

BC107/BC108/ BC109

Low Power Bipolar Transistors



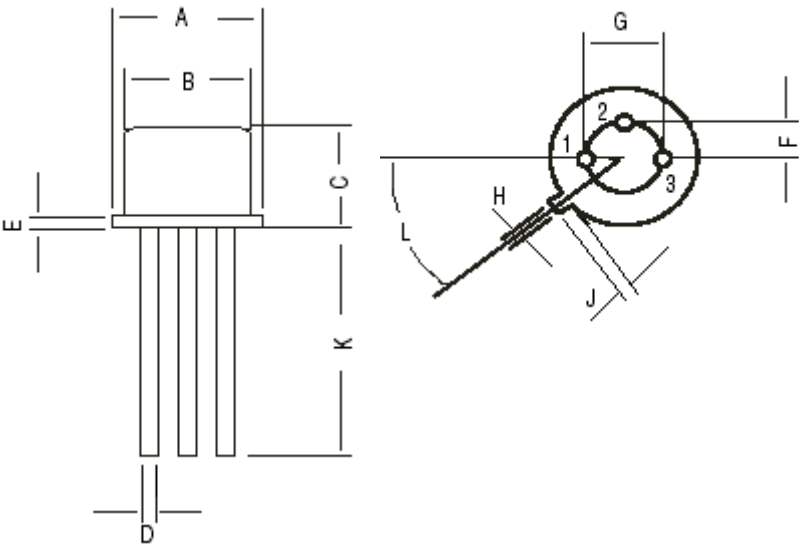
TO-18



Features:

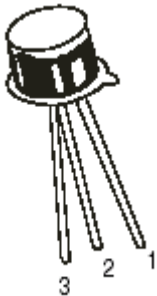
NPN Silicon Planar Epitaxial Transistors.
Suitable for applications requiring low noise and good h_{FE} linearity, eg. audio pre-amplifiers, and instrumentation.

TO-18 Metal Can Package



Dimension	Minimum	Maximum
A	5.24	5.84
B	4.52	4.97
C	4.31	5.33
D	0.40	0.53
E	-	0.76
F	-	1.27
G	-	2.97
H	0.91	1.17
J	0.71	1.21
K	12.70	-
L	45°	

Dimensions : Millimetres



Pin Configuration

- 1. Emitter.
- 2. Base.
- 3. Collector.



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Absolute Maximum Ratings

DESCRIPTION	SYMBOL	BC107	BC108	BC109	UNIT
Collector-Emitter Voltage	V_{CEO}	45	25	25	V
Collector-Base Voltage	V_{CBO}	50	30	30	V
Emitter-Base Voltage	V_{EBO}	6.0	5.0	5.0	V
Collector Current Continuous	I_C		0.2		A
Power Dissipation at $T_a = 25^\circ\text{C}$	P_D		0.6		W
Derate Above 25°C			2.28		mW/ $^\circ\text{C}$
Power Dissipation at $T_c = 25^\circ\text{C}$	P_D		1.0		W
Derate Above 25°C			6.67		mW/ $^\circ\text{C}$
Operating And Storage Junction	T_j, T_{stg}		-65 to +200		$^\circ\text{C}$
Temperature Range					
Thermal Resistance					
Junction to Case	$R_{th(j-c)}$		175		$^\circ\text{C/W}$

Electrical Characteristics ($T_a = 25^\circ\text{C}$ Unless Otherwise Specified)

Description	Symbol	Test Condition	Minimum	Maximum	Unit
Collector-Emitter Voltage	V_{CEO}	$I_C = 2\text{mA}, I_B = 0$	BC107	45	V
			BC108/109	20	V
Emitter-Base Voltage	V_{EBO}	$I_E = 10\mu\text{A}, I_C = 0$	BC107	6.0	V
			BC108/109	5.0	V
Collector-Cut off Current	I_{CBO}	$V_{CB} = 45\text{V}, I_E = 0$	BC107	15	nA
		$V_{CB} = 25\text{V}, I_E = 0$	BC108/109	15	nA
		$T_{amb} = 125^\circ\text{C}$			
		$V_{CB} = 45\text{V}, I_E = 0$	BC107	4.0	μA
		$V_{CB} = 25\text{V}, I_E = 0$	BC108/109	4.0	μA

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Description	Symbol	Test Condition	Minimum	Maximum	Unit
DC Current	h_{FE}	$I_C = 10\mu A, V_{CE} = 5V$	B Group	40	
			C Group	100	
		$I_C = 2mA, V_{CE} = 5V$	BC107	110	450
			BC108	110	800
			BC109	200	800
			A Group	110	220
			B Group	200	450
			C Group	420	800
Base Emitter Saturation Voltage	$V_{BE (Sat)}$	$I_C = 10mA, I_B = 0.5mA$		0.83	V
		$I_C = 100mA, I_B = 5mA$		1.05	V
Collector Emitter Saturation Voltage	$V_{CE (Sat)}$	$I_C = 10mA, I_B = 0.5mA$		0.25	V
		$I_C = 100mA, I_B = 5mA$		0.60	V
Base Emitter on Voltage	$V_{BE (on)}$	$I_C = 2mA, V_{CE} = 5V$	0.55	0.70	V
		$I_C = 10mA, V_{CE} = 5V$		0.77	V
Collector Knee Voltage	$V_{CE (K)}$	$I_C = 10mA, I_B = \text{The Value for which } I_C = 11mA, \text{ at } V_{CE} = 1V$		0.60	V
Transition Frequency	f_t	$V_{CE} = 5V, I_C = 10mA, f = 100MHz$	150		MHz
Noise Figure	NF	$V_{CE} = 5V, I_C = 0.2mA$ $R_g = 2kohms,$ $F = 30Hz \text{ to } 15 KHz$ $F = 1kHz, B = 200Hz$	BC109	4.0	dB
			BC109	4.0	dB
			BC107/108	10	dB
Output Capacitance	C_{obo}	$V_{CB} = 10V, f = 1MHz$		4.5	pF
Small Signal Current Gain	h_{FE}	ALL $f = 1kHz$ $I_C = 2mA, V_{CE} = 5V$	BC107	125	500
			BC108	125	900
			BC109	240	900
			A Group	125	260
			B Group	240	500
			C Group	450	900
Input Impedance	h_{ie}	ALL $f = 1kHz$ $I_C = 2mA, V_{CE} = 5V$	A Group	1.6	$K\Omega$
			B Group	3.2	$K\Omega$
			C Group	6.0	$K\Omega$
Output Admittance	h_{oe}	ALL $f = 1kHz$ $I_C = 2mA, V_{CE} = 5V$	A Group	30	umhos
			B Group	60	umhos
			C Group	110	umhos

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Specifications

V _{CEO} maximum (V)	V _{CBO} maximum (V)	I _C maximum (A)	h _{FE} minimum at I _C = 2 (mA)	Noise Figure maximum (dB)	Transition Frequency minimum (MHz)	P _{tot} at T _a = 25°C (mW)	Package and pin out	Part Number (NPN)			
45	50	0.2	125	10	150	600	TO-18	BC107			
								BC107A			
								BC107B			
25	30										
	240		4					BC108			
								BC108B			
								BC108C			
								BC109			
BC109B											
							BC109C				

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