BC107
BC108
BC109

CASE 22-03, STYLE 1
TO-18 (TO-206AA)

TRANSISTOR

NPN SILICON

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MAXIMUM RATINGS

Rating	Symbol	BC 107	BC 108	BC 109	Unit
Collector-Emitter Voltage	V_{CEO}	45	25	25	Vdc
Collector-Base Voltage	V_{CBO}	50	30	30	Vdc
Emitter-Base Voltage	V_{EBO}	6	5	5	Vdc
Collector Current – Continuous	I_C	0.2			Amp
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	0.6 2.28			Watt mW/°C
Total Device Dissipation @ T_C = 25°C T_C = 100°C Derate above 25°C	P_D	1 6.67			Watt mW/°C
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	$R_{\theta JC}$	175	°C/W

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector Base Leakage Current		I_{CBO}				
(I_E = 0, V_{CB} = 45 V)	BC107				15	nA
(I_E = 0, V_{CB} = 45 V, T_{Amb} = 125°C)	BC107				4	µA
(I_E = 0, V_{CB} = 25 V)	BC108/109				15	nA
(I_E = 0, V_{CB} = 25 V, T_{Amb} = 125°C)	BC108/109				4	µA
Emitter Base Breakdown Voltage		$V_{(BR)EBO}$				V
(I_E = 10 µA, I_C = 0)	BC107		6			
	BC108/109		5			
Collector Emitter Breakdown Voltage		$V_{(BR)CEO}$				V
(I_C = 2 mA, I_E = 0)	BC107		45			
	BC108/109		25			
ON CHARACTERISTICS						
DC Current gain		h_{FE}				
(V_{CE} = 5 V, I_C = 2 mA)	BC107		110		450	
	BC108		110		800	
	BC109		200		800	
	A group		110		220	
	B group		200		450	
	C group		420		800	
(V_{CE} = 5 V, I_C = 10 µA)	B group		40			
	C group		100			
Base Emitter Saturation Voltage		$V_{BE(sat)}$				V
(I_C = 10 mA, I_B = 0.5 mA)				0.7	0.83	
(I_C = 100 mA, I_B = 5 mA)				1.0	1.05	
Collector Emitter Saturation Voltage		$V_{CE(sat)}$				V
(I_C = 10 mA, I_B = 0.5 mA)					0.25	
(I_C = 100 mA, I_B = 5 mA)					0.60	
Base Emitter on Voltage		$V_{BE(on)}$				V
(I_C = 2 mA, V_{CE} = 5 V)			0.55		0.70	
(I_C = 10 mA, V_{CE} = 5 V)					0.77	
Collector Knee Voltage		$V_{CE(K)}$				V
(I_C = 10 mA, I_B = the value for which I_C = 11 mA at V_{CE} = 1 V)				0.4	0.6	
DYNAMIC CHARACTERISTICS						
Transition Frequency		f_T				MHz
(I_C = 10 mA, f = 100 MHz, V_{CE} = 5 V)			150	300		
Noise Figure		NF				dB
(V_{CE} = 5 V, I_C = 0.2 mA, R_g = 2 KΩ)						
F = 30 Hz to 15 kHz	BC109				4	
F = 1 kHz, ΔF = 200 Hz	BC109				4	
	BC107/108				10	

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

Characteristic		Symbol	Min	Typ	Max	Unit
Output Capacitance (V_{CB} = 10 V, f = 1 MHz)		C_{obo}			4.5	pF
h_{21e} Parameters (V_{CE} = 5 V, I_C = 2 mA, f = 1 kHz)	BC107/108	h_{21e}	125		500	
	BC109		240		900	
	A group		125		260	
	B group		240		500	
	C group		450		900	
h_{11e} Parameters (V_{CE} = 5 V, I_C = 2 mA, f = 1 kHz)	A group	h_{11e}	1.6		4.5	KΩ
	B group		3.2		8.5	
	C group		6.0		15	
h_{22e} Parameters (V_{CE} = 5 V, I_C = 2 mA, f = 1 kHz)	A group	h_{22e}			30	μhos
	B group				60	
	C group				110	

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FIGURE 1 – EMITTER-BASE CAPACITANCE COLLECTOR-BASE CAPACITANCE

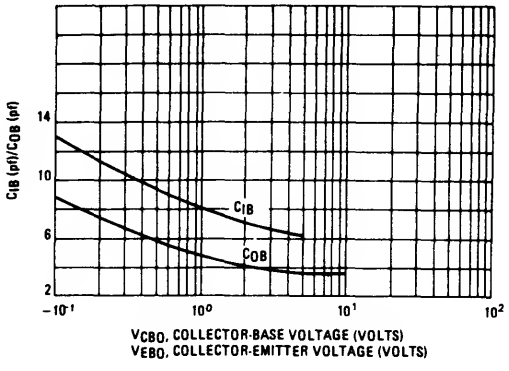

FIGURE 2 – CURRENT GAIN – BANDWIDTH PRODUCT

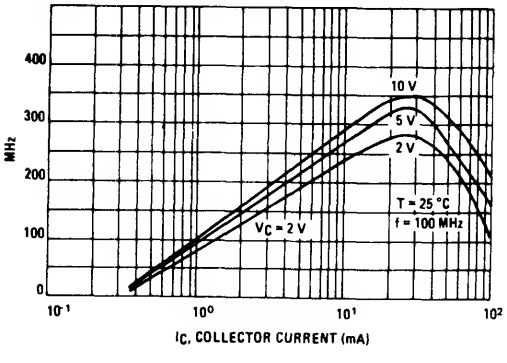

FIGURE 3 – TOTAL PERMISSIBLE POWER DISSIPATION