

SEMICONDUCTOR TECHNICAL DATA

**2N2906,
2N2906A,
2N2907,
2N2907A.**

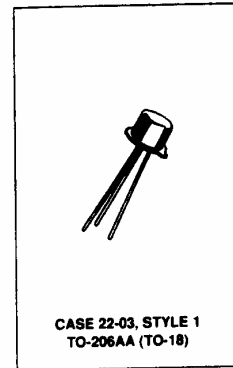
CRYSTALONCS
2805 Veterans Highway
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PNP Silicon Small-Signal Transistors

... designed for high-speed switching and DC to VHF amplifier applications.

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MAXIMUM RATINGS				
Rating	Symbol	2N2906 2N2907	2N2906A 2N2907A	Unit
Collector-Emitter Voltage	V _{CEO}	40	60	V _{dc}
Collector-Base Voltage	V _{CBO}	60		V _{dc}
Emitter-Base Voltage	V _{EBO}	5.0		V _{dc}
Collector Current — Continuous	I _C	600		mAdc
Total Device Dissipation	P _T			Watts
@ T _A = 25°C		0.4		mW/°C
Derate above 25°C		2.28		Watts
@ T _C = 25°C		1.8		mW/°C
Derate above 25°C		10.3		
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-65 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 mAdc, I _E = 0)	V _{(BR)CEO}	40 60	—	V _{dc}	
Collector-Base Breakdown Voltage (I _E = 10 μAdc)	V _{(BR)CBO}	60	—	V _{dc}	
Emitter-Base Breakdown Voltage (I _E = 10 μAdc)	V _{(BR)EBO}	5.0	—	V _{dc}	
Collector Cutoff Current (V _{CB} = 50 Vdc)	I _{CBO}	—	0.02 0.01	μAdc	
(V _{CB} = 50 Vdc, T _A = 150°C)		—	20 10		
Emitter Cutoff Current (V _{EB} = 3.5 Vdc, I _C = 0)	I _{EBO}	—	0.05	μAdc	

(1) Pulsed: Pulse Width 250 to 350 μs, Duty Cycle 1.0 to 2.0%

Continued

2N2906JAN, 2N2907JAN SERIES

ELECTRICAL CHARACTERISTICS — continued (T _A = 25°C unless otherwise noted.)					
Characteristic	Symbol	Min	Max	Unit	
ON CHARACTERISTICS					
DC Current Gain ⁽¹⁾ (I _C = 0.1 mA _{dc} , V _{CE} = 10 V _{dc})	2N2906 2N2907 2N2906A 2N2907A	h _{FE}	20 35 40 75	— — — —	—
(I _C = 1.0 mA _{dc} , V _{CE} = 10 V _{dc})	2N2906 2N2907 2N2906A 2N2907A		25 50 40 100	175 450 175 450	
(I _C = 10 mA _{dc} , V _{CE} = 10 V _{dc})	2N2906 2N2907 2N2906A 2N2907A		35 75 40 100	— — — —	
(I _C = 150 mA _{dc} , V _{CE} = 10 V _{dc})	2N2906, 2N2906A 2N2907, 2N2907A		40 100	120 300	
(I _C = 500 mA _{dc} , V _{CE} = 10 V _{dc})	2N2906 2N2907 2N2906A 2N2907A		20 30 40 50	— — — —	
(I _C = 1.0 mA _{dc} , V _{CE} = 10 V _{dc} , T _A = -55°C)	2N2906 2N2907 2N2906A 2N2907A		15 30 20 50	— — — —	
Collector-Emitter Saturation Voltage ⁽¹⁾ (I _C = 150 mA _{dc} , I _B = 15 mA _{dc}) (I _C = 500 mA _{dc} , I _B = 50 mA _{dc})	V _{CE(sat)}	— —	0.4 1.6	V _{dc}	
Base-Emitter Saturation Voltage ⁽¹⁾ (I _C = 150 mA _{dc} , I _B = 15 mA _{dc}) (I _C = 500 mA _{dc} , I _B = 50 mA _{dc})	V _{BE(sat)}	— —	1.3 2.6	V _{dc}	
SMALL-SIGNAL CHARACTERISTICS					
Output Capacitance (V _{CB} = 10 V _{dc} , f = 0.1 to 1.0 MHz)	C _{obo}	—	8.0	pF	
Input Capacitance (V _{EB} = 2.0 V _{dc} , f = 0.1 to 1.0 MHz)	C _{ibo}	—	30	pF	
Current Gain (I _C = 1.0 mA _{dc} , V _{CE} = 10 V _{dc} , f = 1.0 kHz)	2N2906 2N2907 2N2906A 2N2907A	h _{fe}	25 50 40 100	— — — —	—
Small-Signal Current Transfer Ratio, Magnitude (I _C = 50 mA _{dc} , V _{CE} = 20 V _{dc} , f = 100 MHz)	h _{fe}	2.0	—	—	
SWITCHING CHARACTERISTICS (See Figure 31)					
Turn-On Time	t _{d(on)}	—	45	ns	
Turn-Off Time	t _{d(off)}	—	300	ns	

⁽¹⁾ Pulsed. Pulse Width 250 to 350 μs. Duty Cycle 10 to 20%.

ASSURANCE TESTING (Pre/Post Burn-In)

Burn-In Conditions: T_A = 25 ± 3°C, V_{CB} = 30 V_{dc}, 10 V_{dc} for JANS
P_T = 400 mW

Characteristics Tested	Symbol	Initial and End Point Limits		Unit
		Min	Max	
Collector Cutoff Current (V _{CB} = 50 V _{dc})	I _{CBO}	—	0.02 0.01	μA _{dc}
DC Current Gain ⁽¹⁾ (I _C = 150 mA _{dc} , V _{CE} = 10 V _{dc})	h _{FE}	40 100	120 300	—

Delta from Pre-Burn-In Measured Values		Min	Max	Unit
Delta Collector Cutoff Current	ΔI _{CBO}	—	±100 or ±50 whichever is greater	% of Initial Value nA _{dc}
Delta DC Current Gain ⁽¹⁾	Δh _{FE}	—	±15	% of Initial Value

⁽¹⁾ Pulsed. Pulse Width 250 to 350 μs. Duty Cycle 10 to 20%.