

TIP35C, 36C



Complementary Power Transistors



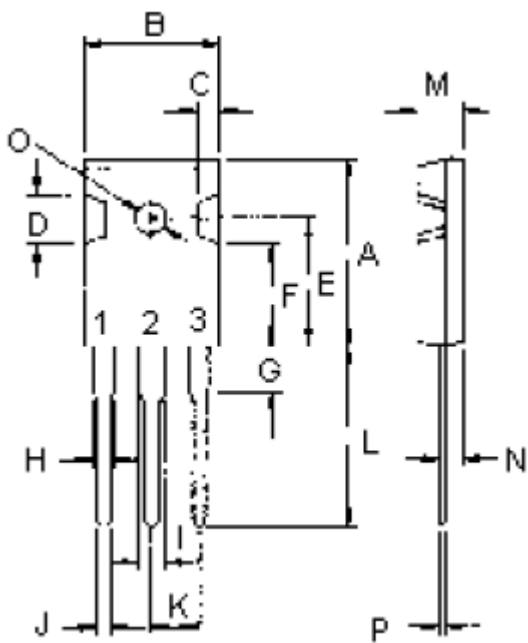
Features:

- Complementary
- Collector - emitter sustaining voltage : $V_{CEO(sus)} = 100\text{ V}$ (Minimum)
- DC Current gain $h_{FE} = 25$ (Minimum) at $I_C = 1.5\text{ A}$
- Current gain - bandwidth product $f_T = 3\text{ MHz}$ (Minimum) at $I_C = 1\text{ A}$

Application:

Designed for use in general purpose power amplifier and switching applications

TO-126



Dimensions	Minimum	Maximum
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

NPN
TIP35C

PNP
TIP36C

25 Amperes
Complementary Silicon
Power Transistors
100 Volts
125 Watts

Maximum Ratings

Characteristic	Symbol	Rating	Unit
Collector - emitter voltage	V_{CEO}	100	V
Collector - base voltage	V_{CBO}	100	V
Emitter - base voltage	V_{EBO}	5	A
Collector current - continuous- peak	I_C	25 40	A
Base current	I_B	5	A
Total power dissipation at $t_c = 25^\circ\text{C}$ derate above 25°C	P_D	125 1	W W/ $^\circ\text{C}$
Operating and storage junction temperature range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

Thermal Characteristics

Characteristic	Symbol	Maximum	Unit
Thermal resistance junction to case	$R_{\theta jc}$	1	$^\circ\text{C/W}$

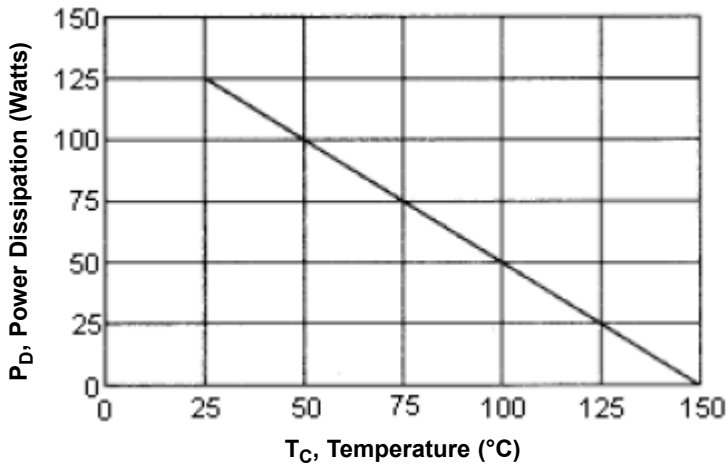


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Figure - 1 Power Derating



Electrical Characteristics ($T_C = 25^\circ\text{C}$ Unless Otherwise Noted)

Characteristic	Symbol	Minimum	Maximum	Unit
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	V
Collector cut off current ($V_{CE} = 100\text{ V}$, $V_{EB} = 0$)	I_{CES}	-	0.7	mA
Emitter cut off current ($V_{EB} = 5\text{ V}$, $I_C = 0$)	I_{EBO}	-	1	mA
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	V
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	V
Dynamic Characteristics				
Current gain - bandwidth product (2) ($I_C = 1\text{ A}$, $V_{CE} = 10\text{ V}$, $f_{TEST} = 50\text{ KHz}$)	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 μs , duty cycle $\leq 2\%$

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

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Figure - 2 DC Current Gain

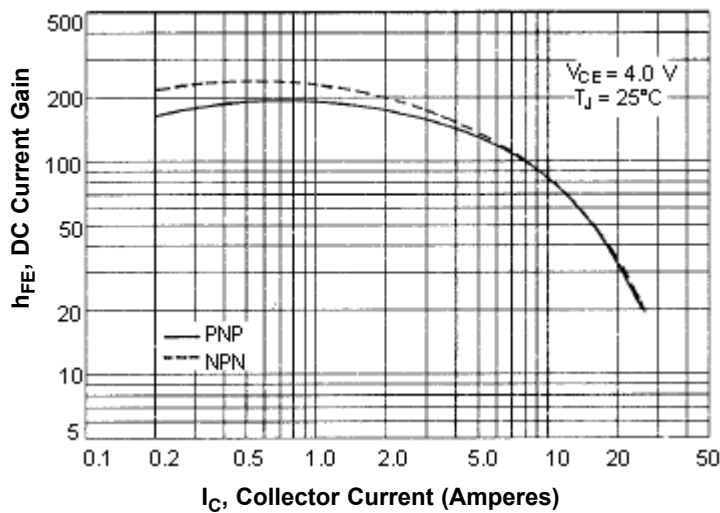


Figure - 3 Turn-Off Time

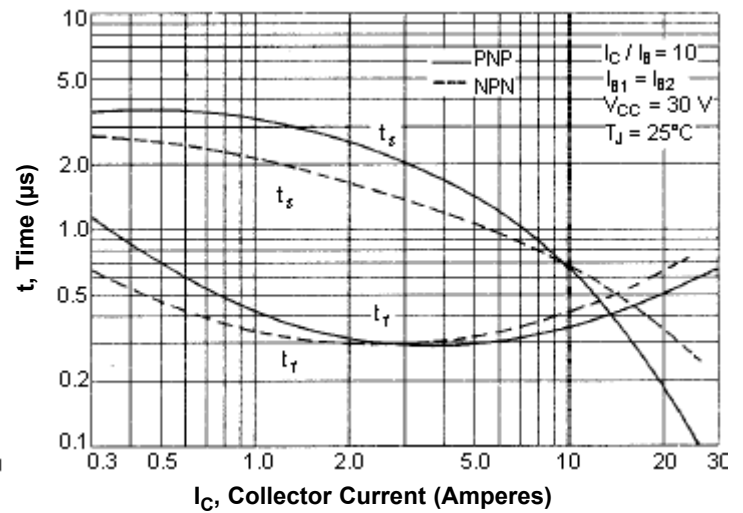


Figure - 4 Turn-On time

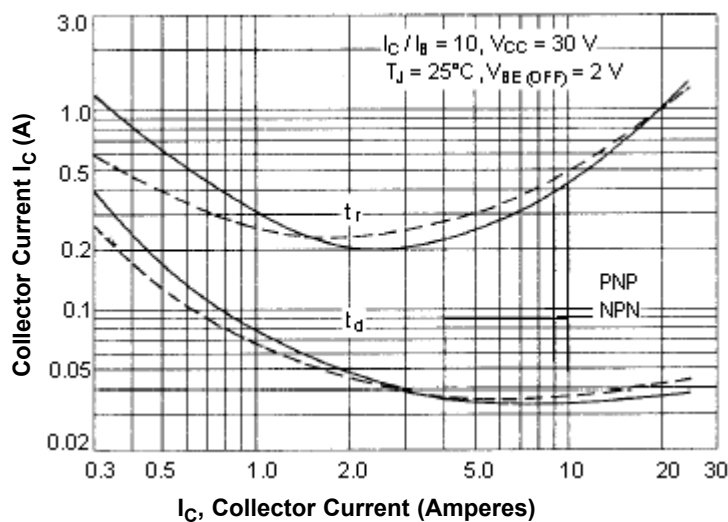
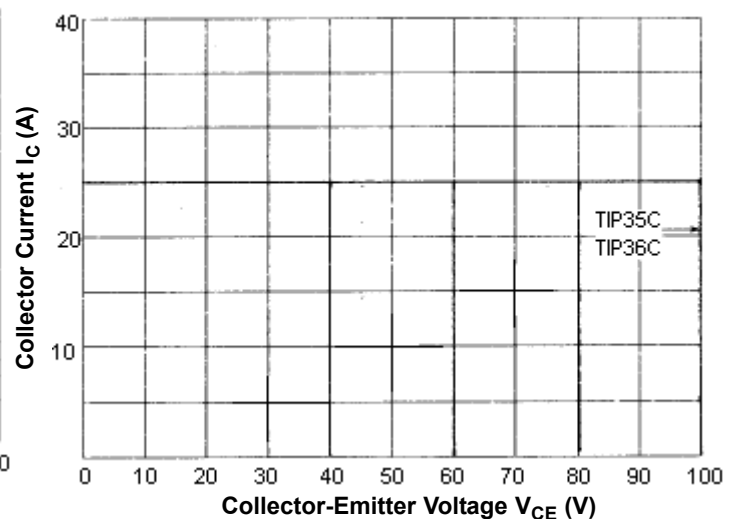


Figure - 5 Reverse Base Safe Operating Area

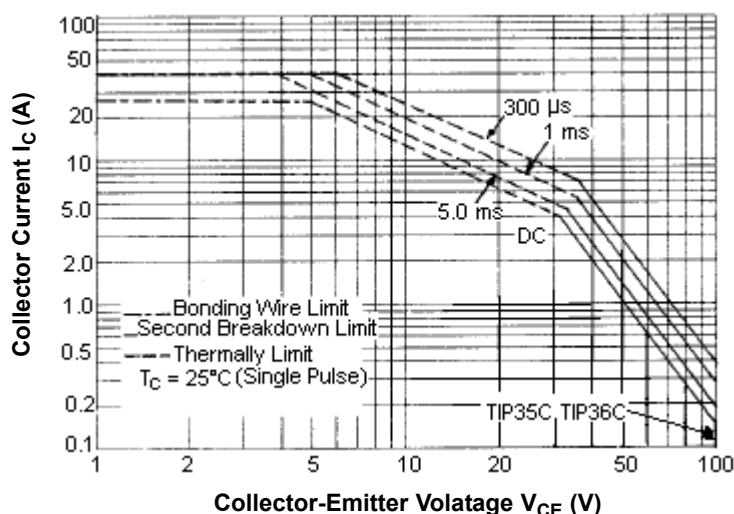


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Safe Operating Area



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

Specification Table

Description	$I_{C(av)}$ Maximum (A)	V_{CEO} Maximum (V)	h_{FE} Minimum at $I_C = 15\text{ A}$	P_{tot} at 25°C (W)	Package	Type	Part Number
Complementary Power Transistor	25	100	15	125	TO-247	NPN	TIP35C
Complementary Power Transistor	25	100	15	125	TO-247	PNP	TIP36C

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