

Description:

A Widely used "Industry Standard" silicon NPN transistor in a TO-18 type case designed for applications such as medium-speed switching and amplifiers from audio to VHF frequencies.

Absolute Maximum Ratings:

Collector-Base Voltage, V_{CBO}	: 60V
Collector-Emitter Voltage, V_{CEO}	: 60V
Emitter-Base Voltage, V_{EBO}	: 6V
Continuous Collector Current, I_C	: 30mA
Total Device Dissipation ($T_A = +25^\circ\text{C}$), P_D	: 500mW
Derate above 25°C	: $>3.33\text{mW}/^\circ\text{C}$
Total Device Dissipation ($T_C = +25^\circ\text{C}$), P_D	: 1.8W
Derate above 25°C	: $12\text{mW}/^\circ\text{C}$
Operating Junction Temperature Range, T_J	: -65°C to $+200^\circ\text{C}$
Storage Temperature Range, T_{stg}	: -65°C to $+200^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min.	Max.	Unit
-----------	--------	-----------------	------	------	------

OFF Characteristics

Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}$, $I_B = 0$, Note 1	45	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}$, $I_E = 0$	80	-	
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}$, $I_C = 0$	6	-	
Collector Cut-off Current	I_{CBO}	$V_{CB} = 45\text{V}$, $I_E = 0$	-	2	nA
Emitter Cut-Off Current	I_{EBO}	$V_{EB} = 5\text{V}$, $I_C = 0$	-	2	

Note 1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

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

ON Characteristics

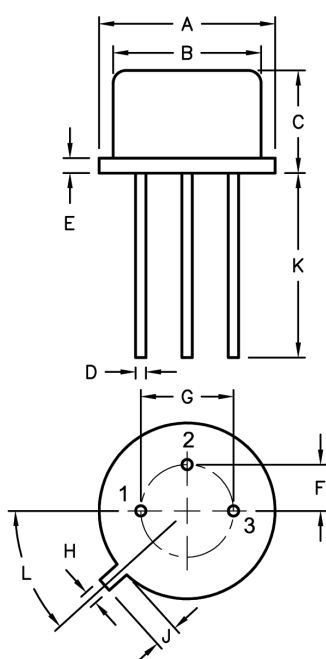
Parameter	Symbol	Test Conditions	Min.	Max.	Unit
DC Current Gain	h_{FE}	$V_{CE} = 5V, I_C = 0.001mA$, Note 1	60	-	-
		$V_{CE} = 5V, I_C = 0.01mA$	100	300	-
		$V_{CE} = 5V, I_C = 10mA$, Note 1	-	600	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10mA, I_B = 0.5mA$, Note 1	-	0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10mA, I_B = 0.5mA$, Note 1	0.7	0.9	

Small-Signal Characteristics

Current Gain-Bandwidth Product	f_T	$V_{CE} = 5V, I_C = 0.5mA, f = 30MHz$, Note 2	45	-	MHz
Output Capacitance	C_{obo}	$V_{CB} = 5V, I_E = 0, f = 1MHz$	-	6	pF
Noise Figure	NF	$V_{CE} = 5V, I_C = 10\mu A, f = 1kHz$, $R_s = 10k\Omega$	-	3	dB

Note 1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

Note 2. f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.



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°	45°

Dimensions : Millimetres

Part Number Table

Description	Part Number
Bipolar Transistor, NPN, 60V, TO-18	2N930A

Important Notice : This data sheet and its contents (the "Information") belong to the members of the Premier Farnell group of companies (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. Multicomp is the registered trademark of the Group. © Premier Farnell plc 2012.