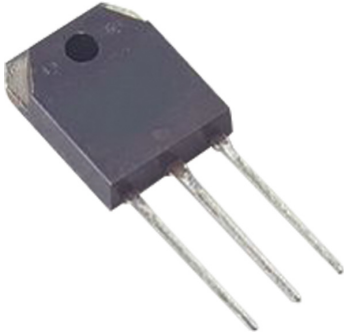


# Complementary Power Transistor

**multicomp** PRO



## Description:

Designed for use in general purpose power amplifier and switching applications.

## Features:

- Collector-Emitter Sustaining Voltage  
 $V_{CEO(sus)} = 100V$  (Min.) - TIP35C, TIP36C
- DC Current Gain  $h_{FE} = 25$  (Min.) at  $I_C = 1.5A$
- Current Gain-Bandwidth Product  $f_T = 3MHz$  (Min.) at  $I_C = 1A$

## Maximum Ratings

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CEO}$	100	V
Collector-Base Voltage	$V_{CBO}$		
Emitter-Base Voltage	$V_{EBO}$		
Collector Current-Continuous -Peak	$I_C$	25 40	A
Base Current	$I_B$	5	
Total Power Dissipation at $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	125 1	W $W/^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +150	$^\circ C$

## Thermal Characteristics

Characteristic	Symbol	Max.	Unit
Thermal Resistance Junction to Case	$R\theta_{jc}$	1	$^\circ C/W$

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## Electrical Characteristics ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min.	Max.	Unit
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### OFF Characteristics

Collector-Emitter Sustaining Voltage (1) $I_C = 30\text{mA}, I_B = 0$	$V_{CEO(SUS)}$	100	-	V
Collector Cut off Current $V_{CE} = 60\text{V}, I_B = 0$	$I_{CEO}$	-	1	mA
Collector Cut off Current $V_{CE} = 100\text{V}, V_{EB} = 0$	$I_{CES}$	-	0.7	
Emitter Cut off Current $V_{EB} = 5\text{V}, I_C = 0$	$I_{EBO}$	-	1	

### ON Characteristics (1)

DC Current Gain $I_C = 1.5\text{A}, V_{CE} = 4\text{V}$ $I_C = 15\text{A}, V_{CE} = 4\text{V}$	$h_{FE}$	25 15	75	V
Collector-Emitter Saturation Voltage $I_C = 15\text{A}, I_B = 1.5\text{A}$ $I_C = 25\text{A}, I_B = 5\text{A}$	$V_{CE(sat)}$	-	1.8 4	
Base-Emitter On Voltage $I_C = 15\text{A}, V_{CE} = 4\text{V}$ $I_C = 25\text{A}, V_{CE} = 4\text{V}$	$V_{BE(on)}$	-	2 4	

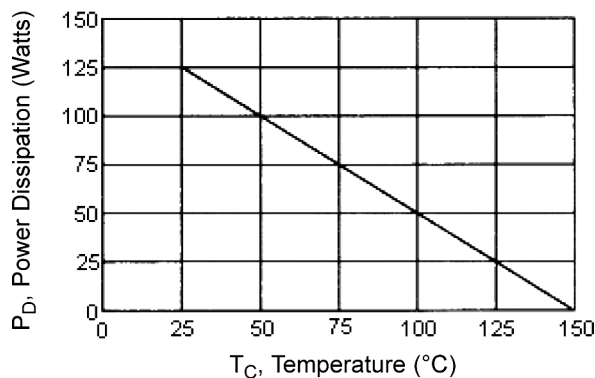
### Dynamic Characteristics

Current Gain Bandwidth Product (2) $I_C = 1\text{mA}, V_{CE} = 10\text{V}, f_{TEST} = 1\text{MHz}$	$f_T$	3	-	MHz
Small-Signal Current Gain $I_C = 1\text{A}, V_{CE} = 10\text{V}, f = 1\text{kHz}$	$h_{fe}$	25	-	-

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

(2)  $f_T = |h_{fe}| \cdot f_{test}$

**Figure - 1 Power Derating**



# Complementary Power Transistor

Figure - 2 DC Current Gain

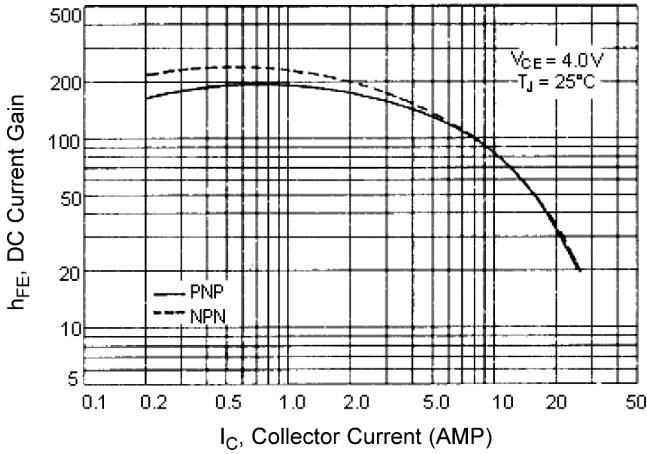


Figure - 3 Turn-Off Time

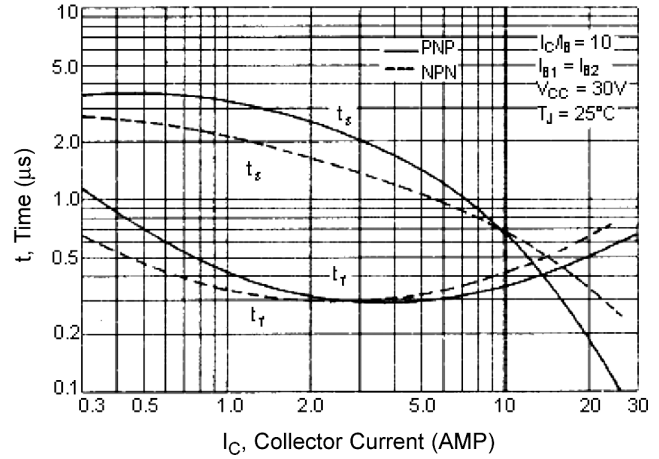


Figure - 4 Turn-On time

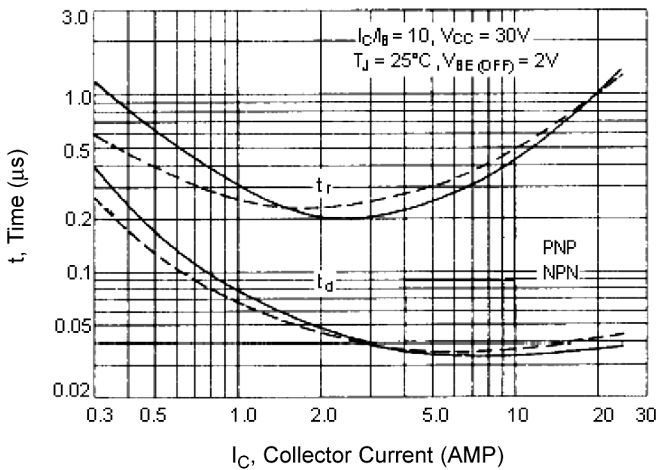


Figure - 5 Reverse Base Safe Operating Area

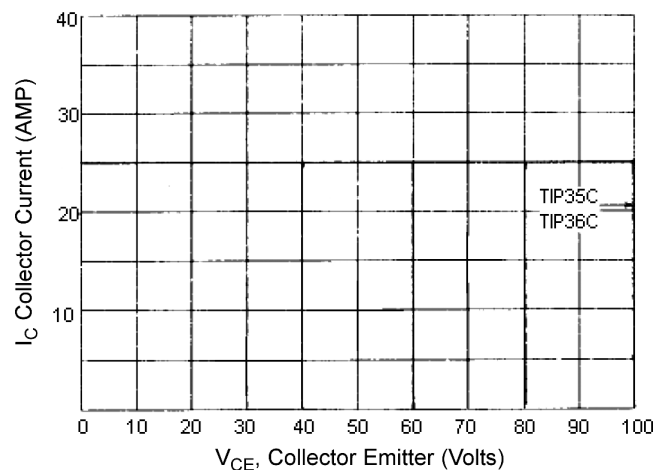
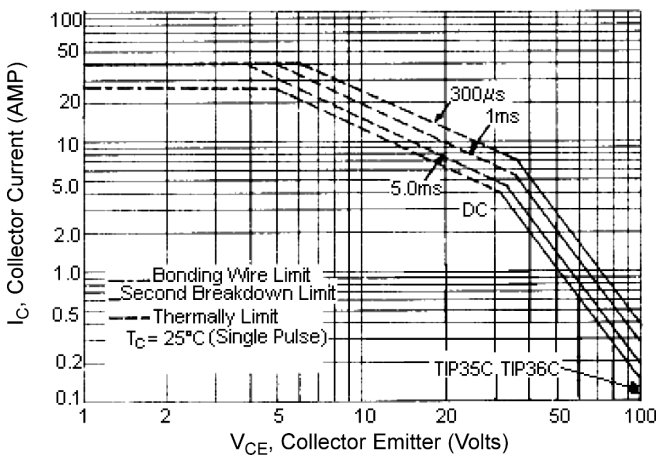


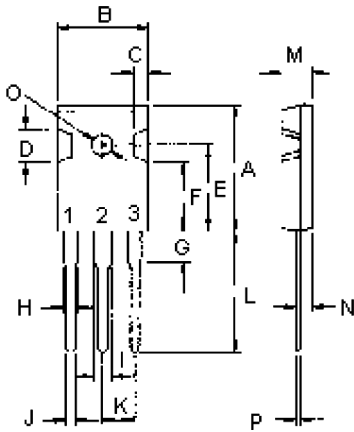
Figure - 6 Active Region Safe Operating Area



There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate  $I_C$ - $V_{CE}$  limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figure - 6 is based on  $T_C = 25^\circ C$ ;  $T_{J(pk)}$  is variable depending on power level. Second breakdown pulse limits are valid for duty cycle to 10% but must be derated when  $T_C \geq 25^\circ C$ , second breakdown limitations do not derate the same as thermal limitation.

# Complementary Power Transistor



### Pin Configuration:

1. Base
2. Collector
3. Emitter

Dimensions	Min.	Max.
A	20.63	22.38
B	15.38	16.2
C	1.9	2.7
D	5.1	6.1
E	14.81	15.22
F	11.72	12.84
G	4.2	4.5
H	1.82	2.46
I	2.92	3.23
J	0.89	1.53
K	5.26	5.66
L	18.5	21.5
M	4.68	5.36
N	2.4	2.8
O	3.25	3.65
P	0.55	0.7

Dimensions : Millimetres

### Part Number Table

Description	Part Number
Transistor, NPN, TO-3P	TIP35C
Transistor, PNP, TO-3P	TIP36C

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