

TIP3055, TIP2955



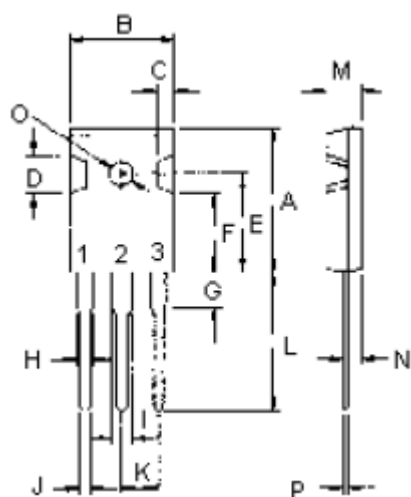
Complementary Power Transistors



Complementary Silicon Power Transistors are designed for use in general purpose power amplifier and switching applications

Features

- Power dissipation- $P_D = 90\text{ W}$ at $T_C = 25^\circ\text{C}$
- DC current gain $h_{FE} = 20$ to 100 at $I_C = 4\text{ A}$
- $V_{CE(sat)} = 1.1\text{ V}$ (maximum) at $I_C = 4\text{ A}$, $I_B = 400\text{ mA}$



Pin 1. Base
2. Collector
3. Emitter

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 **PNP**
TIP3055 **TIP2955**

15 Amperes
Complementary Silicon
Power Transistors
60 Volts
90 Watts

Maximum Ratings

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	60	V
Collector-Emitter Voltage	V_{CER}	70	
Collector-Base Voltage	V_{CBO}	100	
Emitter-Base Voltage	V_{EBO}	7	
Collector Current-Continuous	I_C	15	A
Base Current	I_B	7	
Total Power Dissipation at $T_C = 25^\circ\text{C}$ Derate Above 25°C	P_D	90 0.72	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

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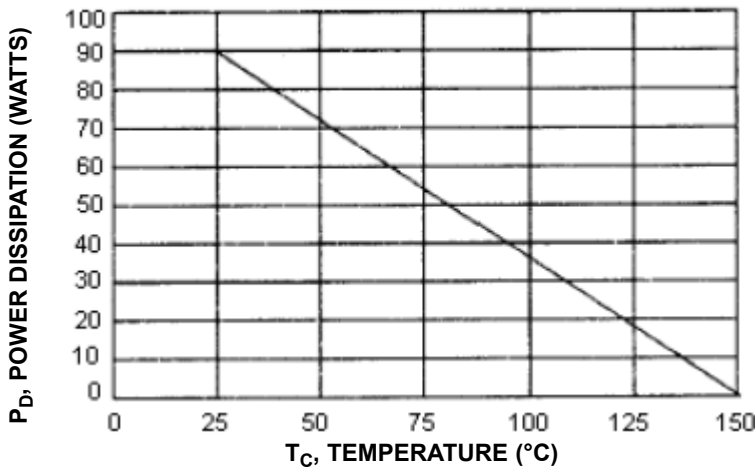


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Thermal Characteristics

Characteristic	Symbol	Maximum	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.39	$^{\circ}\text{C/W}$

Figure1 Power Derating



Electrical Characteristics (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Minimum	Maximum	Unit
OFF Characteristics				
Collector-Emitter Sustaining Voltage (1) (I _C = 30 mA, I _B = 0)	V _{CEO (sus)}	60	-	V
Collector Cut off Current (V _{CE} = 70 V, R _{BE} = 100 Ω)	I _{CER}	-	1	mA
Collector Cut off Current (V _{CE} = 30 V, I _B = 0)	I _{CEO}	-	0.7	
Collector Cut off Current (V _{CE} = 100 V, V _{BE (off)} = 1.5 V)	I _{CEV}	-	5	
Emitter Cut off Current (V _{EB} =7 V, I _C = 0)	I _{EBO}	-		
ON Characteristics (1)				
DC Current Gain (I _C = 4 A, V _{CE} = 4 V) (I _C = 10 A, V _{CE} = 4 V)	h _{FE}	20 5	100	-
Collector-Emitter Saturation Voltage (I _C = 4 A, I _B = 0.4 A) (I _C = 10 A, I _B = 3.3 A)	V _{CE (sat)}	-	1.1 3	V
Base-Emitter on Voltage (I _C = 4 A, V _{CE} = 4 V)	V _{BE (on)}	-	1.8	

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

Characteristic	Symbol	Minimum	Maximum	Unit
Dynamic Characteristics				
Current Gain Bandwidth Product ($I_C = 500\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 1\text{ MHz}$)	f_T	2.5	-	MHz
Small-Signal Current Gain ($I_C = 1\text{ A}$, $V_{CE} = 4\text{ V}$, $f = 1\text{ kHz}$)	h_{fe}	15	-	-

(1) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

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

Figure - 2 DC Current Gain

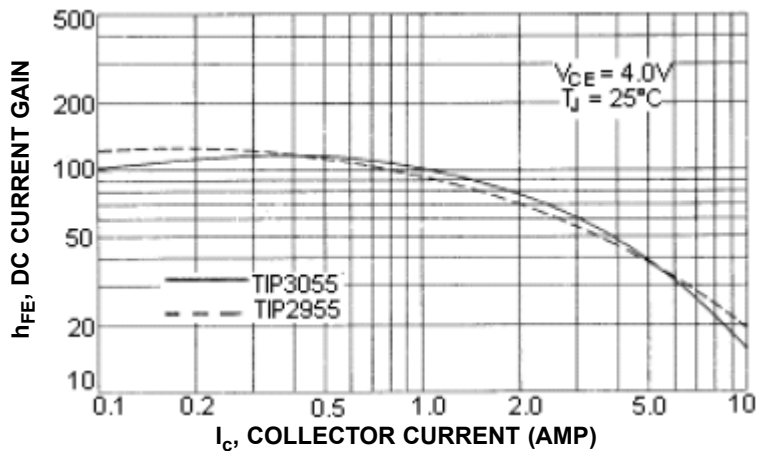
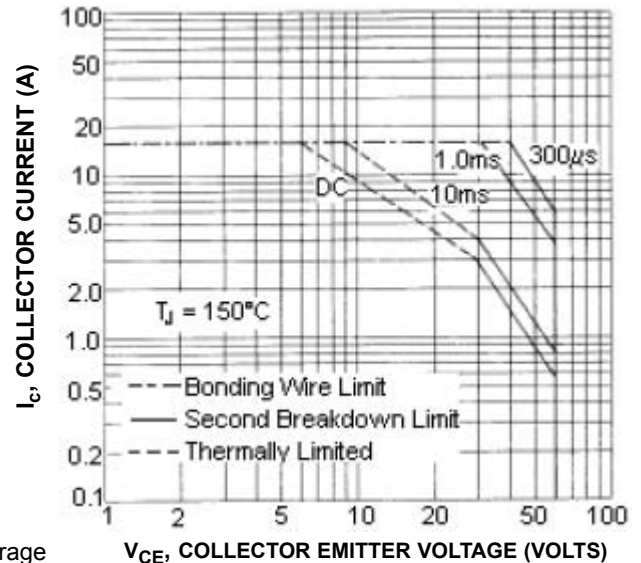


Figure - 3 Active Region Safe Operating Area



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 - 3 is based on $T_C = 150^\circ\text{C}$; $T_J(\text{PK})$ is variable depending on power level. Second breakdown pulse limits are valid for duty cycles to 10% but must be derated for temperature.

Specification Table

I_C (av) maximum (A)	V_{CEO} maximum V	h_{FE} minimum at $I_C = 5\text{ A}$	P_{tot} at 25°C (W)	Package	Type	Part Number
15	60	20	90	TO-247	PNP	TIP2955
					NPN	TIP3055

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