2N6676 & 2N6678

NPN High Power Silicon Transistor

Rev. V1

Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/538
- TO-3 (TO-204AA) Package

Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Off Characteristics					
Collector - Emitter Breakdown Voltage	I_C = 200 mAdc, 2N6676 I_C = 200 mAdc, 2N6678	$V_{(BR)CEO}$	Vdc	300 400	—
Collector - Emitter Cutoff Current	V_{CE} = 450 Vdc, V_{BE} = -1.5 Vdc, 2N6676 V_{CE} = 650 Vdc, V_{BE} = -1.5 Vdc, 2N6678	I_{CEX}	µAdc	—	1.0
Emitter - Base Cutoff Current	V_{EB} = 7 Vdc	I_{EBO}	mAdc	—	2.0
Collector - Base Cutoff Current	V_{CB} = 450 Vdc, 2N6676 V_{CB} = 650 Vdc, 2N6678	I_{CBO}	mAdc	—	1.0
On Characteristics[1]					
Forward Current Transfer Ratio	I_C = 1 Adc, V_{CE} = 3 Vdc I_C = 15 Adc, V_{CE} = 3 Vdc	H_{FE}	-	15 8	40 20
Collector - Emitter Sustaining Voltage	I_C = 15 Adc, I_B = 3 Adc	$V_{CE(SAT)}$	Vdc	—	1.0
Base - Emitter Saturation Voltage	I_C = 15 Adc, I_B = 3 Adc	$V_{BE(SAT)}$	Vdc	—	1.5
Dynamic Characteristics					
Small-Signal Short-Circuit Forward Current Transfer Ratio	I_C = 1 Adc, V_{CE} = 10 Vdc, f = 5 kHz	$\lvert H_{FE} \rvert$	-	3	10
Output Capacitance	V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1 MHz	C_{OBO}	pF	150	500

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

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Parameter	Test Conditions	Symbol	Units	Min.	Max.
Switching Characteristics					
Delay Time Rise Time Storage Time Fall Time Cross-Over Time	See figure 12 of MIL-PRF-19500/538	T_D T_R T_S T_F T_C	µs	—	0.1 0.6 2.5 0.5 0.5
Safe Operating Area					

DC Tests: T_C = +25°C, I Cycle, t = 1.0 s (see figure 4 of MIL-PRF-19500/537)
Test 1: V_{CE} = 11.7 Vdc, I_C = 15 Adc
Test 2: V_{CE} = 30 Vdc, I_C = 5.9 Adc
Test 3: V_{CE} = 100 Vdc, I_C = 0.25 Adc
Test 4: V_{CE} = 300 Vdc, I_C = 20 mAdc, (for 2N6676)
Test 5: V_{CE} = 400 Vdc, I_C = 10 mAdc, (for 2N6678)

Clamped Switch:
T_A = +25°C, V_{CC} = 15 Vdc
Clamp Voltage = 350; I_C = 15 Adc, (2N6676)
Clamp Voltage = 450; I_C = 15 Adc, (2N6678)

Absolute Maximum Ratings

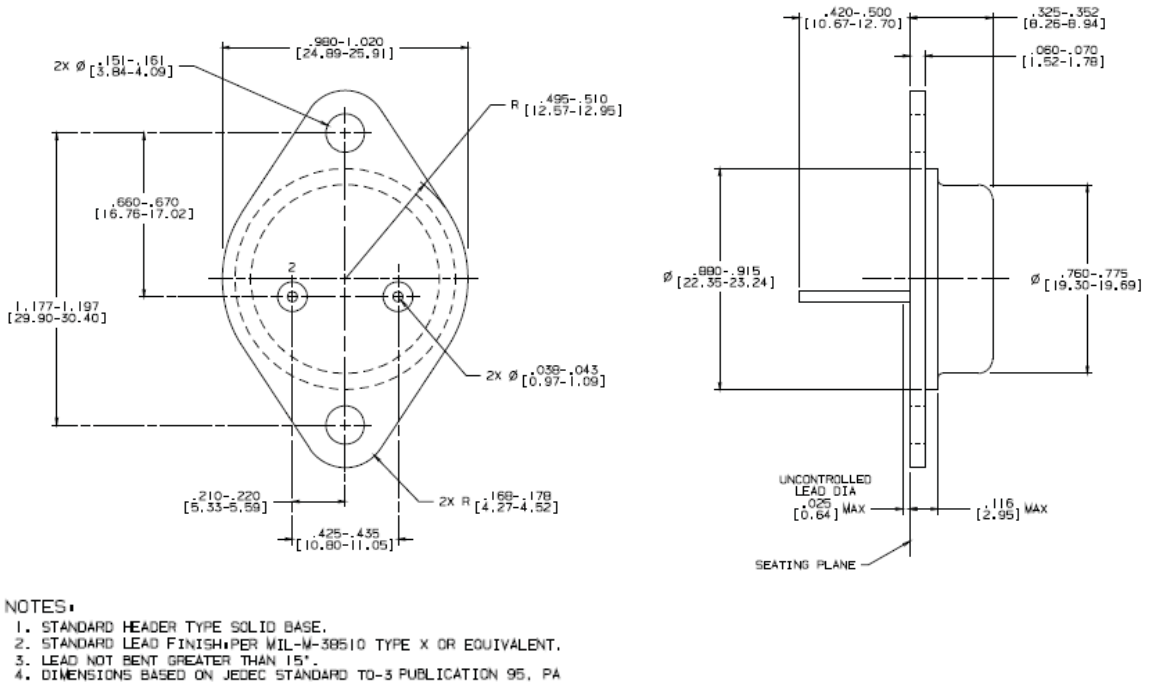
Ratings	Symbol	2N6676	2N6678	Units
Collector - Emitter Voltage	V_{CEO}	300	400	Vdc
Collector - Base Voltage	V_{CBO}/V_{CBX}	450	650	Vdc
Emitter - Base Voltage	V_{EBO}	8		Vdc
Collector Current	I_C	15		Adc
Base Current	I_B	5		Adc
Total Power Dissipation @ T_A = +25°C[2] @ T_A = +25°C	P_T	6 175		W
Operating & Storage Temperature Range	T_{OP}, T_{STG}	-65 to +200		°C

2. Derate linearly @ 34.2 mW / °C for T_A >25°C.

Thermal Characteristics

Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1°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