

**2N6676 JAN, JTX, JTXV**  
**2N6678 JAN, JTX, JTXV**  
**2N6691 JAN, JTX, JTXV**  
**2N6693 JAN, JTX, JTXV**

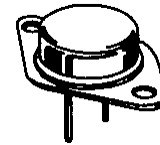


Processed per MIL-PRF-19500/538

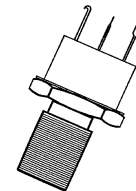
**NPN POWER SWITCHING SILICON TRANSISTOR**

**MAXIMUM RATINGS**

Ratings	Symbol	2N6676 2N6691	2N6678 2N6693	Units
Collector-Emitter Voltage	V <sub>CEO</sub>	300	400	Vdc
Collector-Base Voltage	V <sub>CBO</sub>	450	650	Vdc
Collector-Base Voltage	V <sub>CEX</sub>	450	650	Vdc
Emitter-Base Voltage	V <sub>EBO</sub>	8.0		Vdc
Base Current	I <sub>B</sub>	5.0		Adc
Collector Current	I <sub>C</sub>	15		Adc
		<b>2N6676</b> <b>2N6678</b>	<b>2N6691</b> <b>2N6693</b>	
Total Power Dissipation @ T <sub>A</sub> = 25°C	P <sub>T</sub>	6.0 <sup>(2)</sup>	3.0 <sup>(3)</sup>	W
@ T <sub>C</sub> = 25°C <sup>(1)</sup>		175	175	W
Operating & Storage Junction Temperature Range	T <sub>op</sub> , T <sub>stg</sub>	-65 to +200		°C



2N6676, 2N6678  
TO-3 (TO-204AA)



2N6691, 2N6693  
TO-61

**THERMAL CHARACTERISTICS**

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	R <sub>θJC</sub>	1.0	°C/W

- 1) Derate linearly 1.0 W/°C for T<sub>C</sub> > 25°C
- 2) Derate linearly 34.2 mW/°C for T<sub>A</sub> > 25°C
- 3) Derate linearly 17.1 mW/°C for T<sub>A</sub> > 25°C

**ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)**

Characteristics	Symbol	Min.	Max.	Unit
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**OFF CHARACTERISTICS**

Collector-Emitter Breakdown Voltage I <sub>C</sub> = 200 mAdc	2N6676, 2N6691 2N6678, 2N6693	V <sub>(BR)CEO</sub>	300 400	Vdc
Collector-Emitter Cutoff Current V <sub>CE</sub> = 450 Vdc, V <sub>BE</sub> = 1.5 Vdc V <sub>CE</sub> = 650 Vdc, V <sub>BE</sub> = 1.5 Vdc	2N6676, 2N6691 2N6678, 2N6693	I <sub>CEX</sub>	0.1 0.1	mAdc

2N6676, 2N6678, 2N6691, 2N6693 JAN SERIES

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
Emitter-Base Cutoff Current $V_{EB} = 8.0 \text{ Vdc}$	$I_{EBO}$		2.0	mAdc
Collector-Base Cutoff Current $V_{CB} = 450 \text{ Vdc}$ $V_{CB} = 650 \text{ Vdc}$	$I_{CBO}$	2N6676, 2N6691 2N6678, 2N6693	1.0 1.0	mAdc

**ON CHARACTERISTICS <sup>(4)</sup>**

Forward-Current Transfer Ratio $I_C = 1.0 \text{ Adc}, V_{CE} = 3.0 \text{ Vdc}$ $I_C = 15 \text{ Adc}, V_{CE} = 3.0 \text{ Vdc}$	$h_{FE}$	15 8.0	40 20	
Collector-Emitter Saturation Voltage $I_C = 15 \text{ Adc}, I_B = 3.0 \text{ Adc}$	$V_{CE(sat)}$		1.0	Vdc
Base-Emitter Saturation Voltage $I_C = 15 \text{ Adc}, I_B = 3.0 \text{ Adc}$	$V_{BE(sat)}$		1.5	Vdc

**DYNAMIC CHARACTERISTICS**

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 1.0 \text{ Adc}, V_{CE} = 10 \text{ Vdc}, f = 5.0 \text{ MHz}$	$ h_{fe} $	3.0	10	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	$C_{obo}$	150	500	pF

**SAFE OPERATING AREA**

<b>DC Tests</b> $T_C = +25^{\circ}\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$	
<b>Test 1</b> $V_{CE} = 11.7 \text{ Vdc}, I_C = 15 \text{ Adc}$	All Types
<b>Test 2</b> $V_{CE} = 30 \text{ Vdc}, I_C = 5.9 \text{ Adc}$	2N6676, 2N6678
<b>Test 3</b> $V_{CE} = 100 \text{ Vdc}, I_C = 0.25 \text{ Adc}$	All Types
<b>Test 4</b> $V_{CE} = 25 \text{ Vdc}, I_C = 7.0 \text{ Adc}$	2N6691, 2N6693
<b>Test 5</b> $V_{CE} = 300 \text{ Vdc}, I_C = 20 \text{ mAdc}$ $V_{CE} = 400 \text{ Vdc}, I_C = 10 \text{ mAdc}$	2N6676, 2N6691 2N6678, 2N6693

(4) Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle  $\leq$  2.0%.