

2N3055, MJ2955

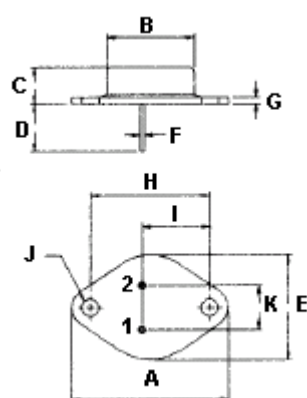
Complementary Power Transistors



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

Features:

- Power dissipation - $P_D = 115W$ at $T_C = 25^\circ C$.
- DC current gain $h_{FE} = 20$ to 70 at $I_C = 4.0A$.
- $V_{CE(sat)} = 1.1V$ (Maximum) at $I_C = 4.0A$, $I_B = 400mA$.



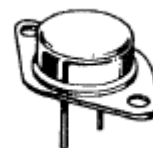
Pin 1. Base
2. Emitter
Collector(Case)

Dimensions	Minimum	Maximum
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18

Dimensions : Millimetres

NPN 2N3055	PNP MJ2955
---------------	---------------

15 Ampere
Complementary Silicon
Power Transistors
60 Volts
115 Watts



TO-3

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	115 0.657	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +200	$^\circ C$



2N3055, MJ2955

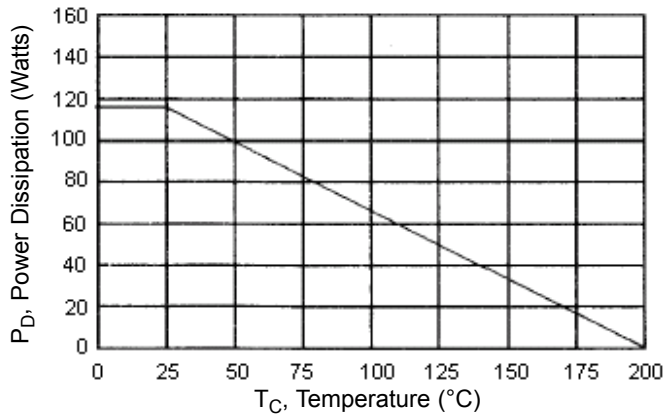
Complementary Power Transistors



Thermal Characteristics

Characteristic	Symbol	Maximum	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.52	$^{\circ}\text{C/W}$

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 = 200mA, I _B = 0)	V _{CEO(sus)}	60	-	V
Collector-Emitter Sustaining Voltage (1) (I _C = 200mA, R _{BE} = 100Ω)	V _{CER(sus)}	70	-	
Collector Cut off Current (V _{CE} = 30V, I _B = 0)	I _{CEO}	-	0.7	mA
Collector Cut off Current (V _{CE} = 100V, V _{BE(off)} = 1.5V) (V _{CE} = 100V, V _{BE(off)} = 1.5V, T _C = 150°C)	I _{CEX}	-	1.0 5.0	
Emitter Cut off Current (V _{EB} = 7.0V, I _C = 0)	I _{EBO}	-	5.0	
ON Characteristics (1)				
DC Current Gain (I _C = 4.0A, V _{CE} = 4.0V) (I _C = 10A, V _{CE} = 4.0A)	h _{FE}	20 5.0	70	-
Collector-Emitter Saturation Voltage (I _C = 4.0A, I _B = 0.4A) (I _C = 10A, I _B = 3.3A)	V _{CE(sat)}	-	1.1 3.0	V
Base-Emitter On Voltage (I _C = 4.0A, V _{CE} = 4.0V)	V _{BE(on)}	-	1.5	
Dynamic Characteristics				
Current Gain-Bandwidth Product (2) (I _C = 500mA, V _{CE} = 10V, f = 1.0MHz)	f _T	2.5	-	MHz
Small-Signal Current Gain (I _C = 1.0A, V _{CE} = 4.0V, f = 1KHz)	h _{fe}	15	120	-

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

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

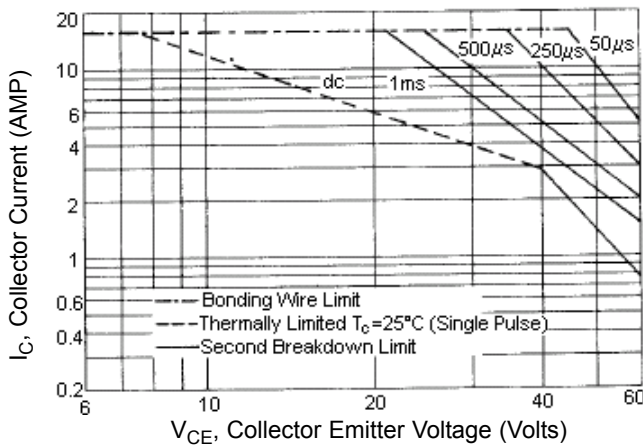


2N3055, MJ2955

Complementary Power Transistors



Active-Region Safe Operating Area (SOA)

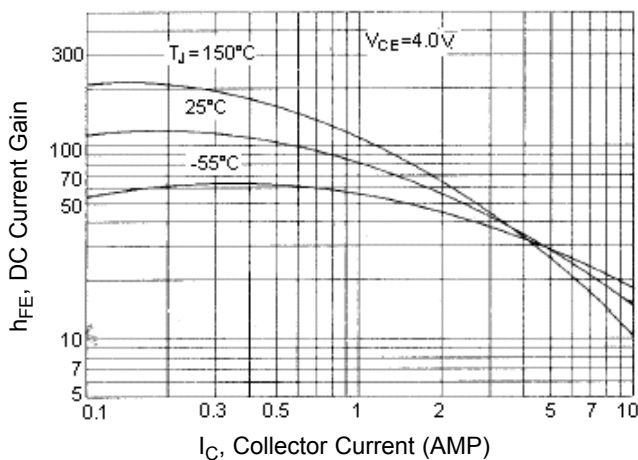


There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate I_C - V_{CE} limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation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

The data of SOA curve is based on $T_{J(PK)} = 200^\circ\text{C}$; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \leq 200^\circ\text{C}$. At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

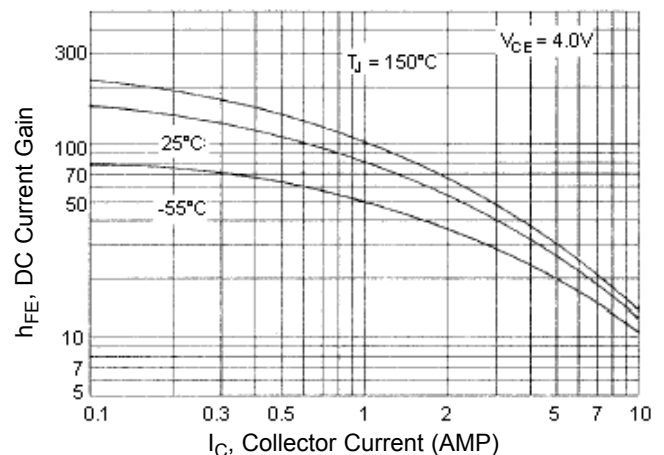
NPN 2N3055

DC Current Gain

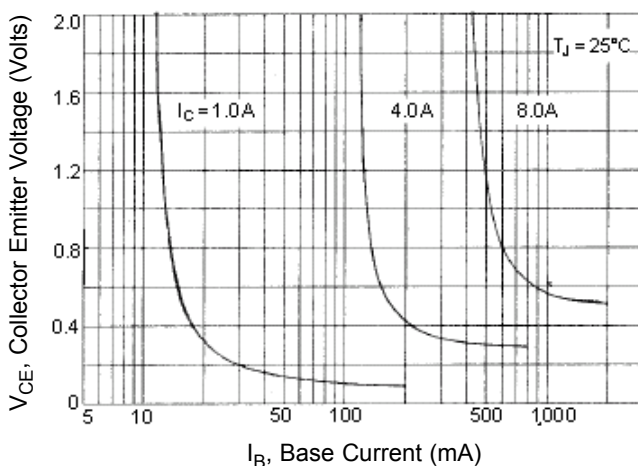


PNP MJ2955

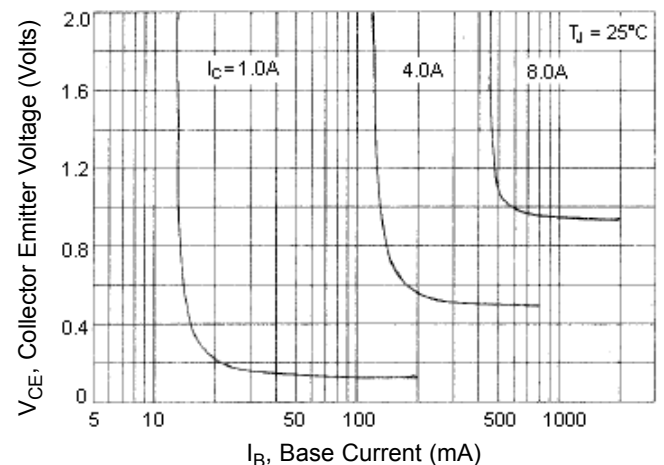
DC Current Gain



Collector Saturation Region



Collector Saturation Region



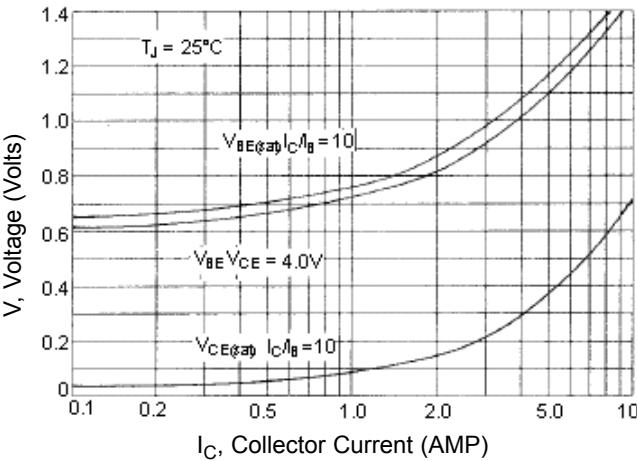
2N3055, MJ2955

Complementary Power Transistors



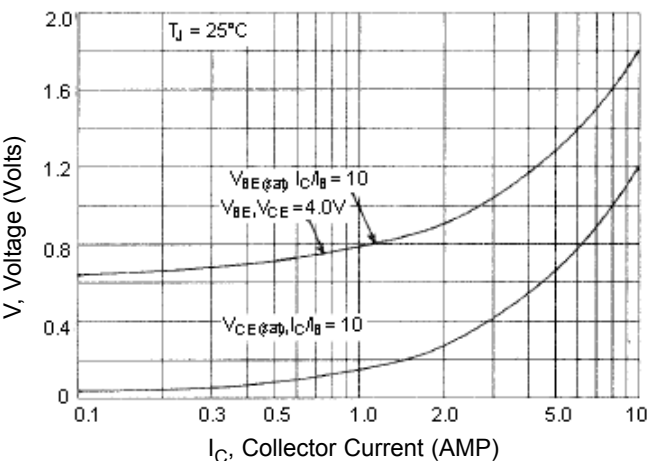
NPN 2N3055

“ON” Voltages



PNP MJ2955

“ON” Voltages



Specifications

$I_{C(av)}$ maximum (A)	V_{CEO} maximum (V)	h_{FE} minimum	P_{tot} at 25°C (W)	Package	Type	Part Number
15	60	20 at $I_C = 4\text{A}$	115	TO-3	NPN	2N3055
		5 at $I_C = 10\text{A}$			PNP	MJ2955



2N3055, MJ2955

Complementary Power Transistors



Notes:

International Sales Offices:



AUSTRALIA – Farnell InOne

Tel No: ++ 61 2 9645 8888
Fax No: ++ 61 2 9644 7898



FINLAND – Farnell InOne

Tel No: ++ 358 9 560 7780
Fax No: ++ 358 9 345 5411



NETHERLANDS – Farnell InOne

Tel No: ++ 31 30 241 7373
Fax No: ++ 31 30 241 7333



SWITZERLAND – Farnell InOne

Tel No: ++ 41 1 204 64 64
Fax No: ++ 41 1 204 64 54



AUSTRIA – Farnell InOne

Tel No: ++ 43 662 2180 680
Fax No: ++ 43 662 2180 670



FRANCE – Farnell InOne

Tel No: ++ 33 474 68 99 99
Fax No: ++ 33 474 68 99 90



NEW ZEALAND – Farnell InOne

Tel No: ++ 64 9 357 0646
Fax No: ++ 64 9 357 0656



UK – Farnell InOne

Tel No: ++ 44 8701 200 200
Fax No: ++ 44 8701 200 201



BELGIUM – Farnell InOne

Tel No: ++ 32 3 475 2810
Fax No: ++ 32 3 227 3648



GERMANY – Farnell InOne

Tel No: ++ 49 89 61 39 39 39
Fax No: ++ 49 89 613 59 01



NORWAY – Farnell InOne

Tel No: ++ 45 44 53 66 66
Fax No: ++ 45 44 53 66 02



UK – BuckHickman InOne

++ 44 8450 510 150
++ 44 8450 510 130



BRAZIL – Farnell-Newark InOne

Tel No: ++ 55 11 4066 9400
Fax No: ++ 55 11 4066 9410



HONG KONG – Farnell-Newark InOne

Tel No: ++ 852 2268 9888
Fax No: ++ 852 2268 9899



PORTUGAL – Farnell InOne

Tel No: ++ 34 93 475 8804
Fax No: ++ 34 93 474 5288



UK – CPC

++ 44 8701 202 530
++ 44 8701 202 531



CHINA – Farnell-Newark InOne

Tel No: ++86 10 6238 5152
Fax No: ++86 10 6238 5022



IRELAND – Farnell InOne

Tel No: ++ 353 1 830 9277
Fax No: ++ 353 1 830 9016



SINGAPORE – Farnell-Newark InOne

Tel No: ++ 65 6788 0200
Fax No: ++ 65 6788 0300



EXPORT – Farnell InOne

Tel No: ++ 44 8701 200 208
Fax No: ++ 44 8701 200 209

For enquiries from all other markets



DENMARK – Farnell InOne

Tel No: ++ 45 44 53 66 44
Fax No: ++ 45 44 53 66 06



ITALY – Farnell InOne

Tel No: ++ 39 02 93 995 200
Fax No: ++ 39 02 93 995 300



SPAIN – Farnell InOne

Tel No: ++ 34 93 475 8805
Fax No: ++ 34 93 474 5107



ESTONIA – Farnell InOne

Tel No: ++ 358 9 560 7780
Fax No: ++ 358 9 345 5411



MALAYSIA – Farnell-Newark InOne

Tel No: ++ 60 3 7873 8000
Fax No: ++ 60 3 7873 7000



SWEDEN – Farnell InOne

Tel No: ++ 46 8 730 50 00
Fax No: ++ 46 8 83 52 62

<http://www.farnellinone.com>

<http://www.buckhickmaninone.com>

<http://www.cpc.co.uk>

Disclaimer This data sheet and its contents (the "Information") belong to the Premier Farnell Group (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. Multicomp is the registered trademark of the Group. © Premier Farnell plc 2004.

