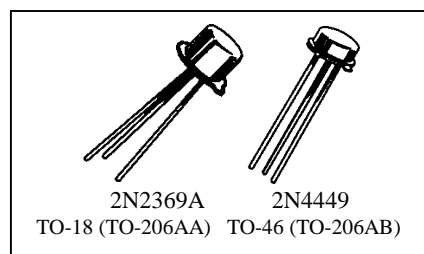


**2N2369A, U, UA, JAN, JTX, JTXV**  
**2N2369AUB JAN, JTX, JTXV**  
**2N4449, U, UA, JAN, JTX, JTXV**  
 Processed per MIL-PRF-19500/317



**NPN SWITCHING SILICON**  
**TRANSISTORS**


**MAXIMUM RATINGS**

Ratings	Symbol	2N2369A	2N4449	All UA	All UB	All U	Unit	
Collector-Emitter Voltage	$V_{CEO}$	15	15	15	20	15	Vdc	
Emitter-Base Voltage	$V_{EBO}$	4.5	4.5	4.5	6.0	4.5	Vdc	
Collector-Base Voltage	$V_{CBO}$	40	40	40	40	40	Vdc	
Collector-Emitter Voltage	$V_{CES}$	40	40	40	40	40	Vdc	
Total Power Dissipation @ $T_A = +25^{\circ}C$ @ $T_C = +25^{\circ}C$	$P_T$	0.50 <sup>(1)</sup>	0.50 <sup>(1)</sup>	0.50 <sup>(5)</sup>	0.40 <sup>(6)</sup>	0.60 <sup>(3)</sup>	W	
		1.2 <sup>(2)</sup>	1.2 <sup>(2)</sup>	1.4 <sup>(7)</sup>	1.3 <sup>(8)</sup>	1.5 <sup>(4)</sup>	W	
Operating & Storage Junction Temperature Range	$T_{op}, T_{stg}$	-65 to +200						$^{\circ}C$

**THERMAL CHARACTERISTICS**

Characteristics	Symbol	2N2369A	2N4449	All UA	All UB	All U	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	146	146	125	135	117	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	325	325	350	437	291	$^{\circ}C/W$

 1) Derate linearly 3.08 mW/ $^{\circ}C$  above  $T_A = +37.5^{\circ}C$ 

 2) Derate linearly 6.85 mW/ $^{\circ}C$  above  $T_C = +25^{\circ}C$ 

 3) Derate linearly 3.44 mW/ $^{\circ}C$  above  $T_A = +63.5^{\circ}C$ 

 4) Derate linearly 8.55 mW/ $^{\circ}C$  above  $T_C = +25^{\circ}C$ 

 5) Derate linearly 2.86 mW/ $^{\circ}C$  above  $T_C = +63.5^{\circ}C$ 

 6) Derate linearly 2.29 mW/ $^{\circ}C$  above  $T_C = +63.5^{\circ}C$ 

 7) Derate linearly 8.00 mW/ $^{\circ}C$  above  $T_C = +63.5^{\circ}C$ 

 8) Derate linearly 7.41 mW/ $^{\circ}C$  above  $T_C = +63.5^{\circ}C$ 
**ELECTRICAL CHARACTERISTICS**

Characteristics	Symbol	Min.	Max.	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Breakdown Voltage $I_C = 10 \text{ mAdc}$	$V_{(BR)CEO}$	15		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 20 \text{ Vdc}$	$I_{CES}$		0.4	$\mu\text{Adc}$
Emitter-Base Breakdown Voltage $V_{EB} = 4.5$ 2N2369A, 2N4449 $V_{EB} = 4.0 \text{ Vdc}$	$I_{EBO}$		10 0.25	$\mu\text{Adc}$
Collector-Base Breakdown Voltage $V_{CB} = 75 \text{ Vdc}$ $V_{CB} = 20 \text{ Vdc}$	$I_{CBO}$		10 0.2	$\mu\text{Adc}$

**2N2369A, AU, AUA, AUB, 2N4449, U, UA, UB JAN SERIES**

**ELECTRICAL CHARACTERISTICS Con't**

Characteristics	Symbol	Min.	Max.	Unit
<b>ON CHARACTERISTICS (1)</b>				
Forward-Current Transfer Ratio I <sub>C</sub> = 10 mAdc, V <sub>CE</sub> = 0.35 Vdc I <sub>C</sub> = 30 mAdc, V <sub>CE</sub> = 0.4 Vdc I <sub>C</sub> = 10 mAdc, V <sub>CE</sub> = 1.0 Vdc I <sub>C</sub> = 100 mAdc, V <sub>CE</sub> = 1.0 Vdc	h <sub>FE</sub>	40 30 40 20	120 120 120 120	
Collector-Emitter Saturation Voltage I <sub>C</sub> = 10 mAdc, I <sub>B</sub> = 1.0 mAdc I <sub>C</sub> = 30 mAdc, I <sub>B</sub> = 3.0 mAdc I <sub>C</sub> = 100 mAdc, I <sub>B</sub> = 10 mAdc	V <sub>CE(sat)</sub>		0.20 0.25 0.45	Vdc
Base-Emitter Saturation Voltage I <sub>C</sub> = 10 mAdc, I <sub>B</sub> = 1.0 mAdc I <sub>C</sub> = 30 mAdc, I <sub>B</sub> = 3.0 mAdc I <sub>C</sub> = 100 mAdc, I <sub>B</sub> = 10 mAdc	V <sub>BE(sat)</sub>	0.70 0.80	0.85 0.90 1.20	Vdc

**DYNAMIC CHARACTERISTICS**

Forward Current Transfer Ratio I <sub>C</sub> = 10 mAdc, V <sub>CE</sub> = 10 Vdc, f = 100 MHz	h <sub>fe</sub>	5.0	10	
Output Capacitance V <sub>CB</sub> = 5.0 Vdc, I <sub>E</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz	C <sub>obo</sub>		4.0	pF
Input Capacitance V <sub>EB</sub> = 0.5 Vdc, I <sub>C</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz	C <sub>ibo</sub>		5.0	pF

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

**SWITCHING CHARACTERISTICS**

Turn-On Time I <sub>C</sub> = 10 mAdc; I <sub>B1</sub> = 3.0 mAdc, I <sub>B2</sub> = 1.5 mAdc	t <sub>on</sub>		12	ns
Turn-Off Time I <sub>C</sub> = 10 mAdc; I <sub>B1</sub> = 3.0 mAdc, I <sub>B2</sub> = 1.5 mAdc	t <sub>off</sub>		18	ns
Charge Storage Time I <sub>C</sub> = 10 mAdc; I <sub>B1</sub> = 10 mAdc, I <sub>B2</sub> = 10 mAdc	t <sub>s</sub>		13	ns