

Features:

- High voltage, high speed transistor for horizontal deflection output stages of TV and CTV circuits
- Collector-Emitter Sustaining Voltage - $V_{CEV} = 400V$ (Min.)
- Low Saturation Voltage - $V_{CE(sat)} = 1V$ (Max.) at $I_C = 5A$
- Fast Switching Speed: $t_f = 0.75\mu s$ (Max.)

Maximum Ratings

Characteristic	Symbol	BU406	Unit
Collector-Emitter Voltage	V_{CEO}	200	V
Collector-Emitter Voltage	V_{CEV}	400	
Collector-Base Voltage	V_{CBO}		
Emitter-Base Voltage	V_{EBO}	6	
Collector Current-Continuous -Peak	I_C	7 10	A
Base Current-Continuous	I_B	4	
Total Power Dissipation at $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	60 0.48	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ C$

Thermal Characteristics

Characteristic	Symbol	Max.	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	2.08	$^\circ C/W$

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

Characteristic	Symbol	Min.	Max.	Unit
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OFF Characteristics

Collector-Emitter Sustaining Voltage (1) $I_C = 100\text{mA}, I_B = 0$	$V_{CE(sus)}$	200	-	V
Collector Cut off Current $V_{CE} = 400\text{V}, V_{BE} = 0$	I_{CES}	-	5	mA
Emitter Cut off Current $V_{EB} = 6\text{V}, I_C = 0$	I_{EBO}	-	1	μA

ON Characteristics (1)

DC Current Gain $I_C = 2\text{A}, V_{CE} = 5\text{V}$	h_{FE}	30 (Typ.)	-	-
Collector-Emitter Saturation Voltage $I_C = 5\text{A}, I_B = 0.5\text{A}$	$V_{CE(sat)}$	-	1	V
Base-Emitter Saturation Voltage $I_C = 5\text{A}, I_B = 0.5\text{A}$	$V_{BE(sat)}$	-	1.2	

Dynamic Characteristics

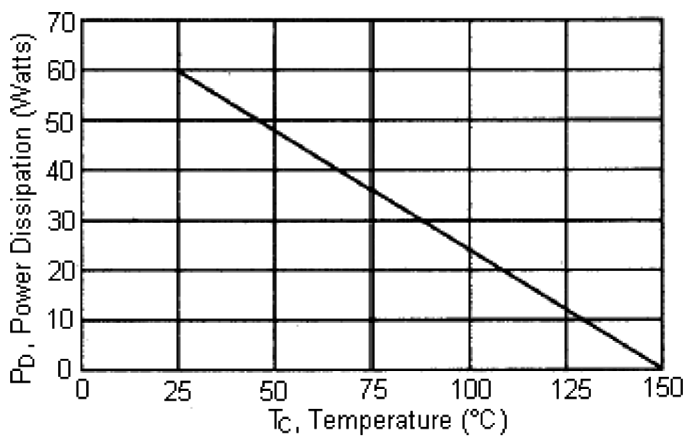
Current Gain-Bandwidth Product $I_C = 0.5\text{A}, V_{CE} = 10\text{V}, f = 1\text{MHz}$	f_T	10	-	MHz
Output Capacitance $V_{CE} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	C_{ob}	80 (Typ.)	-	pF

Switching Characteristics

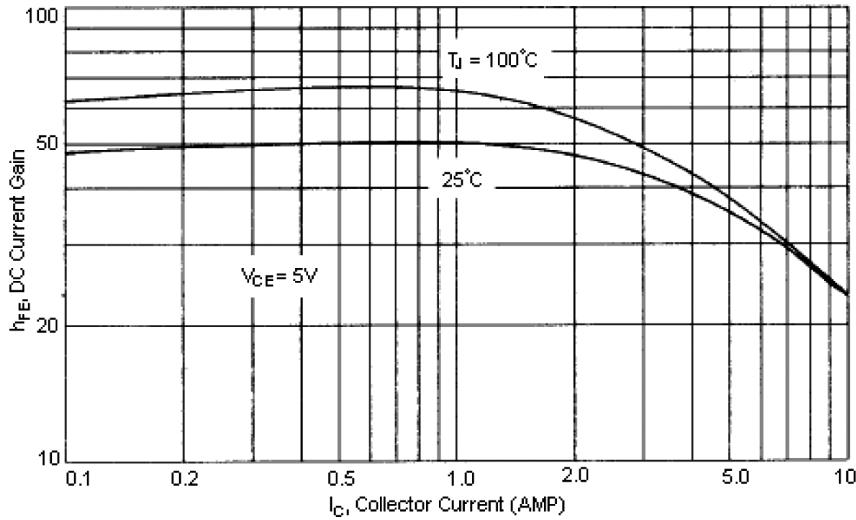
Fall Time $V_{CC} = 40\text{V}, I_C = 5\text{A}, I_{B1} = -I_{B2} = 0.6\text{A}, L = 150\mu\text{H}$	t_f	-	0.75	μs
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(1) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2\%$

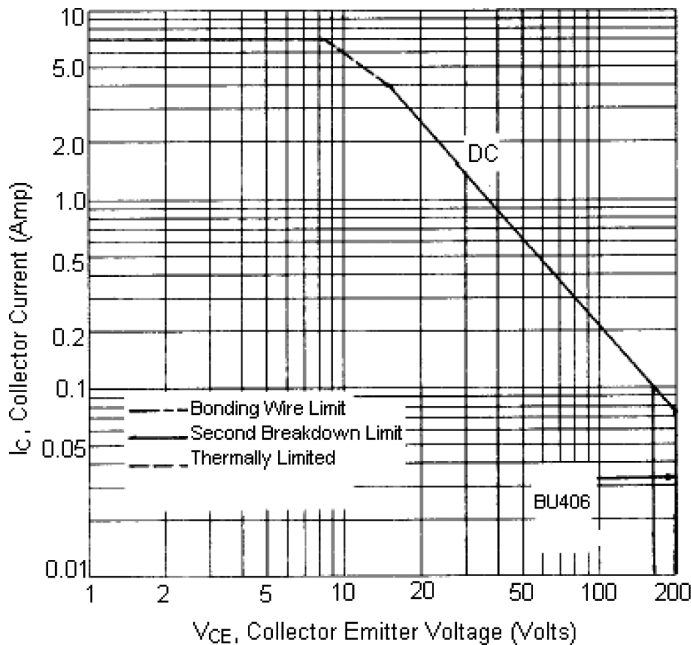
Figure - 1 Power Derating



DC Current Gain



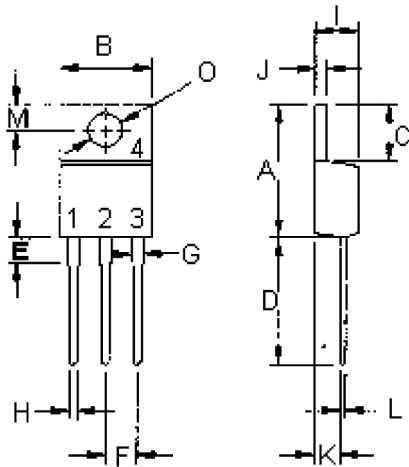
Active-Region Safe Operating Area (SOA)



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 $T_{J(PK)} = 150^\circ\text{C}$; T_C is variable depending on power level. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)} \leq 150^\circ\text{C}$. At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

Power Transistor



Pin Configuration:

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

Dimensions	Min.	Max.
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.2	2.97
L	0.33	0.55
M	2.48	2.98
O	3.7	3.9

Dimensions : Millimetres

Part Number Table

Description	Part Number
Transistor, NPN, TO-220	BU406

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