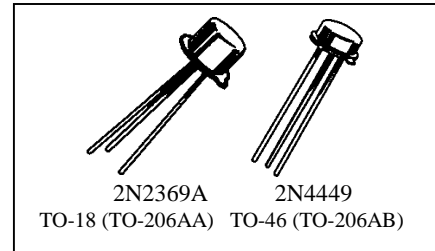


2N2369A, U, UA, JAN, JTX, JTXV
2N2369AUB JAN, JTX, JTXV
2N4449, U, UA, JAN, JTX, JTXV
 Processed per MIL-PRF-19500/317



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 ⁽¹⁾	0.50 ⁽¹⁾	0.50 ⁽⁵⁾	0.40 ⁽⁶⁾	0.60 ⁽³⁾	W	
		1.2 ⁽²⁾	1.2 ⁽²⁾	1.4 ⁽⁷⁾	1.3 ⁽⁸⁾	1.5 ⁽⁴⁾	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
OFF CHARACTERISTICS				
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	μAdc
Emitter-Base Breakdown Voltage $V_{EB} = 4.5$ 2N2369A, 2N4449 $V_{EB} = 4.0 \text{ Vdc}$	I_{EBO}		10 0.25	μAdc
Collector-Base Breakdown Voltage $V_{CB} = 75 \text{ Vdc}$ $V_{CB} = 20 \text{ Vdc}$	I_{CBO}		10 0.2	μAdc

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

ELECTRICAL CHARACTERISTICS Con't

Characteristics	Symbol	Min.	Max.	Unit
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ON CHARACTERISTICS (1)

Forward-Current Transfer Ratio $I_C = 10 \text{ mAdc}, V_{CE} = 0.35 \text{ Vdc}$ $I_C = 30 \text{ mAdc}, V_{CE} = 0.4 \text{ Vdc}$ $I_C = 10 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$ $I_C = 100 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$	h_{FE}	40 30 40 20	120 120 120 120	
Collector-Emitter Saturation Voltage $I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$ $I_C = 30 \text{ mAdc}, I_B = 3.0 \text{ mAdc}$ $I_C = 100 \text{ mAdc}, I_B = 10 \text{ mAdc}$	$V_{CE(sat)}$		0.20 0.25 0.45	Vdc
Base-Emitter Saturation Voltage $I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$ $I_C = 30 \text{ mAdc}, I_B = 3.0 \text{ mAdc}$ $I_C = 100 \text{ mAdc}, I_B = 10 \text{ mAdc}$	$V_{BE(sat)}$	0.70 0.80	0.85 0.90 1.20	Vdc

DYNAMIC CHARACTERISTICS

Forward Current Transfer Ratio $I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 100 \text{ MHz}$	$ h_{fe} $	5.0	10	
Output Capacitance $V_{CB} = 5.0 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}		4.0	pF
Input Capacitance $V_{EB} = 0.5 \text{ Vdc}, I_C = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{ibo}		5.0	pF

(1)Pulse Test: Pulse Width = 300 μ s, Duty Cycle \leq 2.0%.

SWITCHING CHARACTERISTICS

Turn-On Time $I_C = 10 \text{ mAdc}; I_{B1} = 3.0 \text{ mAdc}, I_{B2} = 1.5 \text{ mAdc}$	t_{on}		12	η s
Turn-Off Time $I_C = 10 \text{ mAdc}; I_{B1} = 3.0 \text{ mAdc}, I_{B2} = 1.5 \text{ mAdc}$	t_{off}		18	η s
Charge Storage Time $I_C = 10 \text{ mAdc}; I_{B1} = 10 \text{ mAdc}, I_{B2} = 10 \text{ mAdc}$	t_s		13	η s