

# Bipolar Transistor

multicomp **PRO**



## Description:

High Power TO-3, NPN Transistor

## Features:

- Low Collector Emitter Saturation Voltage :  $V_{CE(sat)1V}$   $I_C = 15A$
- High Current Gain-Bandwidth Product :  $f_T = 4MHz$  (Min.) @  $I_C = 1A$
- Low Leakage Current  $I_{CEX} = 1mA$  (Max.) at Rated Voltage
- Excellent DC Current Gain  $h_{FE} = 20$  (Min.) @  $I_C = 10A$

## Absolute Maximum Ratings:

Characteristic	Symbol	Rating
Collector - Base Voltage	$V_{CBO}$	80V
Collector - Emitter Voltage	$V_{CEO}$	80V
Emitter - Base Voltage	$V_{EBO}$	5V
Continuous Collector Current	$I_C$	25A
Base Current	$I_B$	7.5A
Total Device Dissipation ( $T_C = +25^\circ C$ ) Derate above $25^\circ C$	$P_D$	200W 1.15mW/ $^\circ C$
Operating Junction Temperature Range	$T_J$	$-65^\circ C$ to $+200^\circ C$
Storage Temperature Range	$T_{STG}$	$-65^\circ C$ to $+200^\circ C$

## Electrical Characteristics ( $T_A = 25^\circ C$ unless otherwise specified)

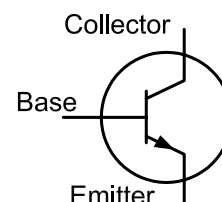
Parameter	Symbol	Test Conditions	Min.	Max.	Unit
<b>OFF Characteristics</b>					
Collector - Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 200mA, I_B = 0$ (Note 1)	80	-	V
Collector Cut-off Current	$I_{CEX}$	$V_{CB} = 80V, V_{EB(off)} = 1.5V$	-	1	mA
	$I_{CBO}$	$V_{CE} = 80V, I_E = 0$	-	1	mA
	$I_{CEO}$	$V_{CB} = 40V, I_B = 0$	-	2	mA
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$	-	1	mA
<b>ON Characteristics</b> (Note 1)					
DC Current Gain	$h_{FE}$	$V_{CE} = 4V, I_C = 3A$	35	-	-
		$V_{CE} = 4V, I_C = 10A$	20	100	-
		$V_{CE} = 4V, I_C = 25A$	4	-	-
Collector - Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 15A, I_B = 1.5A$	-	1	V
		$I_C = 25A, I_B = 6.25A$	-	4	

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Parameter	Symbol	Test Conditions	Min.	Max.	Unit
Base - Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 25A, I_B = 6.25A$	-	2.5	V
Base - Emitter Saturation Voltage	$V_{BE(on)}$	$I_C = 10A, V_{CE} = 4V$	-	1.5	V

### Small-Signal Characteristics

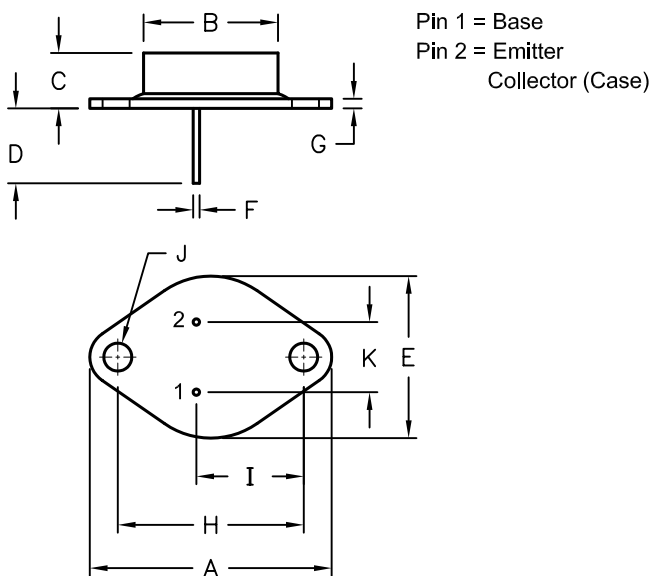
Current Gain-Bandwidth Product (Note 2)	$f_T$	$V_{CE} = 10V, I_C = 1A, f = 1MHz$	4	-	MHz
Output Capacitance	$C_{obo}$	$V_{CB} = 10V, I_E = 0, f = 1MHz$	-	500	pF
Small-Signal Current Gain	$h_{fe}$	$V_{CE} = 4V, I_C = 3A, f = 1kHz$	20	-	-

### Switching Characteristics

Rise Time	$t_r$	$V_{CC} = 30V, I_C = 10A, I_{B1} = I_{B2} = 1A$	-	0.7	$\mu s$
Storage Time	$t_s$	$V_{CC} = 30V, I_C = 10A, I_{B1} = I_{B2} = 1A$	-	1	
Fall Time	$t_f$		-	0.8	

**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	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
High Power Transistor, TO-3, NPN, 25A, 80V	2N5886

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