



TO-220-3L

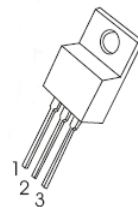
FEATURES

- Power Dissipation

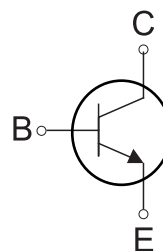
MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	30	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current -Continuous	3	A
P_C	Collector Power Dissipation	2	W
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55-150	$^{\circ}\text{C}$

1. EMITTER
2. COLLECTOR
3. BASE



Equivalent Circuit



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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V(BR)_{CBO}$	$I_C = 100\mu\text{A}, I_E=0$	40			V
Collector-emitter breakdown voltage	$V(BR)_{CEO}$	$I_C = 10\text{mA}, I_B=0$	30			V
Emitter-base breakdown voltage	$V(BR)_{EBO}$	$I_E = 100\mu\text{A}, I_C=0$	6			V
Collector cut-off current	I_{CBO}	$V_{CB}= 40\text{ V}, I_E=0$			1	μA
Collector cut-off current	I_{CEO}	$V_{CE}= 30\text{ V}, I_B=0$			10	μA
Emitter cut-off current	I_{EBO}	$V_{EB}= 6\text{ V}, I_C=0$			1	μA
DC current gain	h_{FE}	$V_{CE}= 2\text{ V}, I_C= 1\text{A}$	60		400	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C= 2\text{A}, I_B= 0.2\text{ A}$			0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C= 2\text{A}, I_B= 0.2\text{ A}$			1.5	V
Transition frequency	f_T	$V_{CE}= 5\text{V}, I_C=0.1\text{A}$ $f=10\text{MHz}$		90		MHz

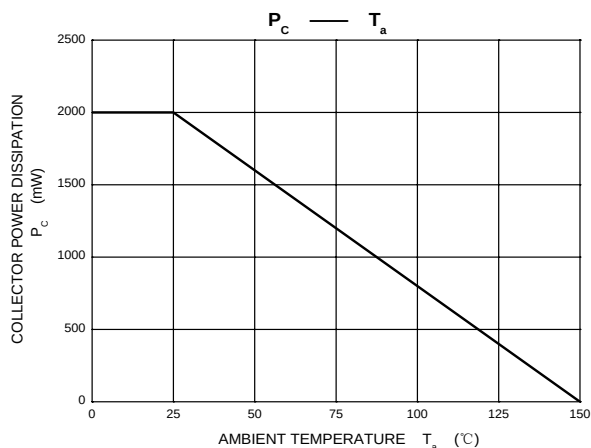
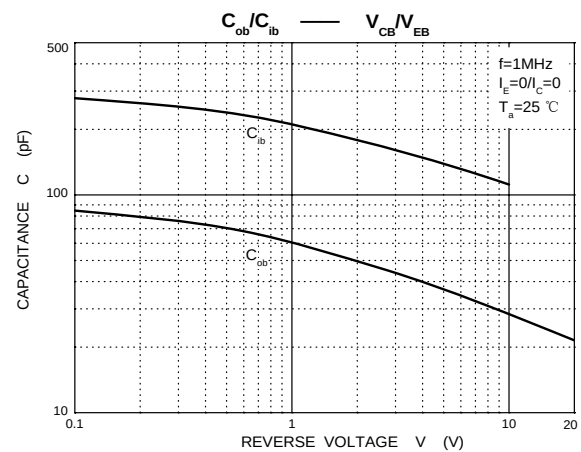
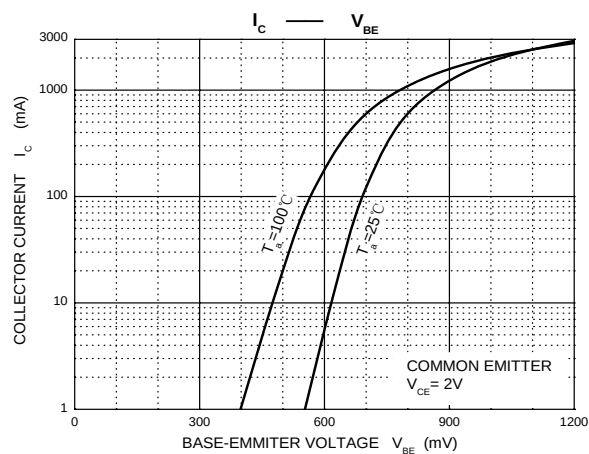
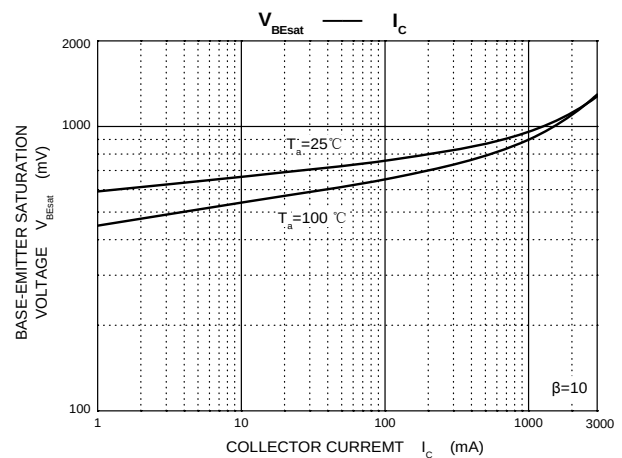
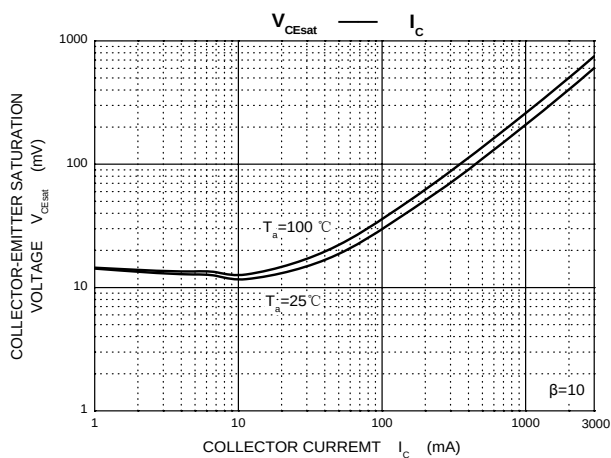
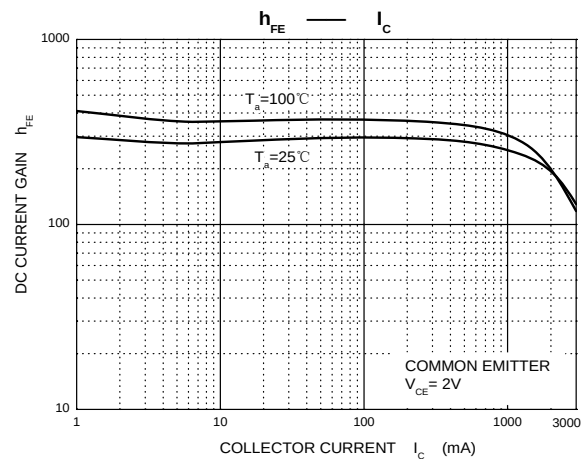
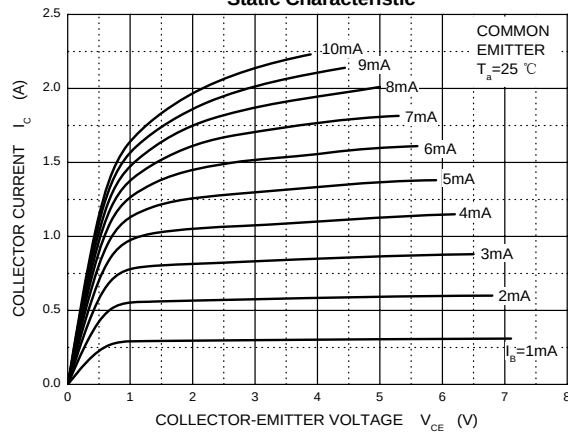
CLASSIFICATION OF h_{FE}

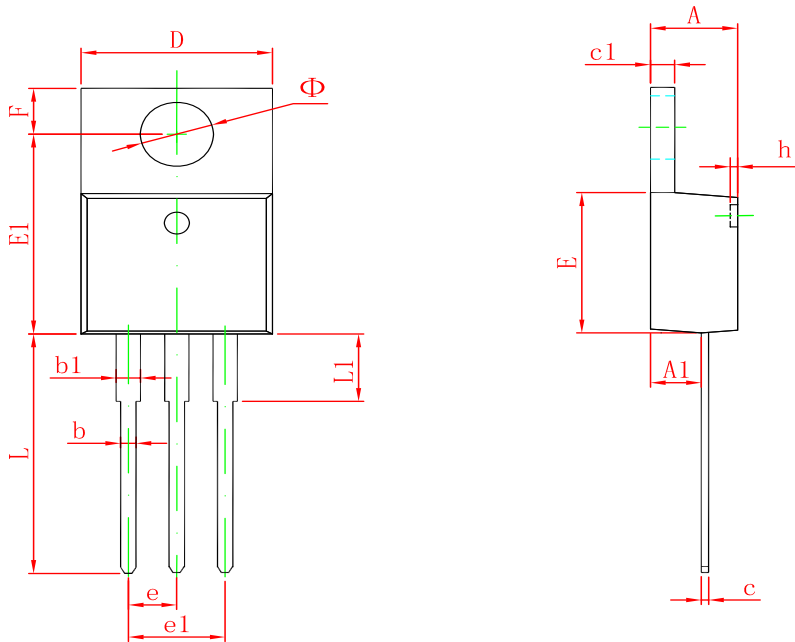
Rank	R	O	Y	GR
Range	60-120	100-200	160-320	200-400



Typical Characteristics

Static Characteristic



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

Package	Packing	Box Size L×W×H(mm)	Quatity(pcs/box)	Carton Size L×W×H(mm)	Quatity(pcs/carton)
TO-220	50pcs/Tube	560×150×50	1000	570×290×180	5000