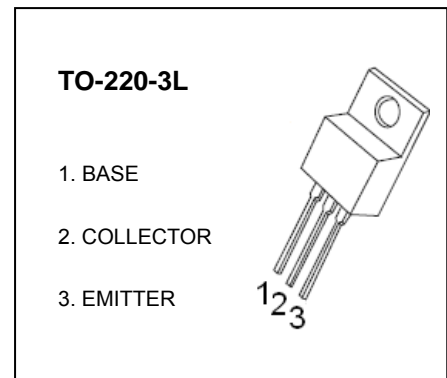


TO-220-3L Plastic-Encapsulate Transistors

HPBU406 TRANSISTOR (NPN)

FEATURES

- High Voltage
- Fast Switching Speed: $t_f = 750$ ns (max)
- Low Saturation Voltage: $V_{CE(sat)} = 1$ V (max) @ 5 A
- Pb-Free Packages are Available*



MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

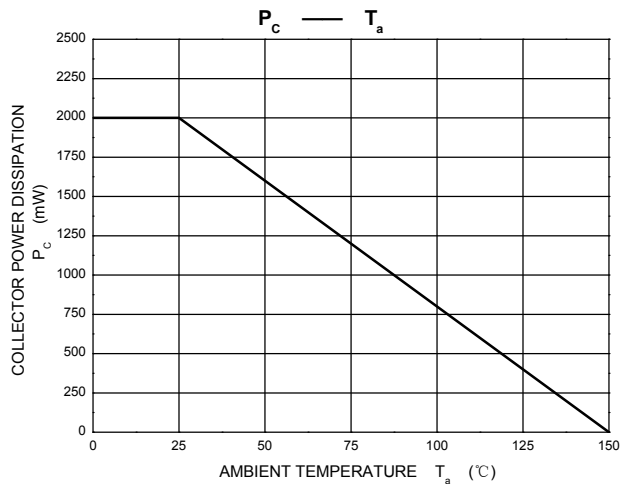
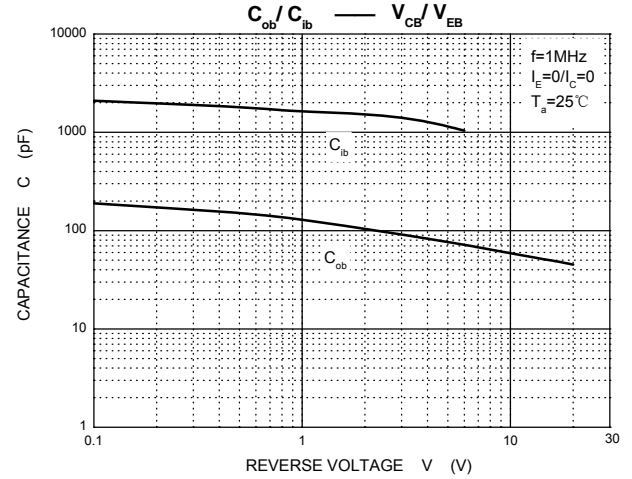
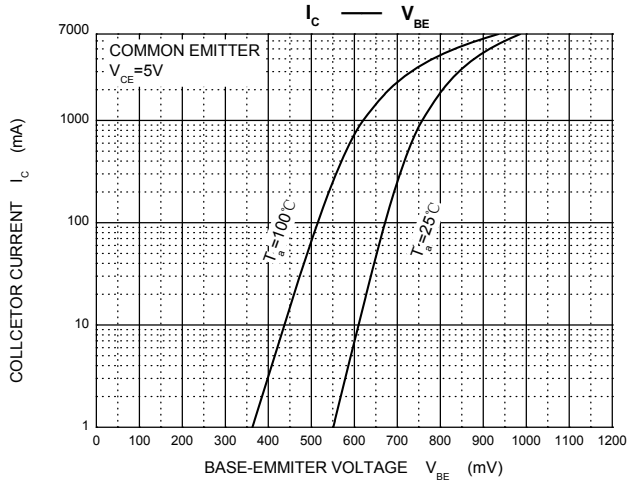
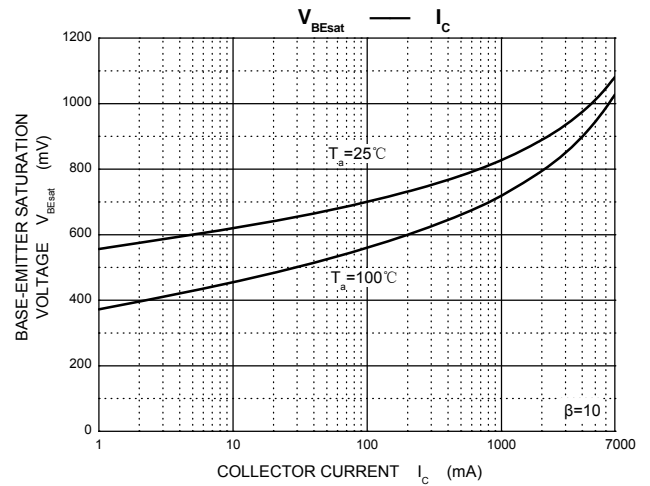
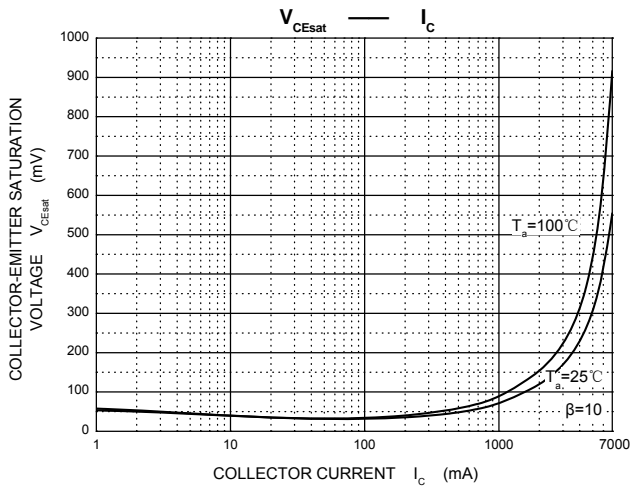
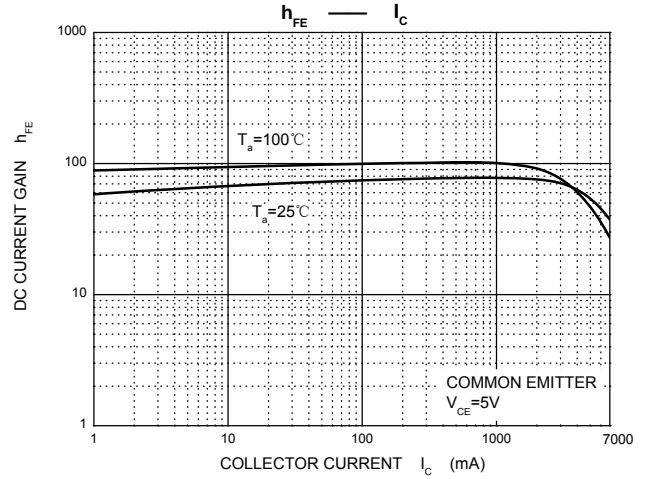
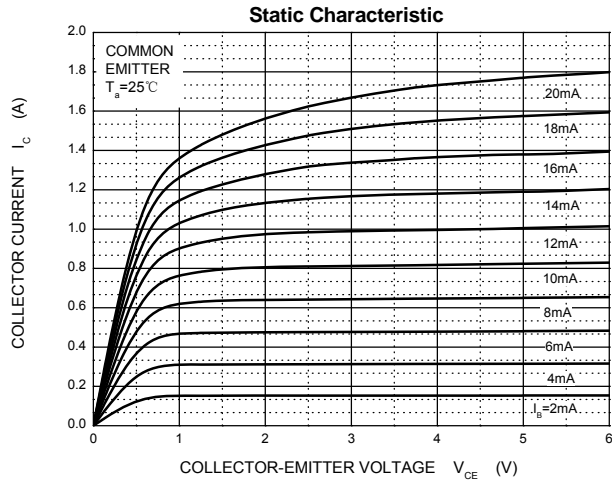
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	400	V
V_{CEO}	Collector-Emitter Voltage	200	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	7	A
P_C	Collector Power Dissipation	2	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	62.5	$^\circ\text{C/W}$
T_j	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature	-55~+150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless otherwise specified)

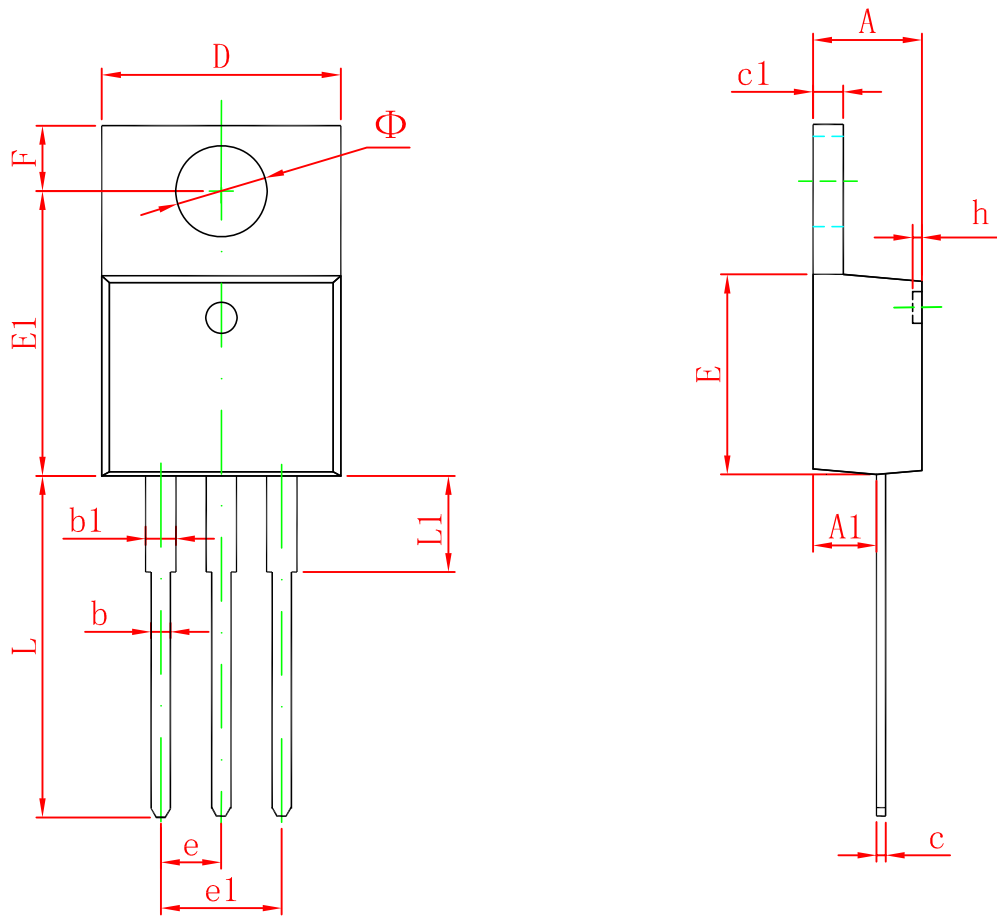
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	400			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}^*$	$I_C=100\text{mA}, I_B=0$	200			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	6			V
Collector cut-off current	I_{CES}	$V_{CB}=400\text{V}, I_E=0$			5	mA
Collector cut-off current	I_{CES}	$V_{CB}=250\text{V}, I_E=0$			1	mA
Collector cut-off current	I_{CBO}	$V_{CB}=300\text{V}, I_E=0$			5	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=6\text{V}, I_C=0$			1	mA
DC current gain	h_{FE}	$V_{CE}=5\text{V}, I_C=1\text{A}$	50		100	
Collector-emitter saturation voltage	$V_{CE(sat)}^*$	$I_C=5\text{A}, I_B=500\text{mA}$			1	V
Base-emitter saturation voltage	$V_{BE(sat)}^*$	$I_C=5\text{A}, I_B=500\text{mA}$			1.2	V
Collector output capacitance	C_{ob}	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$		80		pF
Transition frequency	f_T	$V_{CE}=5\text{V}, I_C=0.2\text{A}, f=10\text{MHz}$	10			MHz

*Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycles $\leq 2.0\%$.

Typical Characteristics



TO-220-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155