

# 2N2222

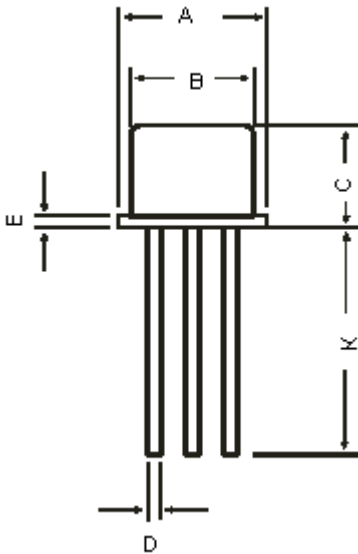
## Low Power Bipolar Transistors



### Features:

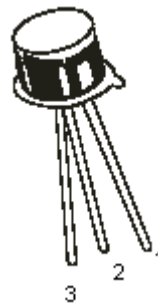
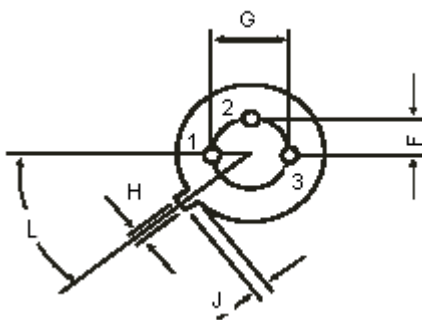
- NPN Silicon Planar Switching Transistors.
- Switching and Linear application DC and VHF Amplifier applications.

### 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	$V_{\text{CEO}}$	30	V
Collector Base Voltage	$V_{\text{CBO}}$	60	
Emitter Base Voltage	$V_{\text{EBO}}$	5	
Collector Current Continuous	$I_{\text{C}}$	800	mA
Power Dissipation at $T_a = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_{\text{D}}$	500	mW
Power Dissipation at $T_{\text{C}} = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$		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	$BV_{\text{CEO}}$	$I_{\text{C}} = 10\text{mA}, I_{\text{B}} = 0$	30	-	V
Collector Base Breakdown Voltage	$BV_{\text{CBO}}$	$I_{\text{C}} = 10\mu\text{A}, I_{\text{E}} = 0$	60	-	
Emitter Base Breakdown Voltage	$V_{\text{EBOF}}$	$I_{\text{E}} = 10\mu\text{A}, I_{\text{C}} = 0$	5	-	
Collector Leakage Current	$I_{\text{CBO}}$	$V_{\text{CB}} = 50\text{V}, I_{\text{E}} = 0$	-	10	nA
		$V_{\text{CB}} = 50\text{V}, I_{\text{E}} = 0$ $T_a = 150^\circ\text{C}$		10	$\mu\text{A}$
Collector Emitter Saturation Voltage	$*V_{\text{CE}}(\text{Sat})$	$I_{\text{C}} = 150\text{mA}, I_{\text{B}} = 15\text{mA}$ $I_{\text{C}} = 500\text{mA}, I_{\text{B}} = 50\text{mA}$	-	0.4 1.6	V
Base Emitter Saturation Voltage	$*V_{\text{BE}}(\text{Sat})$	$I_{\text{C}} = 150\text{mA}, I_{\text{B}} = 15\text{mA}$ $I_{\text{C}} = 500\text{mA}, I_{\text{B}} = 50\text{mA}$	0.6	1.3 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		
<b>Dynamic Characteristics</b>					
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	
<b>Switching Characteristics</b>					
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:

### International Sales Offices:



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