

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CE0}	15	Vdc
Collector-Emitter Voltage(1)	V_{CER}	20	Volts
Collector-Base Voltage	V_{CBO}	25	Volts
Emitter-Base Voltage	V_{EBO}	3.0 5.0 5.0	Volts
Collector Current	I_C	50	mA
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	0.3 2.0	Watt mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0 6.67	Watts mW/°C
Total Device Dissipation @ $T_C = 100^\circ\text{C}$ Derate above 100°C	P_D	0.5	Watt
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

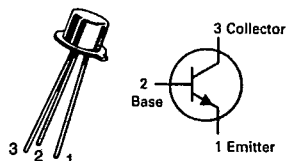
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	150	°C/W
Thermal Resistance, Junction to Ambient 2N706A,B	$R_{\theta JA}$	500	°C/W

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage(2) ($I_C = 10\text{ mAdc}$, $I_B = 0$)	$V_{(BR)CEO}$	15	—	Vdc
Collector-Emitter Breakdown Voltage(2) ($R = 10\text{ ohms}$, $I_C = 10\text{ mAdc}$)	$V_{(BR)CER}$	20	—	Vdc
Collector Cutoff Current ($V_{CB} = 15\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 15\text{ Vdc}$, $I_E = 0$, $T_A = 150^\circ\text{C}$) ($V_{CB} = 25\text{ Vdc}$, $I_E = 0$)	I_{CBO}	— — —	0.5 30 10	μAdc
Collector Cutoff Current ($V_{CE} = 20\text{ Vdc}$, $R_{BE} = 100k$)	I_{CER}	—	10	μAdc
Emitter Cutoff Current ($V_{EB} = 3.0\text{ Vdc}$, $I_C = 0$) ($V_{EB} = 5.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	— —	10 10	μAdc
ON CHARACTERISTICS				
DC Current Gain(2) ($I_C = 10\text{ mAdc}$, $V_{CE} = 1.0\text{ Vdc}$)	h_{FE}	20 20	— 60	—
Collector-Emitter Saturation Voltage(2) ($I_C = 10\text{ mAdc}$, $I_B = 1.0\text{ mAdc}$)	$V_{CE(sat)}$	— —	0.6 0.4	Vdc
Base-Emitter Saturation Voltage(2) ($I_C = 10\text{ mAdc}$, $I_B = 1.0\text{ mAdc}$)	$V_{BE(sat)}$	— 0.7	0.9 0.9	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product ($V_{CE} = 15\text{ Vdc}$, $I_E = 10\text{ mAdc}$, $f = 100\text{ MHz}$)	f_T	200	—	MHz
Output Capacitance ($V_{CB} = 5.0\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$)	C_{obo}	— —	5.0 6.0	pF
Magnitude of Forward Current Transfer Ratio, Common-Emitter ($V_{CE} = 15\text{ Vdc}$, $I_E = 10\text{ mAdc}$, $f = 100\text{ Mhz}$) ($V_{CE} = 10\text{ Vdc}$, $I_E = 10\text{ mAdc}$, $f = 100\text{ MHz}$)	$ h_{fe} $	2.0 2.0	— —	—

2N706, A, B

(2N706 JAN AVAILABLE)
CASE 22-03, STYLE 1
TO-18 (TO-206AA)



SWITCHING TRANSISTORS

NPN SILICON

Refer to 2N2368 for graphs.

T-35-15

3

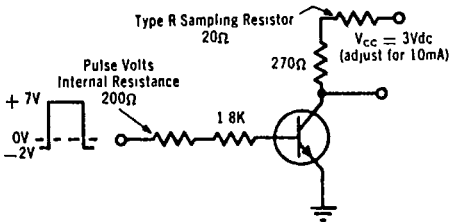
ELECTRICAL CHARACTERISTICS (continued) (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
Collector Base Time Constant (V _{CE} = 15 Vdc, I _E = 10 mAdc, f = 300 MHz)	r _b	—	50	ohms
Storage Time 2N706B	t _s	—	25	ns
Turn-On Time (I _{B1} = 3.0 mA, I _{B2} = 1.0 mA)	t _{on}	—	40	ns
Turn-Off Time (I _{B1} = 3.0 mA, I _{B2} = 1.0 mA)	t _{off}	—	75	ns
Charge Storage Time Constant(2) 2N706 2N706A,B	τ _s	— —	60 25	ns

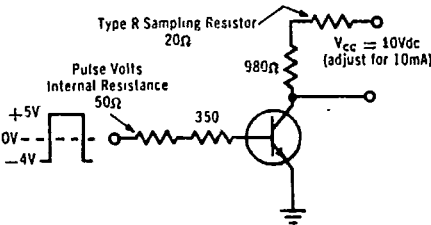
(1) Refers to collector breakdown voltage in the high current region when R_{BE} = 10 Ω
(2) Pulse Test: Pulse Width ≤ 12 μs, Duty Cycle ≤ 2.0%.
(3) Switching Times Measured with Tektronix Type R Plug-In (50 Ω Internal Impedance).

3

SWITCHING TIME TEST CIRCUIT



STORAGE TIME TEST CIRCUIT



MEASUREMENT CIRCUIT

