

2N6676 & 2N6678



NPN High Power Silicon Transistor

Rev. V2

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	$I_C = 200 \text{ mA}_\text{dc}$, 2N6676 $I_C = 200 \text{ mA}_\text{dc}$, 2N6678	$V_{(\text{BR})\text{CEO}}$	Vdc	300 400	—
Collector - Emitter Cutoff Current	$V_{\text{CE}} = 450 \text{ Vdc}$, $V_{\text{BE}} = -1.5 \text{ Vdc}$, 2N6676 $V_{\text{CE}} = 650 \text{ Vdc}$, $V_{\text{BE}} = -1.5 \text{ Vdc}$, 2N6678	I_{CEX}	μA_dc	—	1.0
Emitter - Base Cutoff Current	$V_{\text{EB}} = 7 \text{ Vdc}$	I_{EBO}	mA_dc	—	2.0
Collector - Base Cutoff Current	$V_{\text{CB}} = 450 \text{ Vdc}$, 2N6676 $V_{\text{CB}} = 650 \text{ Vdc}$, 2N6678	I_{CBO}	mA_dc	—	1.0
On Characteristics¹					
Forward Current Transfer Ratio	$I_C = 1 \text{ Adc}$, $V_{\text{CE}} = 3 \text{ Vdc}$ $I_C = 15 \text{ Adc}$, $V_{\text{CE}} = 3 \text{ Vdc}$	H_{FE}	-	15 8	40 20
Collector - Emitter Sustaining Voltage	$I_C = 15 \text{ Adc}$, $I_B = 3 \text{ Adc}$	$V_{\text{CE}(\text{SAT})}$	Vdc	—	1.0
Base - Emitter Saturation Voltage	$I_C = 15 \text{ Adc}$, $I_B = 3 \text{ Adc}$	$V_{\text{BE}(\text{SAT})}$	Vdc	—	1.5
Dynamic Characteristics					
Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 1 \text{ Adc}$, $V_{\text{CE}} = 10 \text{ Vdc}$, $f = 5 \text{ kHz}$	$ H_{\text{FE}} $	-	3	10
Output Capacitance	$V_{\text{CB}} = 10 \text{ Vdc}$, $I_E = 0$, $100 \text{ kHz} \leq f \leq 1 \text{ MHz}$	C_{OBO}	pF	150	500

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

Electrical Characteristics

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: Test 1: Test 2: Test 3: Test 4: Test 5:	$T_C = +25^\circ C$, 1 Cycle, $t = 1.0$ s (see figure 4 of MIL-PRF-19500/537) $V_{CE} = 11.7$ Vdc, $I_C = 15$ Adc $V_{CE} = 30$ Vdc, $I_C = 5.9$ Adc $V_{CE} = 100$ Vdc, $I_C = 0.25$ Adc $V_{CE} = 300$ Vdc, $I_C = 20$ mAdc, (for 2N6676) $V_{CE} = 400$ Vdc, $I_C = 10$ mAdc, (for 2N6678)				
Clamped Switch: $T_A = +25^\circ C$, $V_{CC} = 15$ Vdc Clamp Voltage = 350; $I_C = 15$ Adc, (2N6676) Clamp Voltage = 450; $I_C = 15$ Adc, (2N6678)					

Absolute Maximum Ratings

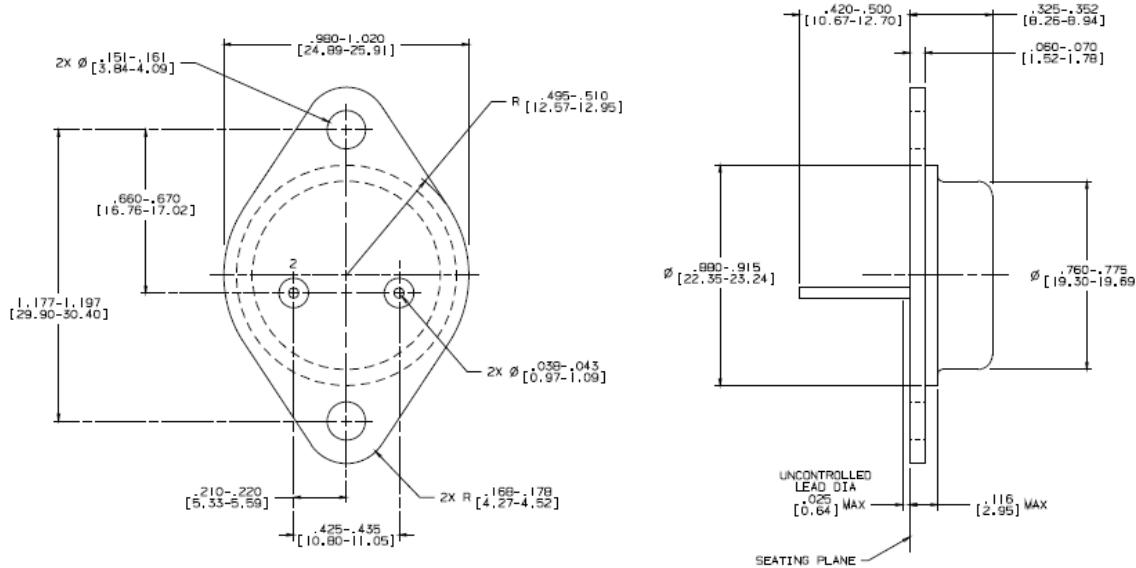
Ratings	Symbol	2N6676	2N6678	Units
Collector - Emitter Voltage	V_{CEO}	300	400	Vdc
Collector - Base Voltage	V_{CBO}/V_{CBX}	450	650	Vdc
Emitter - Base Voltage	V_{EBO}	8		Vdc
Collector Current	I_C	15		Adc
Base Current	I_B	5		Adc
Total Power Dissipation @ $T_A = +25^\circ C^2$ @ $T_A = +25^\circ C$	P_T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

2. Derate linearly @ 34.2 mW / °C for $T_A > 25^\circ C$.

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

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