

NPN SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/312

Devices

2N708

Qualified Level

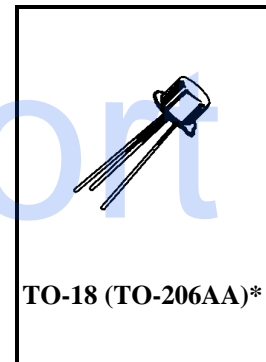
JAN, JANTX

MAXIMUM RATINGS

Ratings	Symbol	Value	Units
Collector-Emitter Voltage	V_{CEO}	15	Vdc
Collector-Base Voltage	V_{CBO}	40	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector-Emitter Voltage	V_{CER}	20	Vdc
Total Power Dissipation	P_T	@ $T_A = +25^{\circ}\text{C}$ (1)	0.36
		@ $T_C = +25^{\circ}\text{C}$ (2)	1.2
Operating & Storage Junction Temperature Range	T_{op}, T_{stg}	-65 to +200	$^{\circ}\text{C}$

1) Derate linearly 2.06 mW/ $^{\circ}\text{C}$ for $T_A > 25^{\circ}\text{C}$

2) Derate linearly 6.90 mW/ $^{\circ}\text{C}$ for $T_C > 25^{\circ}\text{C}$



*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Base Breakdown Voltage $I_C = 1.0 \mu\text{A}$	$V_{(BR)CBO}$	40		Vdc
Emitter-Base Breakdown Voltage $I_E = 10 \mu\text{A}$	$V_{(BR)EBO}$	5.0		Vdc
Collector-Emitter Breakdown Voltage $I_C = 10 \text{mA}$	$V_{(BR)CEO}$	15		Vdc
Collector-Emitter Breakdown Voltage $I_C = 10 \text{mA}$, $R_{BE} \leq 10 \Omega$	$V_{(BR)CER}$	20		Vdc
Collector-Base Cutoff Current $V_{CB} = 20 \text{Vdc}$	I_{CBO}		25	ηA
Emitter-Base Cutoff Current $V_{EB} = 4.0 \text{Vdc}$	I_{EBO}		80	ηA

2N708 JANTX SERIES

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
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ON CHARACTERISTICS ⁽³⁾

Forward-Current Transfer Ratio $I_C = 0.5 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$ $I_C = 10 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$	h_{FE}	15 40	120	
Collector-Emitter Saturation Voltage $I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$	$V_{CE(sat)}$		0.40	Vdc
Base-Emitter Voltage $I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$ $I_C = 1.0 \text{ mAdc}, I_B = 0.1 \text{ mAdc}$	$V_{BE(sat)}$	0.72	0.80 0.72	Vdc

DYNAMIC CHARACTERISTICS

Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 100 \text{ MHz}$	$ h_{fe} $	3.0	9.0	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 1.0 \text{ MHz}$	C_{obo}		6.0	p^f
Input Capacitance $V_{EB} = 0.5 \text{ Vdc}, I_C = 0, f = 1.0 \text{ MHz}$	C_{ibo}		9.0	p^f

SWITCHING CHARACTERISTICS

Charge Storage Time $I_C = I_{B1} = -I_{B2} = 10 \text{ mAdc}$	t_s		25	ηs
Turn-On Time $V_{BE} \approx -2.0 \text{ Vdc}; I_C \approx 10 \text{ mAdc}; I_{B1} \approx 3.0 \text{ mAdc}$	t_{on}		40	ηs
Turn-Off Time $I_C \approx 10 \text{ mAdc}; I_{B1} \approx 3.0 \text{ mAdc}, I_{B2} \approx -1.0 \text{ mAdc}$	t_{off}		75	ηs

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