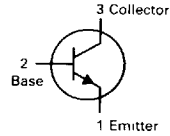
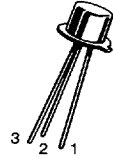
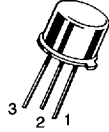


**MAXIMUM RATINGS**

Rating	Symbol	2N718A 2N956	2N1711	Unit
Collector-Emitter Voltage	$V_{CE}$	50		Vdc
Collector-Base Voltage	$V_{CBO}$	75		Vdc
Emitter-Base Voltage	$V_{EBO}$	7.0		Vdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	500 2.86	800 4.57	mW mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.8 10.3	3.0 17.15	Watts mW/°C
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200		°C

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	2N718A 2N956	2N1711	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	350	58	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	97	219	°C/W

**2N718A  
2N956**
**CASE 22-03, STYLE 1  
TO-18 (TO-206AA)**

**2N1711**  
**CASE 79-04, STYLE 1  
TO-39 (TO-205AD)**

**GENERAL PURPOSE  
TRANSISTORS**
**NPN SILICON**

Refer to 2N3019 for graphs.

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

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector-Emitter Breakdown Voltage ( $I_C = 100 \text{ mAdc}$ , pulsed; $R_{BE} \leq 10 \text{ ohms}$ )(1)	$V_{CE(sus)}$	50	—	—	Vdc
Collector-Base Breakdown Voltage ( $I_C = 100 \mu\text{Adc}$ , $I_E = 0$ )	$V_{(BR)CBO}$	75	—	—	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 100 \mu\text{Adc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	7.0	—	—	Vdc
Collector Cutoff Current ( $V_{CB} = 60 \text{ Vdc}$ , $I_E = 0$ ) ( $V_{CB} = 60 \text{ Vdc}$ , $I_E = 0$ , $T_A = 150^\circ\text{C}$ )	$I_{CBO}$	—	0.001	0.01 10	$\mu\text{Adc}$
Emitter Cutoff Current ( $V_{EB} = 5.0 \text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$	—	—	0.010 0.005	$\mu\text{Adc}$
					2N718A, 2N956, 2N1711

**ON CHARACTERISTICS**

DC Current Gain ( $I_C = 0.01 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ )		2N956, 2N1711	$h_{FE}$	20	—	—	—
( $I_C = 0.1 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ )		2N718A, 2N956, 2N1711		20 35	—	—	—
( $I_C = 10 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ )		2N718A, 2N956, 2N1711		35 75	—	—	—
( $I_C = 10 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ , $T_A = -55^\circ\text{C}$ )		2N718A, 2N956, 2N1711		20 35	—	—	—
( $I_C = 150 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ )(1)		2N718A, 2N956, 2N1711		40 100	—	120 300	—
( $I_C = 500 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ )(1)		2N718A, 2N956, 2N1711		20 40	—	—	—
Collector-Emitter Saturation Voltage(1) ( $I_C = 150 \text{ mAdc}$ , $I_B = 15 \text{ mAdc}$ )	$V_{CE(sat)}$			—	0.24	1.5	Vdc
Base-Emitter Saturation Voltage(1) ( $I_C = 150 \text{ mAdc}$ , $I_B = 15 \text{ mAdc}$ )	$V_{BE(sat)}$			—	1.0	1.3	Vdc

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

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**2N718A, 2N956, 2N1711**ELECTRICAL CHARACTERISTICS (continued) ( $T_A = 25^\circ\text{C}$  unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>SMALL-SIGNAL CHARACTERISTICS</b>					
Current-Gain — Bandwidth Product ( $I_C = 50 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ , $f = 20 \text{ MHz}$ )	$f_T$	60 70	300 300	—	MHz
Output Capacitance ( $V_{CB} = 10 \text{ Vdc}$ , $I_E = 0$ , $f = 1 \text{ MHz}$ )	$C_{obo}$	—	4.0	25	pF
Input Capacitance ( $V_{EB} = 0.5 \text{ Vdc}$ , $I_C = 0$ , $f = 1 \text{ MHz}$ )	$C_{ibo}$	—	20	80	pF
Input Impedance ( $I_C = 1.0 \text{ mAdc}$ , $V_{CB} = 5.0 \text{ Vdc}$ , $f = 1.0 \text{ kHz}$ ) ( $I_C = 5.0 \text{ mAdc}$ , $V_{CB} = 10 \text{ Vdc}$ , $f = 1.0 \text{ kHz}$ )	$h_{ib}$	24 4.0	— —	34 8.0	ohms
Voltage Feedback Ratio ( $I_C = 1.0 \text{ mAdc}$ , $V_{CB} = 5.0 \text{ Vdc}$ , $f = 1.0 \text{ kHz}$ ) ( $I_C = 5.0 \text{ mAdc}$ , $V_{CB} = 10 \text{ Vdc}$ , $f = 1.0 \text{ kHz}$ )	$h_{rb}$	— —	— —	3.0 5.0	$\times 10^{-4}$
Small-Signal Current Gain ( $I_C = 1.0 \text{ mAdc}$ , $V_{CE} = 5.0 \text{ Vdc}$ , $f = 1.0 \text{ kHz}$ ) ( $I_C = 5.0 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ , $f = 1.0 \text{ kHz}$ )	$h_{fe}$	30 50	— —	100 200	—
Output Admittance ( $I_C = 1.0 \text{ mAdc}$ , $V_{CB} = 5.0 \text{ Vdc}$ , $f = 1.0 \text{ kHz}$ ) ( $I_C = 5.0 \text{ mAdc}$ , $V_{CB} = 10 \text{ Vdc}$ , $f = 1.0 \text{ kHz}$ )	$h_{ob}$	0.05 0.05	— —	0.5 0.5	$\mu\text{mhos}$
Noise Figure ( $I_C = 300 \mu\text{A}$ , $V_{CE} = 10 \text{ Vdc}$ , $f = 1.0 \text{ kHz}$ )	NF	— —	— —	12 8.0	dB

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