

2N2222

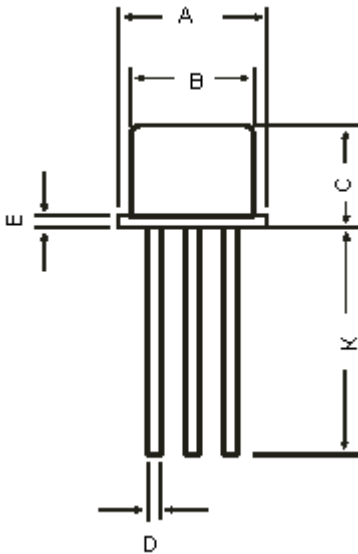
Low Power Bipolar Transistors



Features:

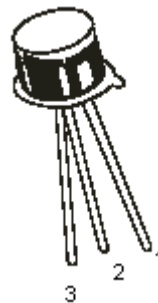
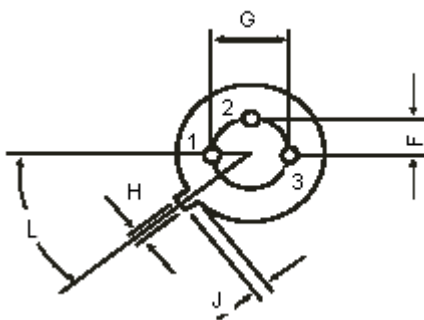
- NPN Silicon Planar Switching Transistors.
- Switching and Linear application DC and VHF Amplifier applications.

TO-18 Metal Can Package



Dimensions	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

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$ unless specified otherwise)

Description	Symbol	2N2222	Unit
Collector Emitter Voltage	V_{CEO}	30	V
Collector Base Voltage	V_{CBO}	60	
Emitter Base Voltage	V_{EBO}	5	
Collector Current Continuous	I_{C}	800	mA
Power Dissipation at $T_a = 25^\circ\text{C}$ Derate above 25°C	P_{D}	500	mW
Power Dissipation at $T_{\text{C}} = 25^\circ\text{C}$ Derate above 25°C		2.28	$\text{mW}/^\circ\text{C}$
		1.2	W
		6.85	$\text{mW}/^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_{\text{J}}, T_{\text{stg}}$	-65 to +200	$^\circ\text{C}$

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

Description	Symbol	Test Condition	Value		Unit
			Minimum	Maximum	
Collector Emitter Breakdown Voltage	BV_{CEO}	$I_{\text{C}} = 10\text{mA}, I_{\text{B}} = 0$	30	-	V
Collector Base Breakdown Voltage	BV_{CBO}	$I_{\text{C}} = 10\mu\text{A}, I_{\text{E}} = 0$	60	-	
Emitter Base Breakdown Voltage	V_{EBOF}	$I_{\text{E}} = 10\mu\text{A}, I_{\text{C}} = 0$	5	-	
Collector Leakage Current	I_{CBO}	$V_{\text{CB}} = 50\text{V}, I_{\text{E}} = 0$	-	10	nA
		$V_{\text{CB}} = 50\text{V}, I_{\text{E}} = 0$ $T_a = 150^\circ\text{C}$		10	μA
Collector Emitter Saturation Voltage	$*V_{\text{CE}}(\text{Sat})$	$I_{\text{C}} = 150\text{mA}, I_{\text{B}} = 15\text{mA}$	-	0.4	V
		$I_{\text{C}} = 500\text{mA}, I_{\text{B}} = 50\text{mA}$		1.6	
Base Emitter Saturation Voltage	$*V_{\text{BE}}(\text{Sat})$	$I_{\text{C}} = 150\text{mA}, I_{\text{B}} = 15\text{mA}$	0.6	1.3	
		$I_{\text{C}} = 500\text{mA}, I_{\text{B}} = 50\text{mA}$		2.6	

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

Parameter	Symbol	Test Condition	2N2222		Unit
			Minimum	Maximum	
DC Current Gain	h_{FE}	$I_C = 0.1\text{mA}, V_{CE} = 10\text{V}^*$	35	300	-
		$I_C = 1\text{mA}, V_{CE} = 10\text{V}$	50		
		$I_C = 10\text{mA}, V_{CE} = 10\text{V}^*$	75		
		$I_C = 150\text{mA}, V_{CE} = 1\text{V}^*$	50		
		$I_C = 150\text{mA}, V_{CE} = 1\text{V}^*$	100		
		$I_C = 500\text{mA}, V_{CE} = 10\text{V}^*$	30		
Dynamic Characteristics					
Transition Frequency	f_t	$I_C = 20\text{mA}, V_{CE} = 20\text{V}$ $f = 100\text{MHz}$	250	-	MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0$ $f = 100\text{kHz}$	-	8	pF
Input Capacitance	C_{ib}	$V_{EB} = 0.5\text{V}, I_C = 0$ $f = 100\text{kHz}$	-	30	
Switching Characteristics					
Delay Time	t_d	$I_C = 150\text{mA}, I_{B1} = 15\text{mA}$	-	10	ns
Rise Time	t_r	$V_{CC} = 30\text{V}, V_{BE(\text{off})} = 0.5\text{V}$	-	25	
Storage Time	t_s	$I_C = 150\text{mA}, I_{B1} = 15\text{mA}$	-	225	
Fall Time	t_f	$I_{B2} = 15\text{mA}, V_{CC} = 30\text{V}$	-	60	

*Pulse Condition: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Part Number Table

Package	Part Number
TO-18	2N2222



2N2222

Low Power Bipolar Transistors

Notes:

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