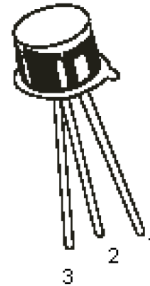
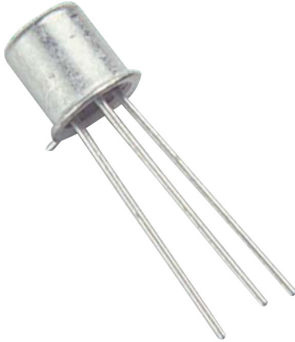


Low Power Bipolar Transistor



1. Emitter
2. Base
3. Collector

Features:

- NPN Silicon Planar Switching Transistors

Applications:

- High speed saturated switching applications

Absolute Maximum Ratings:

Description	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CES}	40	
Collector-Emitter Voltage	V_{CEO}	15	
Emitter-Base Voltage	V_{EBO}	4.5	
Collector Peak Current (t = 10 μ s)	I_{CM}	0.5	A
Power Dissipation at $T_a = 25^\circ\text{C}$ $T_C = 25^\circ\text{C}$	P_{tot}	0.36	W
		1.2	
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +120	$^\circ\text{C}$

Thermal Resistance

Junction to Case	$R_{th(j-c)}$	146	$^\circ\text{C/W}$
Junction to Ambient	$R_{th(j-a)}$	486	

Low Power Bipolar Transistor

Electrical Characteristics: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Max.	Unit
Collector Cut off Current	I_{CBO}	$V_{CB} = 20\text{V}, I_E = 0$	-	400	nA
		$V_{CB} = 20\text{V}, I_E = 0,$ $T_a = 150^\circ\text{C}$	-	30	μA
	I_{CES}	$V_{CE} = 15\text{V}, V_{BE} = 0,$ $T_a = 55^\circ\text{C}$	-	400	nA
		$V_{CE} = 40\text{V}, V_{BE} = 0$	-	1	μA
	I_{CEX}	$V_{CE} = 15\text{V}, V_{BE} = -3\text{V},$ $T_a = 55^\circ\text{C}$	-	600	nA
Emitter Cut off Current	I_{EBO}	$V_{EB} = 4.5\text{V}, I_C = 0$	-	10	μA
Base-Cut off Current	I_{BEX}	$V_{CE} = 15\text{V}, V_{BE} = -3\text{V},$ $T_a = 55^\circ\text{C}$	-	600	nA
Collector Emitter (sus) Voltage	$V_{CER(Sus)}^*$	$I_C = 10\text{mA}, R_{BE} = 10\Omega$	20	-	V
Collector Emitter Voltage	V_{CEO}^*	$I_C = 10\text{mA}, I_B = 0$	15	-	
Collector Emitter Saturation Voltage	$V_{CE(Sat)}^*$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	-	0.25	
		$I_C = 100\text{mA}, I_B = 10\text{mA}$	-	0.6	
		$I_C = 10\text{mA}, I_B = 0.3\text{mA}$	-	0.3	
Base Emitter On Voltage	$V_{BE(on)}^*$	$I_C = 30\mu\text{A}, V_{CE} = 20\text{V},$ $T_a = 100^\circ\text{C}$	0.35	-	
Base Emitter Saturation Voltage	$V_{BE(Sat)}^*$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	0.7	0.85	
		$I_C = 100\text{mA}, I_B = 10\text{mA}$	-	1.5	
DC Current	h_{FE}^*	$I_C = 10\text{mA}, V_{CE} = 1\text{V}$	40	-	
		$I_C = 100\text{mA}, V_{CE} = 2\text{V}$	20	-	
		$I_C = 10\text{mA}, V_{CE} = 1\text{V},$ $T_a = -55^\circ\text{C}$	20	-	

Dynamic Characteristics

Transition Frequency	f_t	$V_{CE} = 10\text{V}, I_C = 10\text{mA}$	500	-	MHz
Collector Base Capacitance	C_{bo}	$I_E = 0, V_{CB} = 5\text{V}$	-	4	μF
Emitter Base Capacitance	C_{ebo}	$I_C = 0, V_{EB} = 1\text{V}$		4.5	
Storage Time	t_s	$I_C = 10\text{mA}, V_{CC} = 10\text{V},$ $I_{B1} = -I_{B2} = 10\text{mA}$	-	13	ns

*Pulsed: Pulse Duration = 300 μs , Duty Cycle = 1%

Low Power Bipolar Transistor

Electrical Characteristics: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

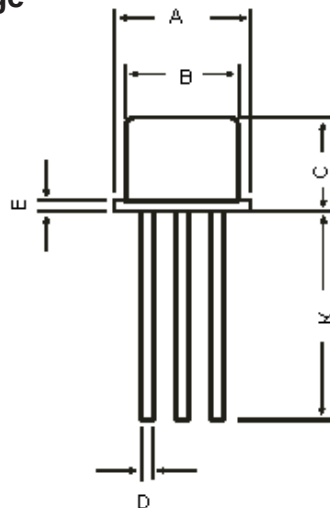
Parameter	Symbol	Test Condition	Min.	Max.	Unit
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Dynamic Characteristics

Turn on Time	t_{on}	$I_C = 10\text{mA}, V_{CC} = 3\text{V}, I_{B1} = 3\text{mA}$	-	12	ns
		$I_C = 100\text{mA}, V_{CC} = 6\text{V}, I_{B1} = 40\text{mA}$		7	
Turn off Time	t_{off}	$I_C = 10\text{mA}, V_{CC} = 3\text{V}, I_{B1} = 3\text{mA}, I_{B2} = -1.5\text{mA}$	-	18	
		$I_C = 100\text{mA}, V_{CC} = 6\text{V}, I_{B1} = 40\text{mA}, I_{B2} = -20\text{mA}$		21	

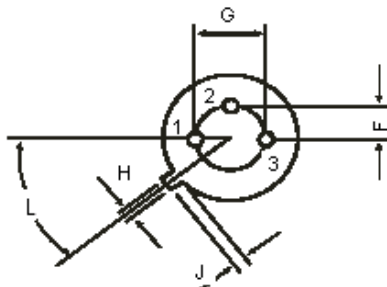
*Pulsed: Pulse Duration = 300 μs , Duty Cycle = 1%

TO-18 Metal Can Package



Dim.	Min.	Max.
A	5.24	5.84
B	4.52	4.97
C	4.31	5.33
D	0.4	0.53
E	-	0.76
F	-	1.27
G	-	2.97
H	0.91	1.17
J	0.71	1.21
K	12.7	-
L	45°	

Dimensions : Millimetres



1. Emitter
2. Base
3. Collector

Part Number Table

Description	Part Number
Transistor, NPN, TO-18	BSX20

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