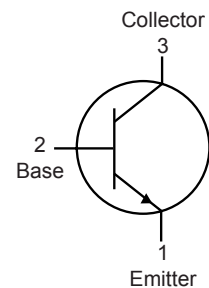


RoHS
Compliant



NPN



Features:

- High Collector Sustaining Voltage : $V_{CEO} = 80V @ I_C = 200mA$
- Low Collector Emitter saturation Voltage $V_{CE(sat)} 1V @ I_C = 10A$

Description:

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

Maximum Ratings:

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}		
Continuous Collector Current	I_C	20	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	$V_{(BR)CEO}$	$I_C = 200\text{mA}, I_B = 0$	80	-	V
Collector Cut-Off Current	I_{CEO}	$V_{CB} = 80\text{V}, I_B = 0$	-	5	mA
	I_{CEX}	$V_{CE} = 80\text{V}, V_{EB(off)} = 1.5\text{V}$		1	
	I_{CBO}	$V_{CB} = 80\text{V}, I_E = 0$			
Emitter Cut-Off Current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$		5	

ON Characteristics (See Note 1)

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

Small Signal Characteristics

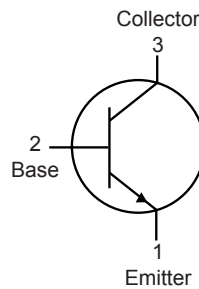
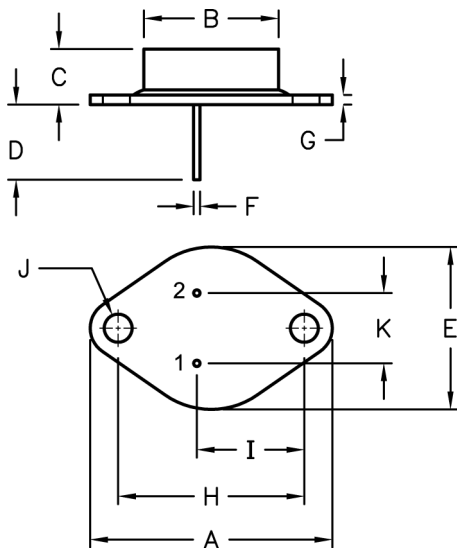
Current Gain-Bandwidth Product	f_T	$V_{CE} = 10\text{V}, I_C = 1\text{A}, f = 1\text{MHz}$	2	-	MHz
Small-Signal Current Gain	h_{fe}	$V_{CE} = 10\text{V}, I_C = 1\text{A}, f = 1\text{kHz}$	-	40	-

Switching Characteristics

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

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

Bipolar Transistor



Dimensions	Min.	Max.
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
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, 20A, 80V, TO-3	2N5303

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