

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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Electrical Characteristics

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°C, 1 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 @ $T_A = +25^\circ C$ @ $T_A = +25^\circ C$	P_T	6 175		W
Operating & Storage Temperature Range	T_{OP}, T_{STG}	-65 to +200		$^\circ C$

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

Thermal Characteristics

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

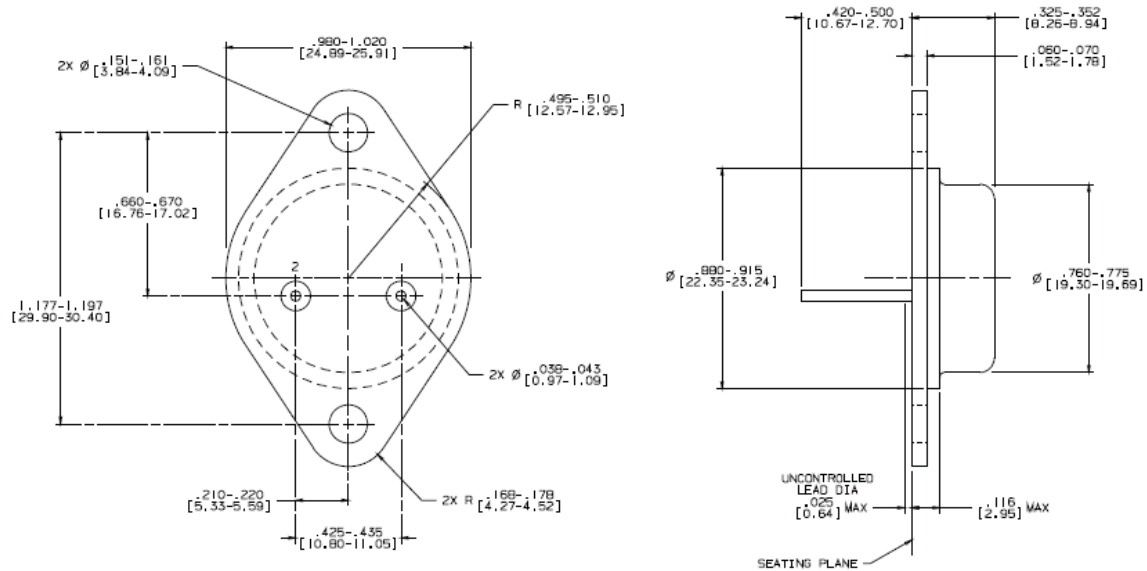
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Outline Drawing



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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