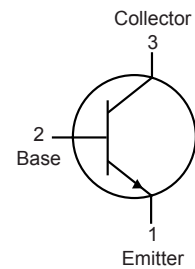


RoHS
Compliant



NPN



Features:

- High Collector Emitter Sustaining Voltage : $V_{CEO} = 80V @ I_C = 200mA$
- Low Collector Emitter saturation Voltage $V_{CE(sat)} 0.75V @ I_C = 10A$

Description:

High Power TO-3, NPN, Silicon Transistor Designed for use in power amplifier and switching circuits applications

Maximum Ratings:

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}		
Continuous Collector Current	I_C	30	A
Base Current	I_B	7.5	
Total Device Dissipation ($T_C = +25^\circ C$) Derate Above $25^\circ C$	P_D	200 1.14	W mW/ $^\circ C$
Operating Junction Temperature Range	T_J	-65 to +200	$^\circ C$
Storage Temperature Range	T_{stg}		

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

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

OFF Characteristics

Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 200\text{mA}, I_B = 0$ (Note 1)	40	-	V
Collector Cut-Off Current	I_{CEO}	$V_{CB} = 40\text{V}, I_B = 0$	-	5	mA
	I_{CEX}	$V_{CE} = 40\text{V}, V_{EB(off)} = 1.5\text{V}$		1	
	I_{CBO}	$V_{CB} = 40\text{V}, I_E = 0$			
Emitter Cut-Off Current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$		5	

ON Characteristics

DC Current Gain (Note 1)	h_{FE}	$V_{CE} = 2\text{V}, I_C = 1\text{A}$	40	-	-
		$V_{CE} = 2\text{V}, I_C = 15\text{A}$	15	60	
		$V_{CE} = 4\text{V}, I_C = 30\text{A}$	5	-	
Collector - Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{A}, I_B = 1\text{A}$	-	0.75	V
		$I_C = 20\text{A}, I_B = 2\text{A}$		2	
		$I_C = 30\text{A}, I_B = 6\text{A}$		3	
Base - Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{A}, I_B = 1\text{A}$	-	1.7	V
		$I_C = 15\text{A}, I_B = 1.5\text{A}$		1.8	
		$I_C = 20\text{A}, I_B = 2\text{A}$		2.5	
Base - Emitter Saturation Voltage	$V_{BE(on)}$	$I_C = 15\text{A}, V_{CE} = 2\text{V}$	-	1.7	V
		$I_C = 30\text{A}, V_{CE} = 4\text{V}$		3	

Small Signal Characteristics

Current Gain-Bandwidth Product (Note 2)	f_T	$V_{CE} = 10\text{V}, I_C = 1\text{A}, f = 1\text{MHz}$	2	-	MHz
Small-Signal Current Gain	h_{fe}	$V_{CE} = 10\text{V}, I_C = 1\text{A}, f = 1\text{kHz}$	40	-	-

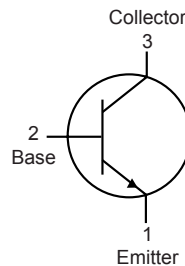
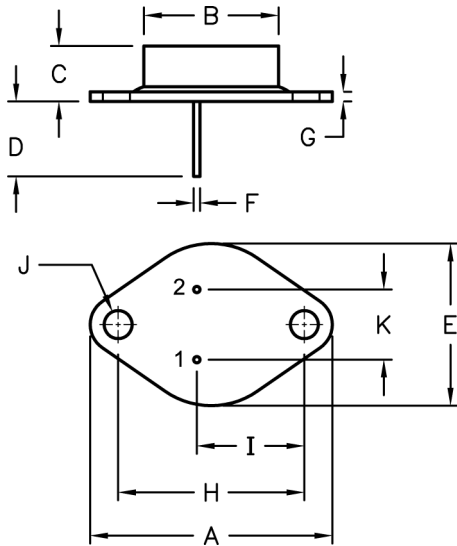
Switching Characteristics

Rise Time	t_r	$V_{CC} = 30\text{V}, I_C = 10\text{A}, I_{B1} = 1\text{A}$	-	1	us
Storage Time	t_s	$V_{CC} = 30\text{V}, I_C = 10\text{A}, I_{B1} = I_{B2} = 1\text{A}$		2	
Fall Time	t_f			1	

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

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

Bipolar Transistor



Dimensions	Min.	Max.
A	38.75	39.96
B	19.28	22.23
C	7.96	9.23
D	11.18	12.19
E	25.2	26.67
F	0.92	1.09
G	1.38	1.62
H	29.9	30.4
I	16.64	17.3
J	3.88	4.36
K	10.67	11.18

Dimensions : Millimetres

Part Number Table

Description	Part Number
Transistor, NPN, 30A, 40V, TO-3	2N5301

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.