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 mAdc, 2N3715 I_C = 10 mAdc, 2N3716	$V_{(BR)CEO}$	Vdc	60 80	—
Collector - Base Cutoff Current	V_{CE} = 60 Vdc, 2N3715 V_{CE} = 80 Vdc, 2N3716	I_{CEO}	µAdc	—	10 10
Emitter - Base Cutoff Current	V_{EB} = 7 Vdc	I_{EBO}	mAdc	—	1
Collector - Emitter Cutoff Current	V_{CE} = 60 Vdc, V_{BE} = 1.5 Vdc, 2N3715 V_{CE} = 80 Vdc, V_{BE} = 1.5 Vdc, 2N3716	I_{CEX}	µAdc	—	10 10
Collector - Emitter Cutoff Current	V_{CE} = 50 Vdc, 2N3715 V_{CE} = 70 Vdc, 2N3716	I_{CEO}	µAdc	—	10 10
On Characteristics[1]					
Forward Current Transfer Ratio	I_C = 1 Adc, V_{CE} = 2 Vdc I_C = 3 Adc, V_{CE} = 2 Vdc I_C = 5 Adc, V_{CE} = 2 Vdc I_C = 10 Adc, V_{CE} = 4 Vdc	H_{FE}	-	50 30 10 5	150 120 — —
Collector - Emitter Saturation Voltage	I_C = 5 Adc, I_B = 0.5 Adc I_C = 10 Adc, I_B = 2.0 Adc	$V_{CE(SAT)}$	Vdc	—	1.0 2.5
Emitter - Base Saturation Voltage	I_C = 5 Adc, I_B = 0.5 Vdc I_C = 10 Adc, I_B = 2.0 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 Adc, V_{CE}= 4 Vdc, f = 100 kHz	$\lvert H_{FE} \rvert$		4	20
Small-Signal Short-Circuit Forward Current Transfer Ratio	I_C = 0.5 Adc, V_{CE}= 10 Vdc, f = 1 kHz	H_{FE}		30	300
Output Capacitance	V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1 MHz	C_{OBO}	pF	—	500
Safe Operating Area					
DC Tests:	T_C = +25 °C, I Cycle, t = 1.0 s				
Test 1:	V_{CE} = 15 Vdc, I_C = 10 Adc				
Test 2:	V_{CE} = 40 Vdc, I_C = 3.75 Adc				
Test 3:	V_{CE} = 55 Vdc, I_C = 0.9 Adc, 2N3715 V_{CE} = 65 Vdc, I_C = 0.9 Adc, 2N3716				

1. Pulse Test: Pulse Width = 300 µs, Duty Cycle ≤2.0%.

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Absolute Maximum Ratings

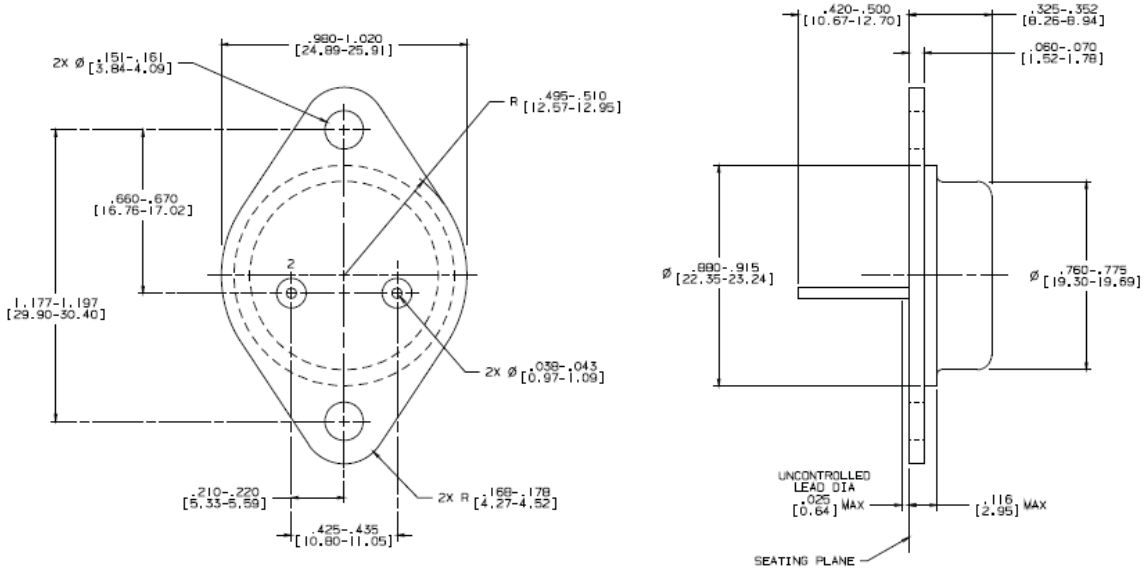
Ratings	Symbol	Value
Collector - Emitter Voltage 2N3715 2N3716	V_{CEO}	 60 Vdc 80 Vdc
Collector - Base Voltage 2N3715 2N3716	V_{CBO}	 80 Vdc 100 Vdc
Emitter - Base Voltage	V_{EBO}	7 Vdc
Base Current	I_B	4 Vdc
Collector Current	I_C	10 Adc
Total Power Dissipation @ T_A = 25°C[2] @ T_A = 25°C	P_T	 5 W 117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

2. Derate linearly @ 28.57 mW / °C for T_A = 25 °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-M-38510 TYPE X OR EQUIVALENT.
3. LEAD NOT BENT GREATER THAN 15°.
4. DIMENSIONS BASED ON JEDEC STANDARD TO-3 PUBLICATION 95, PA