

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

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

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Parameter	Test Conditions	Symbol	Units	Min.	Max.
Switching Characteristics					
Delay Time	See figure 12 of MIL-PRF-19500/538	T_D	μs	—	0.1
Rise Time		T_R			0.6
Storage Time		T_S			2.5
Fall Time		T_F			0.5
Cross-Over Time		T_C			0.5
Safe Operating Area					
DC Tests: $T_C = +25^\circ\text{C}$, 1 Cycle, $t = 1.0\text{ s}$ (see figure 4 of MIL-PRF-19500/537) Test 1: $V_{CE} = 11.7\text{ Vdc}$, $I_C = 15\text{ Adc}$ Test 2: $V_{CE} = 30\text{ Vdc}$, $I_C = 5.9\text{ Adc}$ Test 3: $V_{CE} = 100\text{ Vdc}$, $I_C = 0.25\text{ Adc}$ Test 4: $V_{CE} = 300\text{ Vdc}$, $I_C = 20\text{ mAdc}$, (for 2N6676) Test 5: $V_{CE} = 400\text{ Vdc}$, $I_C = 10\text{ mAdc}$, (for 2N6678) Clamped Switch: $T_A = +25^\circ\text{C}$, $V_{CC} = 15\text{ Vdc}$ Clamp Voltage = 350; $I_C = 15\text{ Adc}$, (2N6676) Clamp Voltage = 450; $I_C = 15\text{ Adc}$, (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 @ $T_A = +25^\circ\text{C}^2$ @ $T_A = +25^\circ\text{C}$	P_T	6 175		W
Operating & Storage Temperature Range	T_{OP} , T_{STG}	-65 to +200		$^\circ\text{C}$

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

Thermal Characteristics

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

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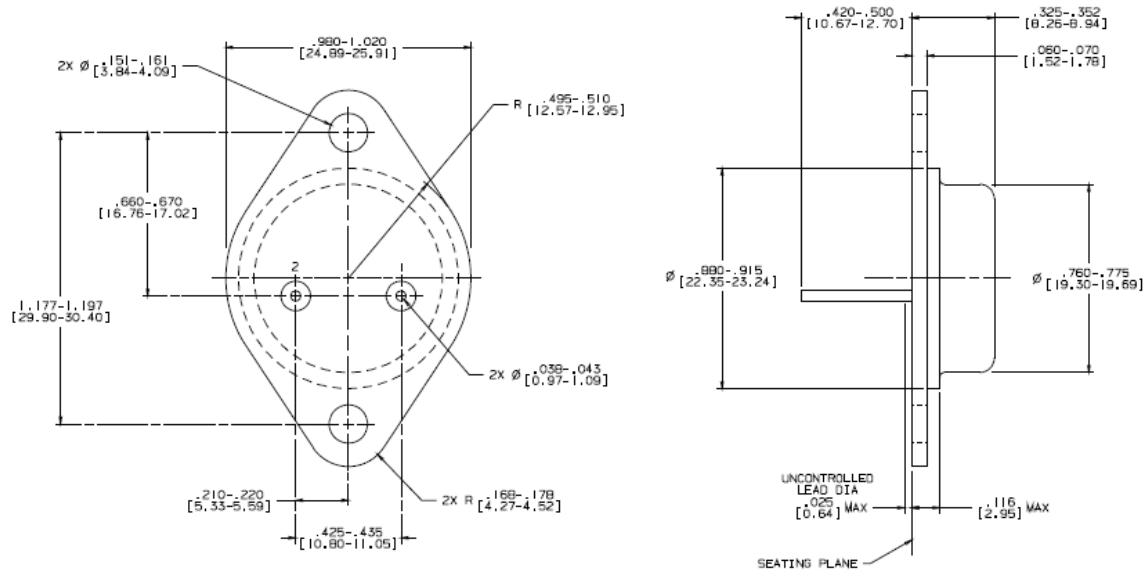
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Outline Drawing



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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