

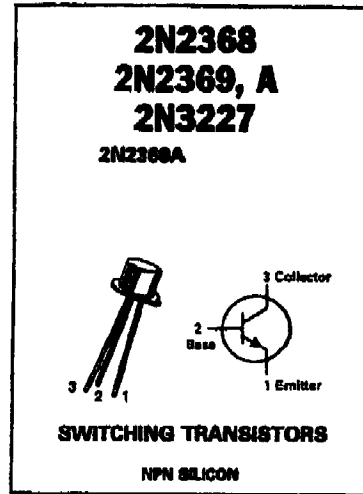
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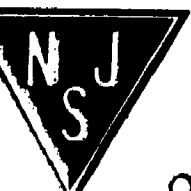
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage 2N2368, 9, A 2N3227	V _{CEO}	15 20	V _{dc}
Collector-Emitter Voltage	V _{CES}	40	V _{dc}
Collector-Base Voltage	V _{CBO}	40	V _{dc}
Emitter-Base Voltage 2N2368, 9, A 2N3227	V _{EB0}	4.5 6.0	V _{dc}
Collector Current (10 μs pulse)	I _{C(Peak)}	500	mA
Collector Current — Continuous 2N2368A, 2N3227	I _C	200	mA
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	0.36 2.06	Watt mW/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C 2N3227	P _D	1.2 6.85	Watts mW/°C
Total Device Dissipation @ T _C = 100°C Derate above 100°C	P _D	.68 6.85	Watts mW/°C
Operating and Storage Junction Temperature Range	T _{J, Tstg}	-55 to +200	°C



ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage(1) (I _C = 10 mA, V _{BE} = 0)	V _{(BR)CEO}	20	—	V _{dc}
Collector-Emitter Breakdown Voltage (I _C = 10 μA, V _{BE} = 0)	V _{(BR)CES}	40	—	V _{dc}
Collector-Emitter Sustaining Voltage(1) (I _C = 10 mA, I _E = 0)	V _{CEO(sust)}	15	—	V _{dc}
Collector-Base Breakdown Voltage (I _C = 10 μA, I _E = 0)	V _{(BR)CBO}	40	—	V _{dc}
Emitter-Base Breakdown Voltage (I _E = 10 μA, I _C = 0)	V _{(BR)EBO}	4.5 6.0	—	V _{dc}
Collector Cutoff Current (V _{CE} = 20 V _{dc} , V _{BE} = 3.0 V _{dc})	I _{CEX}	—	0.2	μA _{dc}
Collector Cutoff Current (V _{CE} = 20 V _{dc} , I _E = 0)	I _{CBO}	—	0.4 0.2	μA _{dc}
(V _{CE} = 20 V _{dc} , I _E = 0, T _A = 150°C)		—	30 50	
Collector Cutoff Current (V _{CE} = 20 V _{dc} , V _{BE} = 0)	I _{CES}	—	0.4	μA _{dc}
Base Current (V _{CE} = 20 V _{dc} , V _{BE} = 0)	I _B	—	0.4	μA _{dc}
ON CHARACTERISTICS				
DC Current Gain(1) (I _C = 10 mA, V _{CE} = 1.0 V _{dc})	h _{FE}	20 40 — 100	60 120 120 300	—
(I _C = 10 mA, V _{CE} = 1.0 V _{dc} , T _A = -55°C)		10 20 40	— — —	
(I _C = 10 mA, V _{CE} = 0.35 V _{dc} , T _A = -55°C)		20	—	
(I _C = 30 mA, V _{CE} = 0.4 V _{dc})		30	—	



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Quality Semi-Conductors

2N2368, 2N2369, A, 2N3227

ELECTRICAL CHARACTERISTICS (continued) ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
$(I_C = 100 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc})$	2N2369A	20	—	
	2N3227	30	—	
$(I_C = 100 \text{ mAdc}, V_{CE} = 2.0 \text{ Vdc})$	2N2368	10	—	
	2N2369	20	—	
Collector-Emitter Saturation Voltage(1) $(I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc})$	2N2368, 2N2369, 2N3227 2N2369A	—	0.25 0.20	Vdc
$(I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}, T_A = +125^\circ\text{C})$ $(I_C = 30 \text{ mAdc}, I_B = 3.0 \text{ mAdc})$	2N2369A	—	0.30	
	2N2368A	—	0.25	
$(I_C = 100 \text{ mAdc}, I_B = 10 \text{ mAdc})$	2N2369A	—	0.50	
	2N3227	—	.45	
Base-Emitter Saturation Voltage(1) $(I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc})$ $(I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}, T_A = +125^\circ\text{C})$ $(I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}, T_A = -55^\circ\text{C})$ $(I_C = 30 \text{ mAdc}, I_B = 3.0 \text{ mAdc})$	All Types 2N2368A 2N2369A 2N2369A	0.70 0.60	0.85 —	Vdc
$(I_C = 100 \text{ mAdc}, I_B = 10 \text{ mAdc})$	2N2368A	—	1.00	
	2N3227	—	1.4	

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product $(I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 100 \text{ MHz})$	2N2368 2N2369, 2N2369A, 2N3227	f_T	400 500	—	MHz
Output Capacitance $(V_{CE} = 5.0 \text{ Vdc}, I_C = 0, f = 140 \text{ kHz})$	All Types	C_{obo}	—	4.0	pF
Input Capacitance $(V_{BE} = 1.0 \text{ Vdc}, I_C = 0, f = 140 \text{ kHz})$	2N3227	C_{ibo}	—	4.0	pF

SWITCHING CHARACTERISTICS

Delay Time	$(V_{CC} = 10 \text{ V}, V_{BE} = 2.0 \text{ Vdc}, 100 \text{ mA}, I_{B1} = 10 \text{ mA})$	2N3227	t_d	—	8.0	ns
Rise Time			t_r	—	18	ns
Storage Time $(I_C = I_{B1} = 10 \text{ mAdc}, I_{B2} = -10 \text{ mAdc})$ $(I_C = 100 \text{ mAdc}, I_{B1} = I_{B2} = 10 \text{ mAdc}, V_{CC} = 10 \text{ V})$	All Types	2N2368 2N2369A 2N3227	t_s	—	10 13 13	ns
Fall Time $(V_{CC} = 10 \text{ V}, I_C = 100 \text{ mA}, I_{B1} = I_{B2} = 10 \text{ mA})$			t_f	—	18	ns
Turn-On Time $(I_C = 10 \text{ mAdc}, I_{B1} = 3.0 \text{ mA}, I_{B2} = -1.5 \text{ mA}, V_{CC} = 3.0 \text{ Vdc})$			t_{on}	—	12	ns
Turn-Off Time $(I_C = 10 \text{ mAdc}, I_{B1} = 3.0 \text{ mA}, I_{B2} = -1.5 \text{ mA}, V_{CC} = 3.0 \text{ Vdc})$	All Types	2N2368 2N2369, 2N2369A, 2N3227	t_{off}	—	—	ns
Total Control Charge $(I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}, V_{CC} = 3.0 \text{ V})$			—	—	—	pC
			—	—	18	
			—	—	18	
	2N3227	Q_T	—	50	pC	

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