

2N708

JAN, JTX AVAILABLE
CASE 22, STYLE 1
TO-18 (TO-206AA)

SWITCHING TRANSISTOR

NPN SILICON

Refer to 2N2368 for graphs.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	15	Vdc
Collector-Emitter Voltage	V_{CER}	20	Vdc
Collector-Base Voltage	V_{CBO}	40	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current — Continuous	I_C	limited by P_D only	
Total Device Dissipation (α $T_A = 25^\circ\text{C}$ Derate above 25°C)	P_D	360 2.1	mW mW/ $^\circ\text{C}$
Total Device Dissipation (α $T_C = 25^\circ\text{C}$ Derate above 25°C Derate above 100°C)	P_D	1.2 680 6.9 6.9	Watts mW mW/ $^\circ\text{C}$ mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	145	$^\circ\text{C/W}$

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ($I_C = 30 \text{ mAdc}, R_{BE} \leq 10 \text{ ohms}$)	$V_{CER(sus)}$	20	—	Vdc
Collector-Emitter Sustaining Voltage ($I_C = 30 \text{ mAdc}, I_B = 0$)	$V_{CEO(sus)}$	15	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 1.0 \mu\text{Adc}, I_E = 0$)	$V_{(BR)CBO}$	40	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}, I_C = 0$)	$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current ($V_{CE} = 20 \text{ Vdc}, V_{BE} = 0.25 \text{ Vdc}, T_A = +125^\circ\text{C}$)	I_{CEX}	—	10	μAdc
Collector Cutoff Current ($V_{CB} = 20 \text{ Vdc}, I_E = 0$ $(V_{CB} = 20 \text{ Vdc}, I_C = 0, T_A = 150^\circ\text{C})$)	I_{CBO}	—	0.025 15	μAdc
Emitter Cutoff Current ($V_{BE} = 4.0 \text{ Vdc}, I_C = 0$)	I_{EBO}	—	0.08	μAdc
ON CHARACTERISTICS				
DC Current Gain ($I_C = 0.5 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 10 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$)(1) ($I_C = 10 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}, T_A = -55^\circ\text{C}$)(1)	h_{FE}	15 30 15	— 120 —	—
Collector-Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$) ($I_C = 7.0 \text{ mAdc}, I_B = 0.7 \text{ mAdc}, T_A = -55^\circ\text{C}$ to $+125^\circ\text{C}$)	$V_{CE(sat)}$	— —	0.4 0.4	Vdc
Base-Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}, I_B = 1.0 \text{ mAdc}$) ($I_C = 7.0 \text{ mAdc}, I_B = 0.7 \text{ mAdc}, T_A = -55^\circ\text{C}$)	$V_{BE(sat)}$	0.72 —	0.80 0.90	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product ($I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 100 \text{ MHz}$)	f_T	300	—	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$)	C_{obo}	—	6.0	pF
Extrinsic Base Resistance ($I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 300 \text{ MHz}$)	r_b'	—	50	ohms
SWITCHING CHARACTERISTICS				
Storage Time ($I_C = I_{B1} = I_{B2} = 10 \text{ mAdc}$)	t_s	—	25	ns
Turn-On Time	t_{on}	—	40	ns
Turn-Off Time	t_{off}	—	70	ns