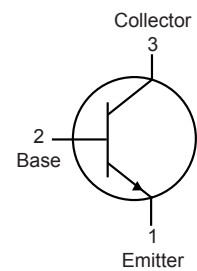


RoHS
Compliant



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
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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	
		$I_C = 15\text{A}, I_B = 1.5\text{A}$		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	
		$I_C = 30\text{A}, V_{CE} = 4\text{V}$		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		-

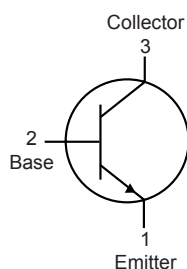
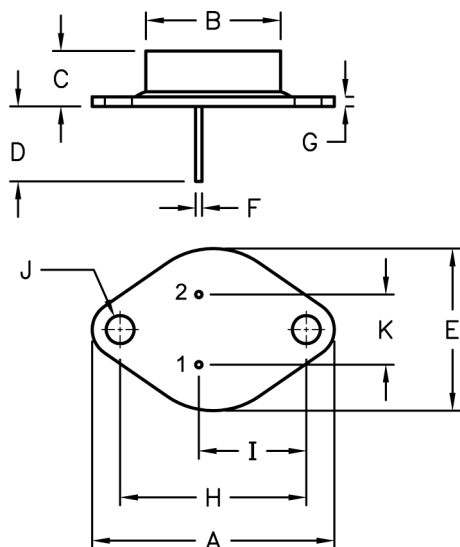
Switching Characteristics

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

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