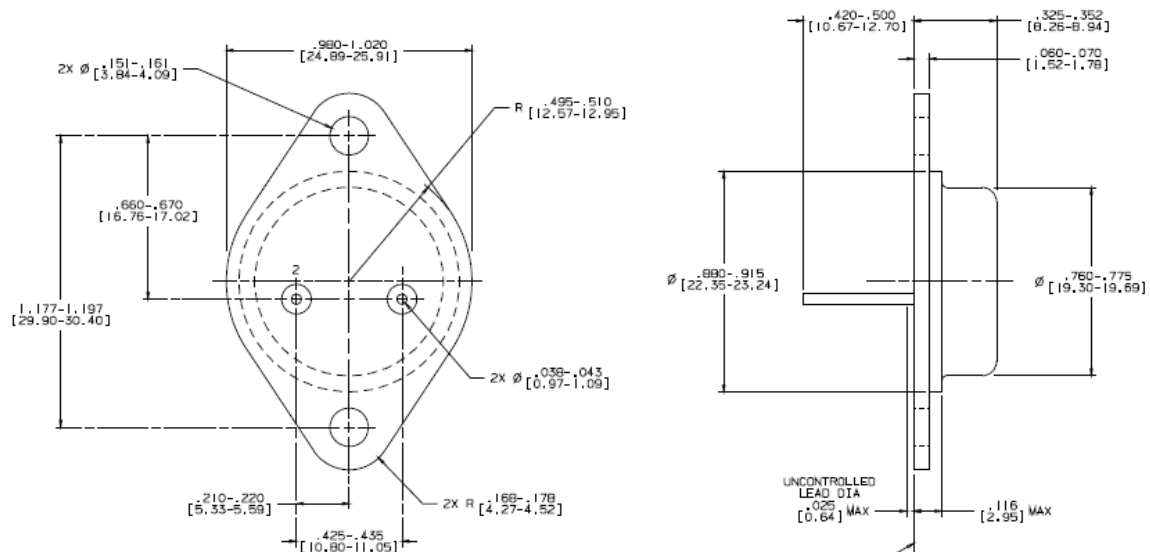
Ratings	Symbol	Value
Collector - Emitter Voltage 2N3715 2N3716	V_{CEO}	60 Vdc 80 Vdc
Collector - Base Voltage 2N3715 2N3716	V_{CBO}	80 Vdc 100 Vdc
Emitter - Base Voltage	V_{EBO}	7 Vdc
Base Current	I_B	4 Vdc
Collector Current	I_C	10 Adc
Total Power Dissipation @ $T_A = 25^\circ\text{C}^2$ @ $T_A = 25^\circ\text{C}$	P_T	5 W 117 W
Operating & Storage Temperature Range	T_{OP}, T_{STG}	-65°C to $+200^\circ\text{C}$

2. Derate linearly @ 28.57 mW / °C for $T_A = 25^\circ\text{C}$

Thermal Characteristics

Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5°C/W

Outline Drawing



NOTES:

1. STANDARD HEADER TYPE SOLID BASE.
2. STANDARD LEAD FINISH PER MIL-W-38510 TYPE X OR EQUIVALENT.
3. LEAD NOT BENT GREATER THAN 15°.
4. DIMENSIONS BASED ON JEDEC STANDARD TO-3 PUBLICATION 95, PA

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