

Transistor

NPN, TO-3



Features:

- Power dissipation - $P_D = 115W$ at $T_C = 25^\circ C$
- DC current gain $h_{FE} = 20 \sim 70$ at $I_C = 4A$
- $V_{CE(Sat)} = 1.1V$ (max.) at $I_C = 4A$, $I_B = 400mA$
- Designed for use in general-purpose amplifier and switching applications

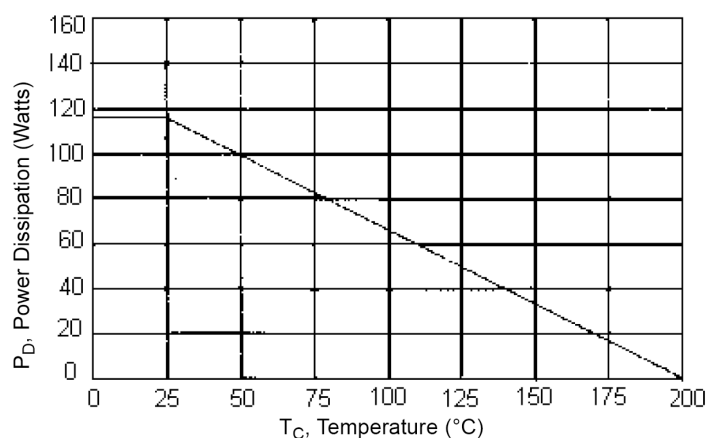
Maximum Ratings

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	60	V
Collector-Emitter Voltage	V_{CEX}	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 Device 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 +150	$^\circ C$

Thermal Characteristics

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.52	$^\circ C/W$

Power Derating



Transistor

NPN, TO-3



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

Characteristic	Symbol	Min.	Max.	Unit
----------------	--------	------	------	------

Off Characteristics

Collector-Emitter Sustaining Voltage (1) ($I_C = 200\text{mA}$, $I_B = 0$)	$I_{EO(sus)}$	60	-	V
Collector-Base Sustaining Voltage (1) ($I_C = 200\text{mA}$, $R_{BE} = 100\Omega$)	$V_{CER(sus)}$	70	-	
Collector Cut off Current ($V_{CE} = 30\text{V}$, $I_B = 0$)	I_{CEO}	-	0.7	mA
Collector Cut off Current ($V_{CE} = 100\text{V}$, $V_{BE(off)} = 1.5\text{V}$) ($V_{CE} = 100\text{V}$, $V_{BE(off)} = 1.5\text{V}$, $T_C = 150^\circ\text{C}$)	I_{CEX}	-	1 5	
Emitter Cut off Current ($V_{EB} = 7\text{V}$, $I_C = 0$)	I_{EBO}	-	5	

On Characteristic (1)

DC Current Gain ($I_C = 4\text{A}$, $V_{CE} = 4\text{V}$) ($I_C = 10\text{A}$, $V_{CE} = 4\text{V}$)	h_{FE}	20 5	70	-
Collector-Emitter Saturation Voltage ($I_C = 4\text{A}$, $I_B = 0.4\text{A}$) ($I_C = 10\text{A}$, $I_B = 3.3\text{A}$)	$V_{CE(sat)}$	-	1.1 3	V
Base-Emitter On Voltage ($I_C = 4\text{A}$, $V_{CE} = 4\text{V}$)	$V_{BE(sat)}$	-	1.5	

Dynamic Characteristics

Current Gain - Bandwidth Product (2) ($I_C = 500\text{mA}$, $V_{CE} = 10\text{V}$, $f = 1\text{MHz}$)	f_T	2.5	-	MHz
Small-Signal Current Gain ($I_C = 1\text{A}$, $V_{CE} = 4\text{V DC}$, $f = 1\text{MHz}$)	h_{fe}	15	120	-

Second Breakdown Characteristics

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

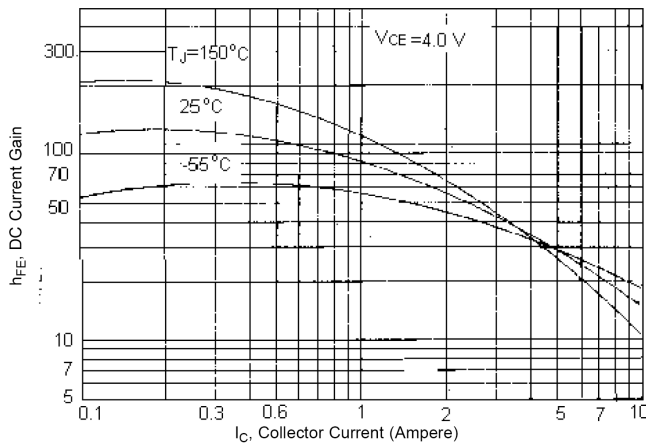
(2). $f_T = |h_{fe}| \cdot f_{test}$

Transistor

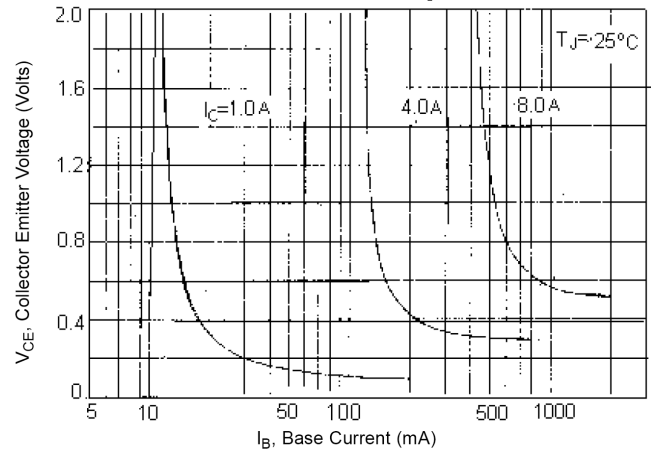
NPN, TO-3



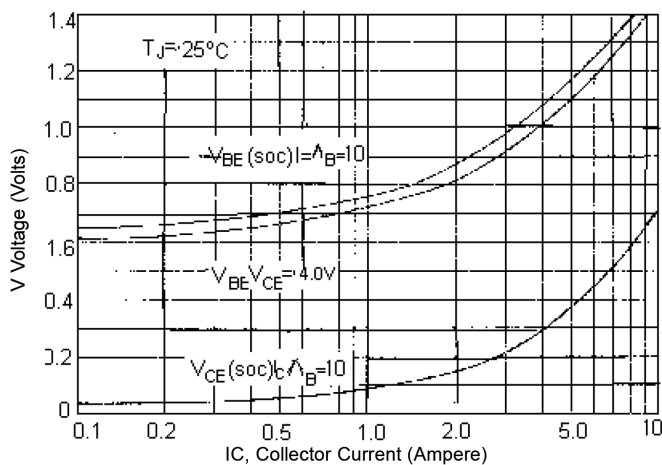
DC Current Gain



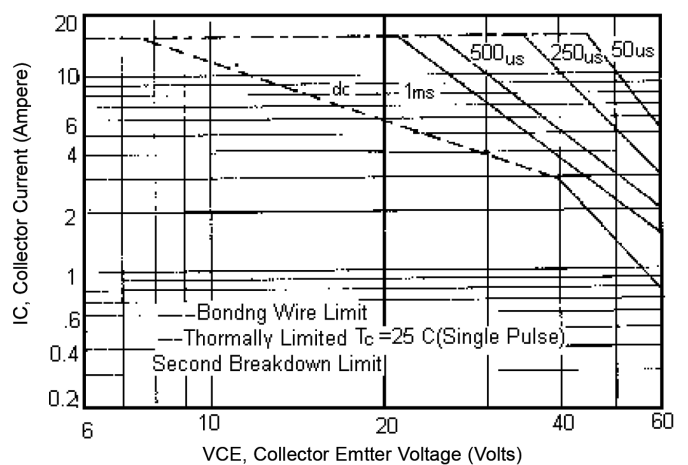
Collector Saturation Region



"On Voltage"



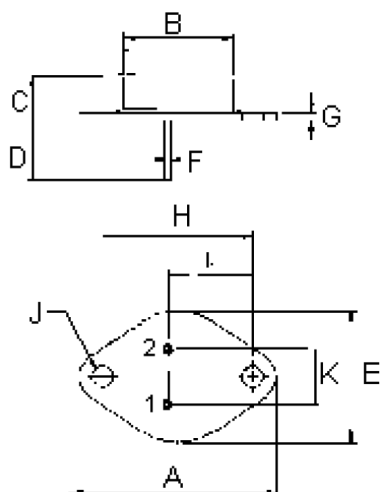
Active Region Safe Operating Area (SOA)



There are two limitation 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 curves indicate. The data of SOA curve is base 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 $T_{J(PK)} = 200^\circ\text{C}$. At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

Transistor

NPN, TO-3



Pin 1. Base
2. Emitter
3. Collector (Case)

Dimensions	Min.	Max.
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
D	11.18	12.19
E	25.2	26.67
F	0.92	1.09
G	1.38	1.62
H	29.9	30.4
I	16.64	17.3
J	3.88	4.36
K	10.67	11.18

Dimensions : Millimetres

Part Number Table

Description	Part Number
Transistor, NPN, TO-3	2N3055

Important Notice : This data sheet and its contents (the "Information") belong to the members of the Premier Farnell group of companies (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 2012.