



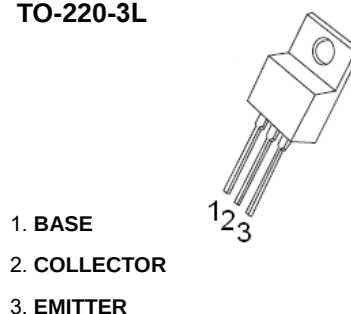
TO-220-3L Plastic-Encapsulate Transistors

2SA1012 TRANSISTOR (PNP)

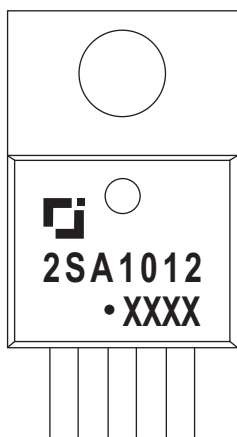
FEATURES

- High Current Switching Applications
- Low Collector Saturation Voltage
- High Speed Switching Time

TO-220-3L



MARKING

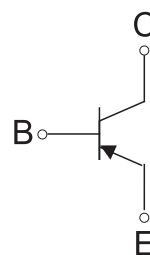


2SA1012=Device code

Solid dot=Green moldinn compound device,
if none,the normal device

XXXX=Code

Equivalent Circuit



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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-60	V
V_{CEO}	Collector-Emitter Voltage	-50	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current -Continuous	-5	A
P_C	Collector Power Dissipation	2	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62.5	$^{\circ}\text{C/W}$
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	$^{\circ}\text{C}$

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

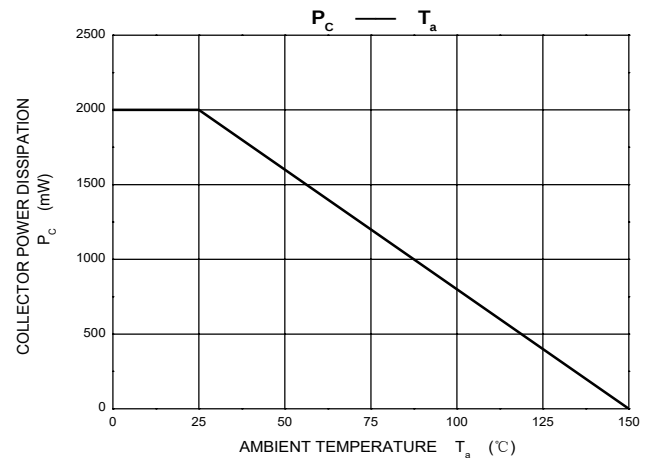
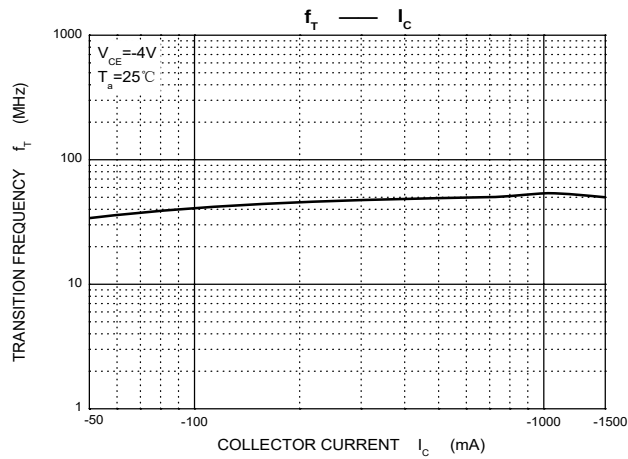
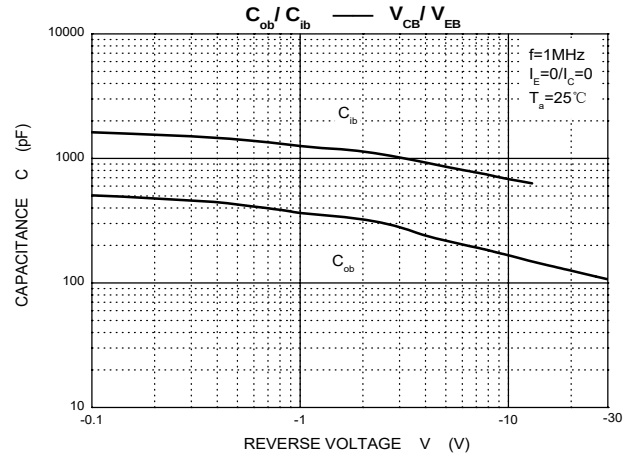
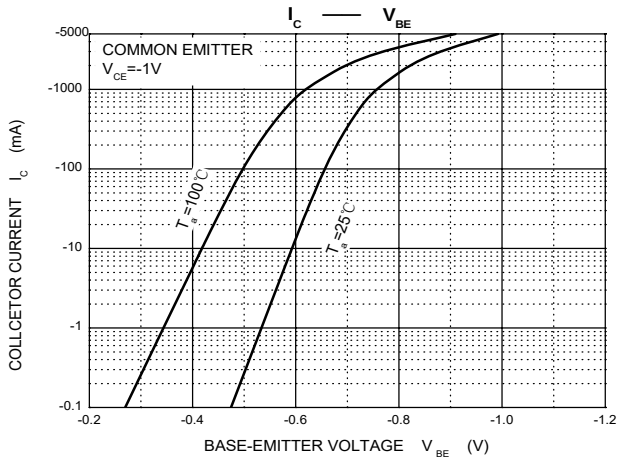
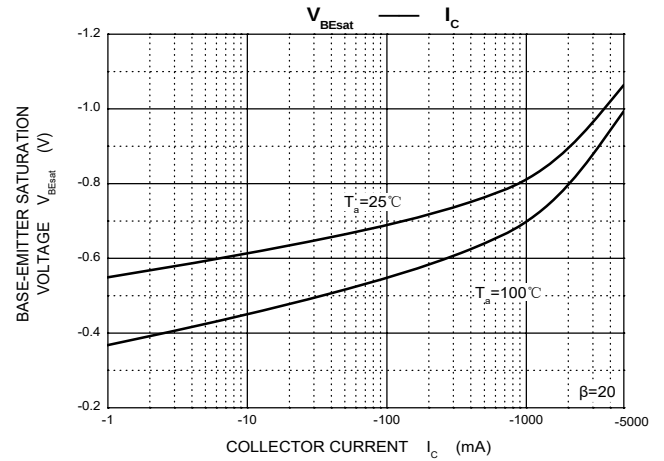
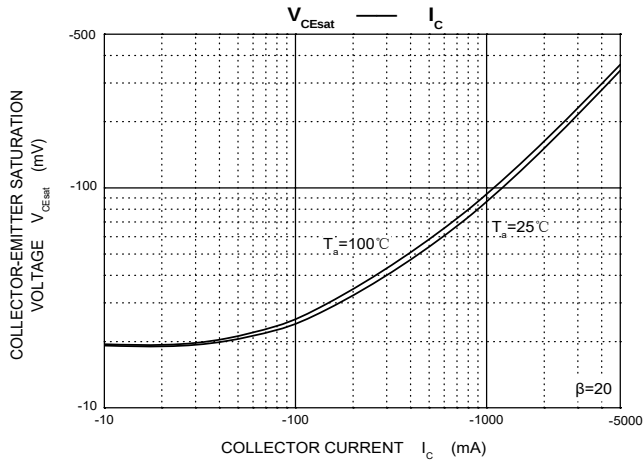
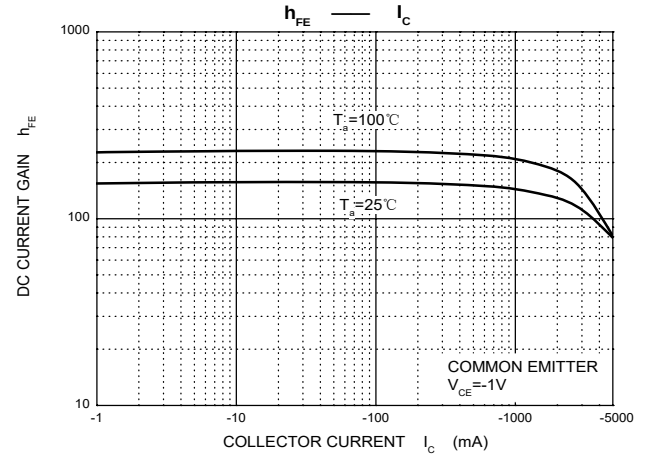
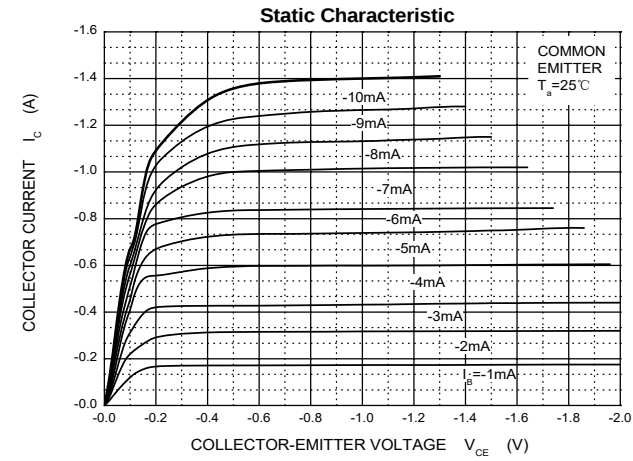
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -0.1\text{mA}$, $I_E = 0$	-60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}^*$	$I_C = -10\text{mA}$, $I_B = 0$	-50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -100\mu\text{A}$, $I_C = 0$	-5			V
Collector cut-off current	I_{CBO}	$V_{CB} = -50\text{V}$, $I_E = 0$			-1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -5\text{V}$, $I_C = 0$			-1	μA
DC current gain	$h_{FE(1)}$	$V_{CE} = -1\text{V}$, $I_C = -1\text{A}$	70		240	
	$h_{FE(2)}^*$	$V_{CE} = -1\text{V}$, $I_C = -3\text{A}$	30			
Collector-emitter saturation voltage	$V_{CE(sat)}^*$	$I_C = -3\text{A}$, $I_B = -150\text{mA}$			-0.4	V
Base-emitter saturation voltage	$V_{BE(sat)}^*$	$I_C = -3\text{A}$, $I_B = -150\text{mA}$			-1.2	V
Transition frequency	f_T	$V_{CE} = -4\text{V}$, $I_C = -1\text{A}$		60		MHz
Collector output capacitance	C_{ob}	$V_{CB} = -10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$		170		pF
Turn-on Time	t_{on}	$V_{CC} = -30\text{V}$, $I_C = -3\text{A}$, $I_{B1} = -I_{B2} = -0.15\text{A}$		0.1		μs
Storage Time	t_s			1.0		
Fall Time	t_f			0.1		

*Pulse test: $t_p \leq 300\mu\text{s}$, $\delta \leq 0.02$.

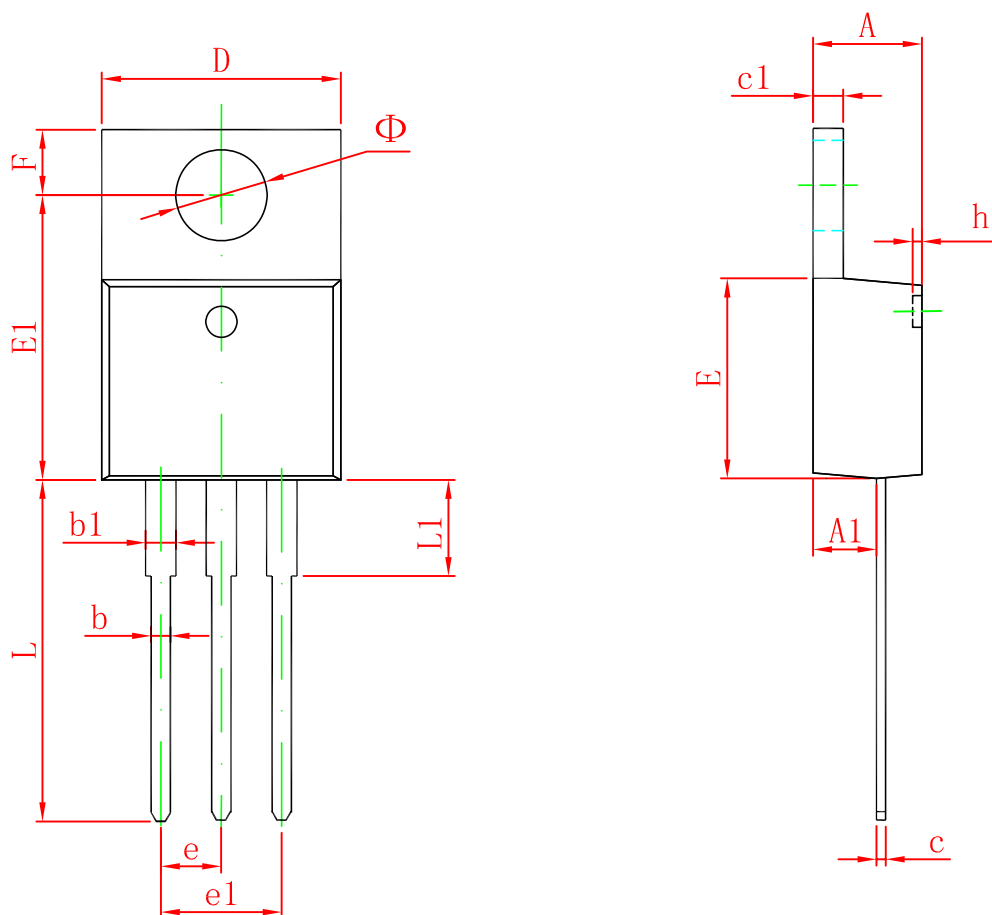
CLASSIFICATION of $h_{FE(1)}$

Rank	O	Y
Range	70-140	120-240

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