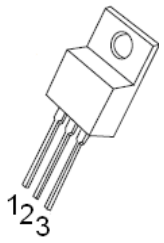
JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

TO-220-3L Plastic-Encapsulate Transistors

2SA1012 TRANSISTOR (PNP)

TO-220-3L



1. **BASE**
2. **COLLECTOR**
3. **EMITTER**

FEATURES

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

MAXIMUM RATINGS (T_a=25℃ 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	℃/W
T_j	Junction Temperature	150	℃
T_{stg}	Storage Temperature Range	-55~+150	℃

ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise specified)

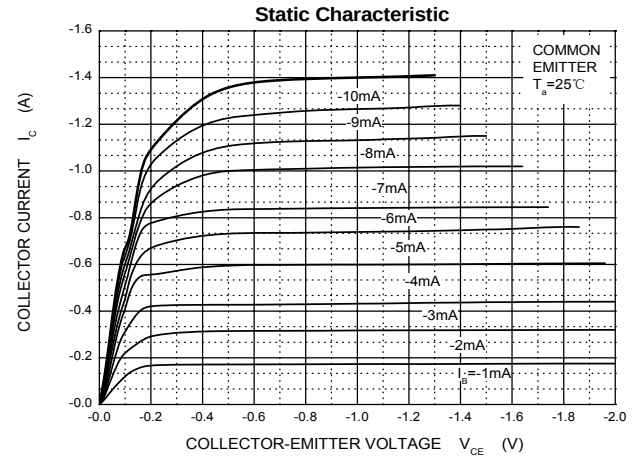
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C =-0.1mA, I_E=0	-60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$*	I_C =-10mA, I_B=0	-50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-100μA, I_C=0	-5			V
Collector cut-off current	I_{CBO}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

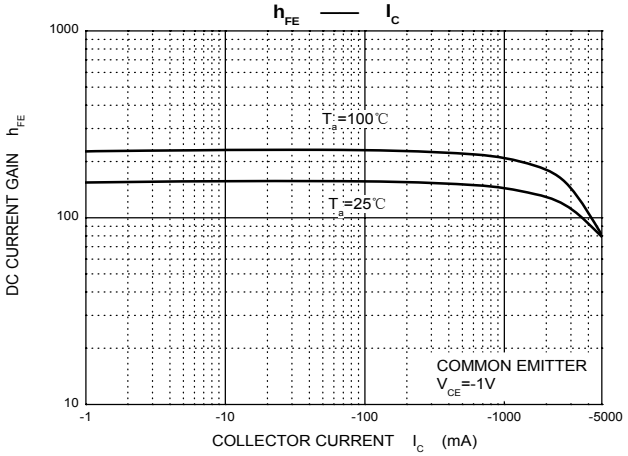
*Pulse test: t_p≤300μs, δ≤0.02.

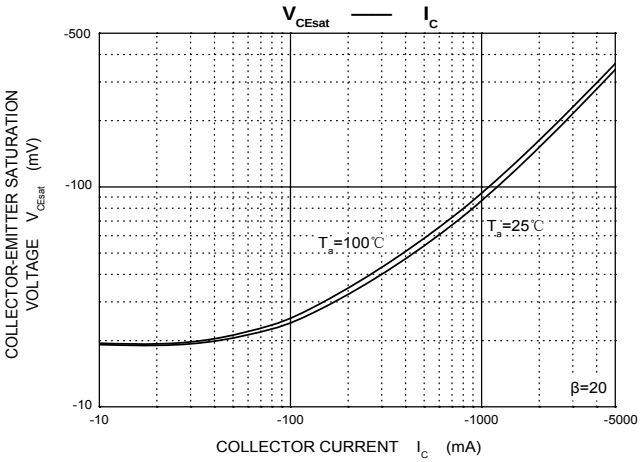
CLASSIFICATION of $h_{FE(1)}$

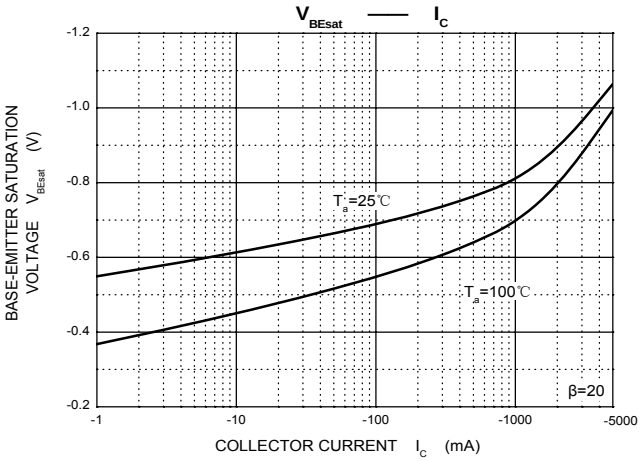
Rank	O	Y
Range	70-140	120-240

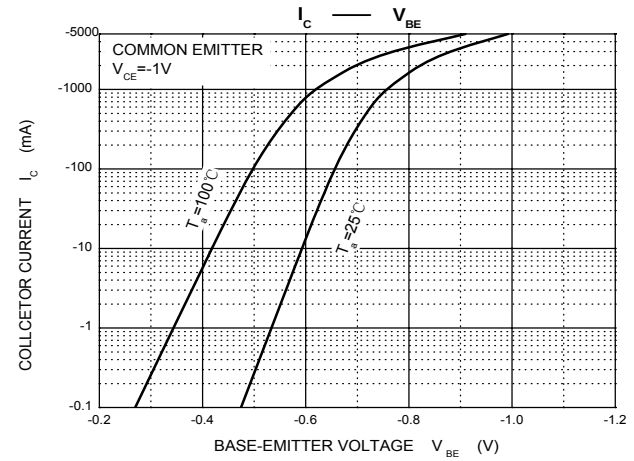
Typical Characteristics

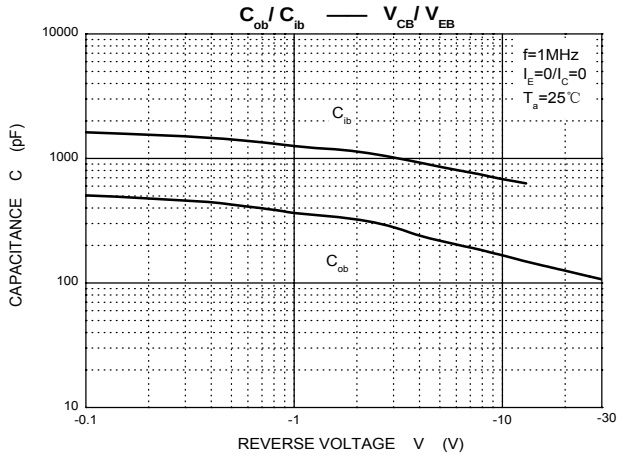


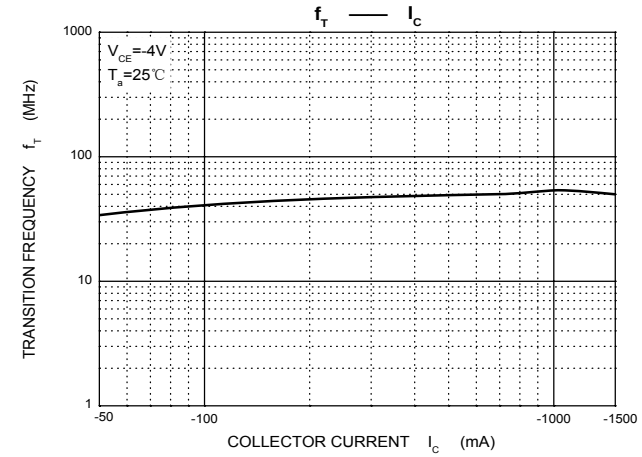


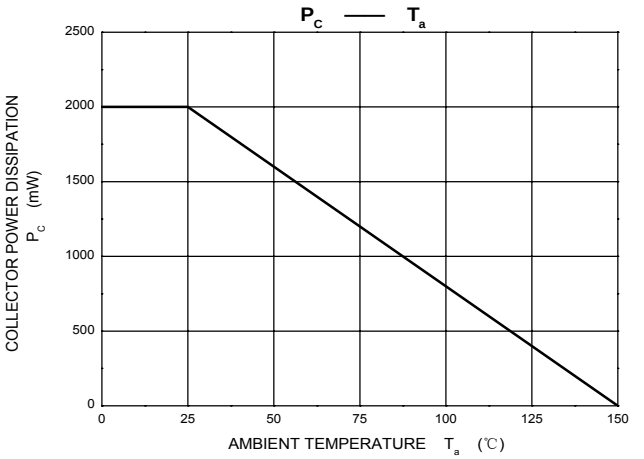




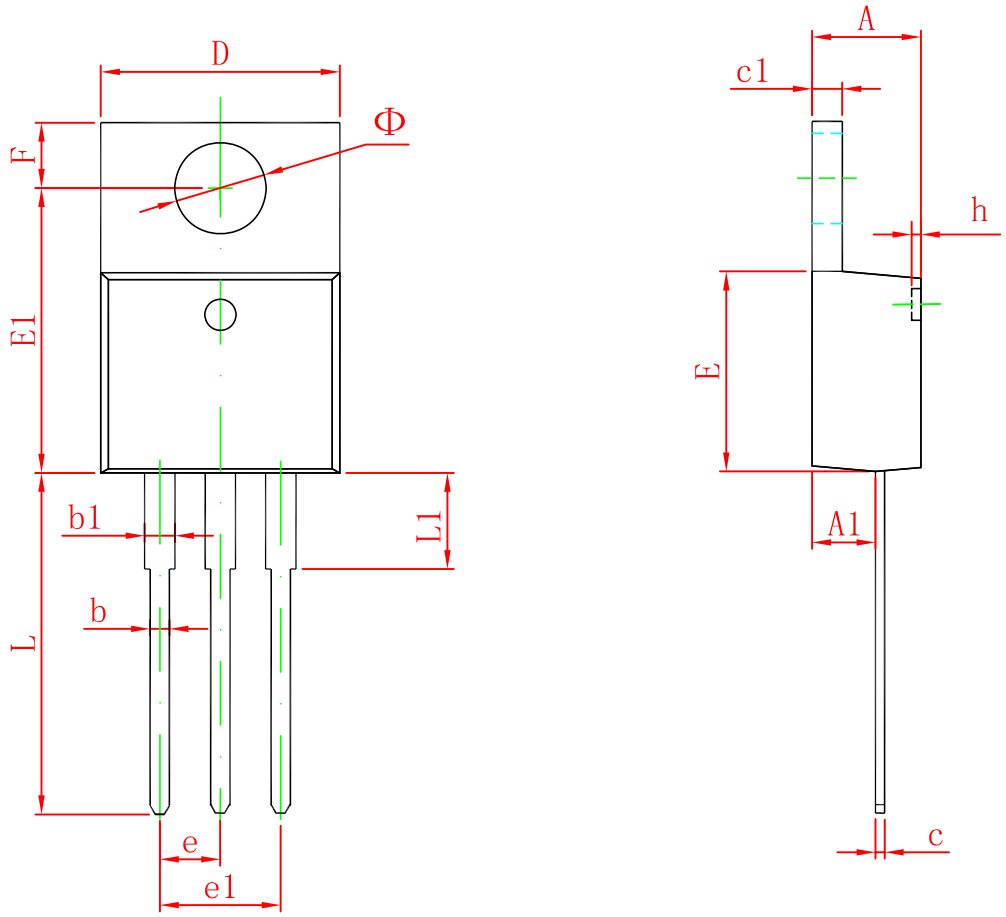








TO-220-3L Package Outline Dimensions



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