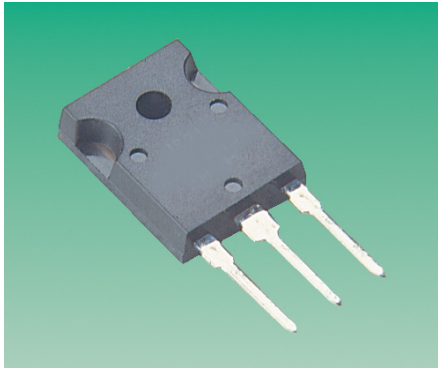


# TIP3055, 2955

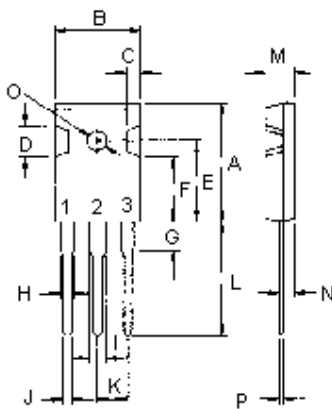
## Complementary Power Transistors



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

### Features:

- Power Dissipation- $P_D = 90W$  at  $T_C = 25^\circ C$ .
- DC Current Gain  $h_{FE} = 20 \sim 100$  at  $I_C = 4.0A$ .
- $V_{CE(sat)} = 1.1V$  (Maximum) at  $I_C = 4.0A$ ,  $I_B = 400mA$ .



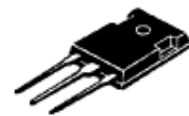
- Pin 1. Base  
2. Collector  
3. Emitter

Dimensions	Minimum	Maximum
A	20.63	22.38
B	15.38	16.20
C	1.90	2.70
D	5.10	6.10
E	14.81	15.22
F	11.72	12.84
G	4.20	4.50
H	1.82	2.46
I	2.92	3.23
J	0.89	1.53
K	5.26	5.66
L	18.50	21.50
M	4.68	5.36
N	2.40	2.80
O	3.25	3.65
P	0.55	0.70

Dimensions : Millimetres

NPN	PNP
TIP3055	TIP2955

15 Ampere  
Complementary Silicon  
Power Transistors  
60 Volts  
90 Watts



TO-247(3P)

### 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	$V_{EBO}$	7.0	
Collector Current-Continuous	$I_C$	15	A
Base Current	$I_B$	7.0	
Total Power Dissipation at $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	90 0.72	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +150	$^\circ C$



# TIP3055, 2955

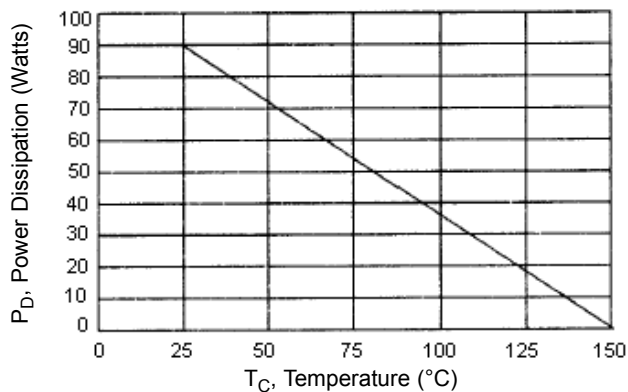
## Complementary Power Transistors



### Thermal Characteristics

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

Figure - 1 Power Derating



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

Characteristic	Symbol	Minimum	Maximum	Unit
<b>OFF Characteristics</b>				
Collector-Emitter Sustaining Voltage (1) ( $I_C = 30\text{mA}$ , $I_B = 0$ )	$V_{CEO(SUS)}$	60	-	V
Collector Cut off Current ( $V_{CE} = 70\text{V}$ , $R_{BE} = 100\Omega$ )	$I_{CER}$	-	1.0	mA
Collector Cut off Current ( $V_{CE} = 30\text{V}$ , $I_B = 0$ )	$I_{CEO}$	-	0.7	
Collector Cut off Current ( $V_{CE} = 100\text{V}$ , $V_{BE(off)} = 1.5\text{V}$ )	$I_{CEV}$	-	5.0	
Emitter Cut off Current ( $V_{EB} = 7.0\text{V}$ , $I_C = 0$ )	$I_{EBO}$	-	-	
<b>ON Characteristics (1)</b>				
DC Current Gain ( $I_C = 4.0\text{A}$ , $V_{CE} = 4.0\text{V}$ ) ( $I_C = 10\text{A}$ , $V_{CE} = 4.0\text{V}$ )	$h_{FE}$	20 5.0	100	-
Collector-Emitter Saturation Voltage ( $I_C = 4.0\text{A}$ , $I_B = 0.4\text{A}$ ) ( $I_C = 10\text{A}$ , $I_B = 3.3\text{A}$ )	$V_{CE(sat)}$	-	1.1 3.0	V
Base-Emitter On Voltage ( $I_C = 4.0\text{A}$ , $V_{CE} = 4.0\text{V}$ )	$V_{BE(on)}$	-	1.8	
<b>Dynamic Characteristics</b>				
Current Gain Bandwidth Product ( $I_C = 500\text{mA}$ , $V_{CE} = 10\text{V}$ , $f = 1.0\text{MHz}$ )	$f_T$	2.5	-	MHz
Small-Signal Current Gain ( $I_C = 1.0\text{A}$ , $V_{CE} = 4\text{V}$ , $f = 1\text{kHz}$ )	$h_{fe}$	15	-	-

(1) Pulse Test: Pulse Width =  $300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

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



# TIP3055, 2955

## Complementary Power Transistors



Figure - 2 DC Current Gain

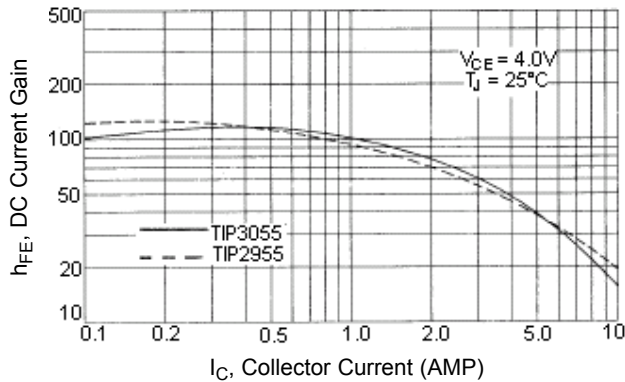
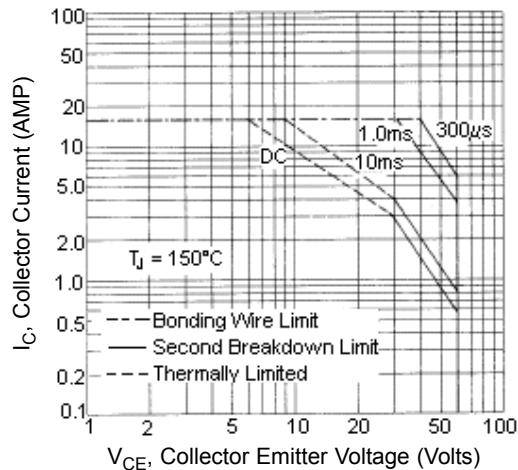


Figure - 3 Active Region Safe Operating Area



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

### Specifications

$I_{C(av)}$ maximum (A)	$V_{CE0}$ maximum (V)	$h_{FE}$ minimum at $I_C = 4A$	$P_{tot}$ at $25^\circ\text{C}$ (W)	Package	Type	Part Number
15	60	20	90	TO-247	PNP	TIP2955
					NPN	TIP3055



# TIP3055, 2955

## Complementary Power Transistors

### Notes:

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