Transistor
NPN, TO-3

Features:

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

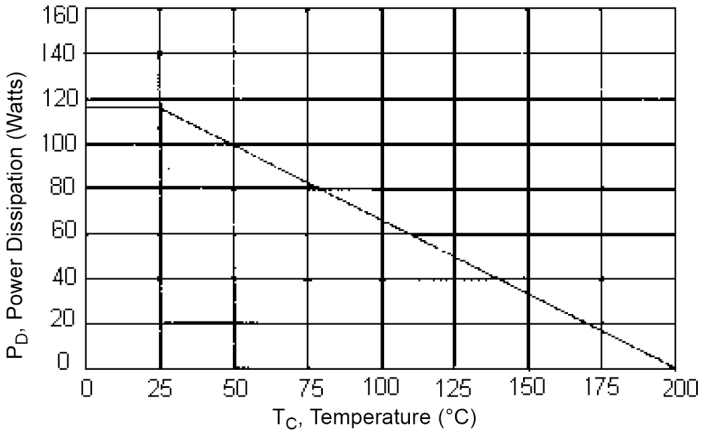
Maximum Ratings

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 TC = 25°C Derate above 25°C	P_D	115 0.657	W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	°C

Thermal Characteristics

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

Power Derating



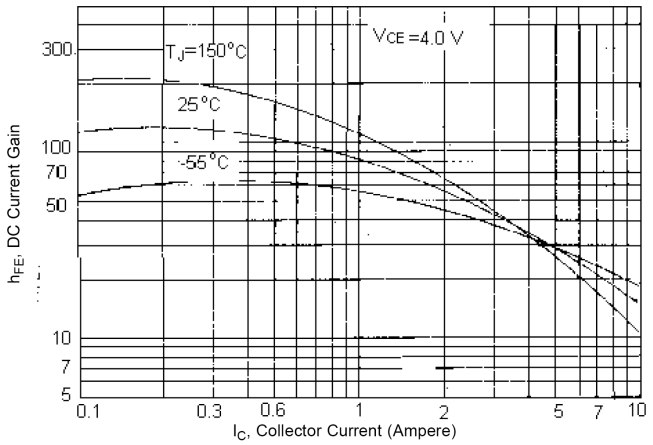
Electrical Characteristics (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min.	Max.	Unit
Off Characteristics				
Collector-Emitter Sustaining Voltage (1) (I_C = 200mA, I_B = 0)	$I_{EO\ (sus)}$	60	-	V
Collector-Base 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 5	
Emitter Cut off Current (V_{EB} = 7V, I_C = 0)	I_{EBO}	-	5	
On Characteristic (1)				
DC Current Gain (I_C = 4A, V_{CE} = 4V) (I_C = 10A, V_{CE} = 4V)	h_{FE}	20 5	70	-
Collector-Emitter Saturation Voltage (I_C = 4A, I_B = 0.4A) (I_C = 10A, I_B = 3.3A)	$V_{CE\ (sat)}$	-	1.1 3	V
Base-Emitter On Voltage (I_C = 4A, V_{CE} = 4V)	$V_{BE\ (sat)}$	-	1.5	
Dynamic Characteristics				
Current Gain - Bandwidth Product (2) (I_C = 500mA,V_{CE} = 10V, f = 1MHz)	f_T	2.5	-	MHz
Small-Signal Current Gain (I_C = 1A, V_{CE} = 4V DC, f = 1 MHz)	h_{fe}	15	120	-
Second Breakdown Characteristics				

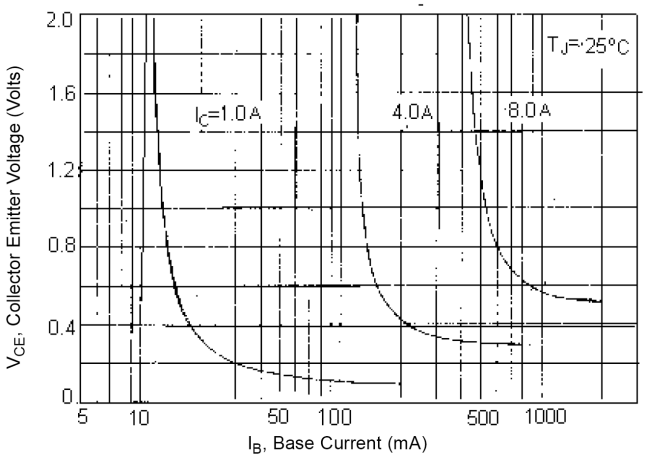
(1). Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2%.

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

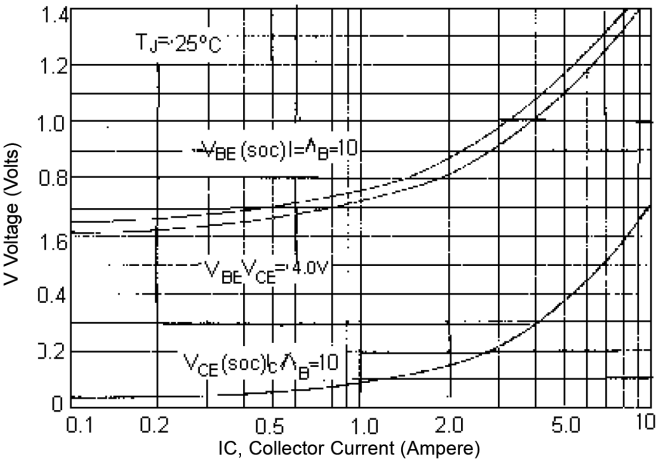
DC Current Gain



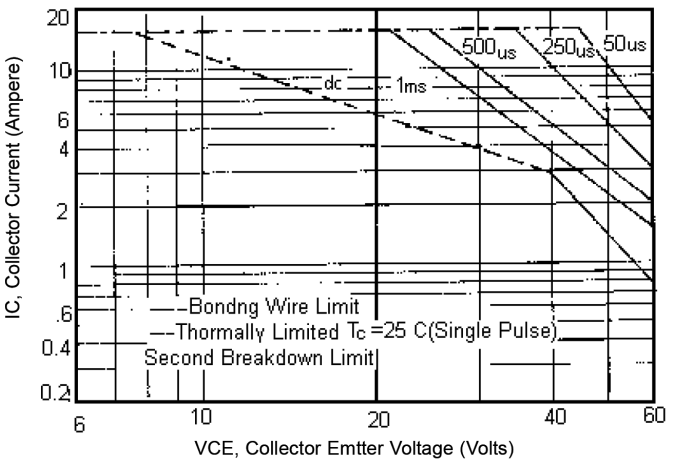
Collector Saturation Region



"On Voltage"



Active Region Sage 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°C; TC is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)}$ = 200°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.

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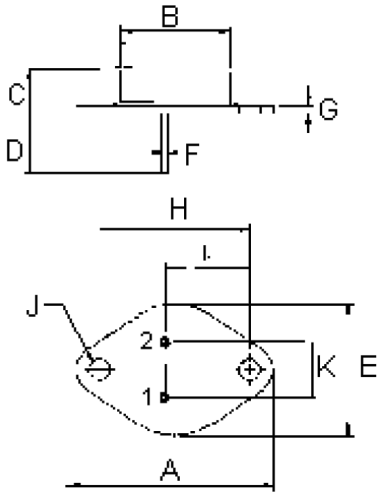

Pin 1. Base
2. Emitter
3. Collector (Case)

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