

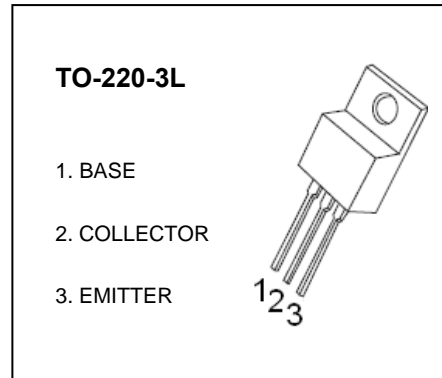


TO-220-3L Plastic-Encapsulate Transistors

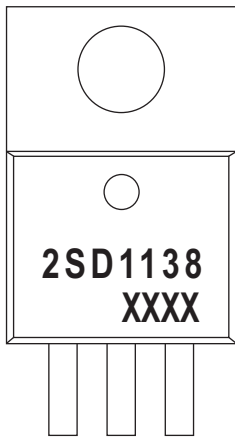
2SD1138 TRANSISTOR (NPN)

FEATURES

- Low Frequency Power Amplifier Color TV Vertical Deflection Output

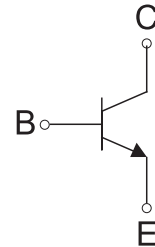


MARKING



2SD1138=Device code
XXXX=Code

Equivalent Circuit



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

Symbol	Parameter	Value	Unit
V_{CB0}	Collector-Base Voltage	200	V
V_{CEO}	Collector-Emitter Voltage	150	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	2	A
P_C	Collector Power Dissipation	1.8	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	69	$^{\circ}\text{C/W}$
T_j, T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

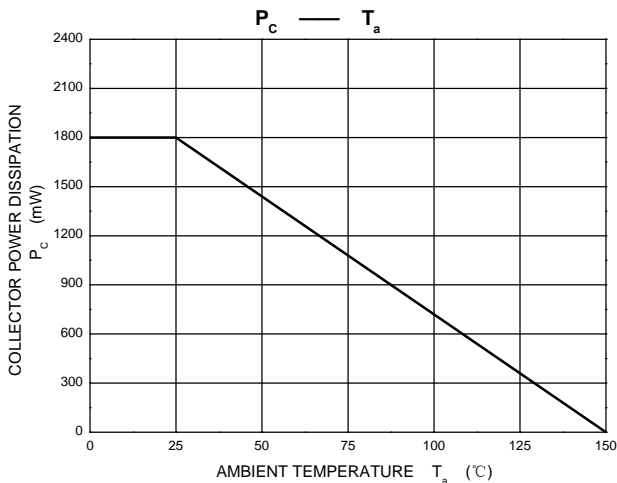
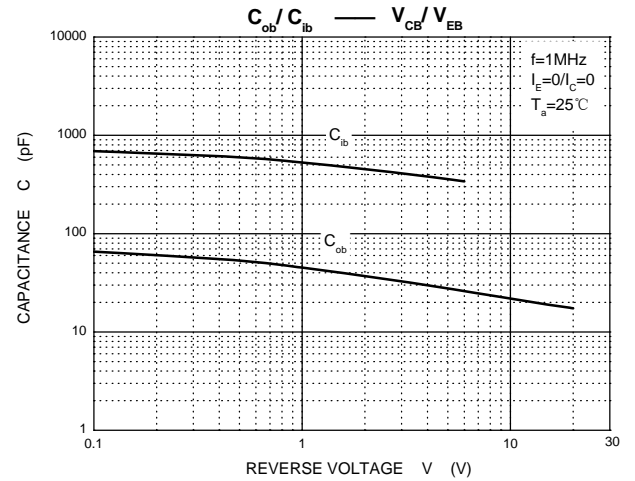
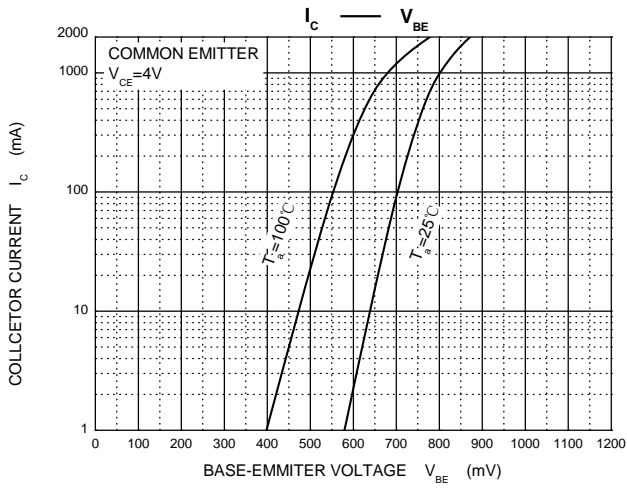
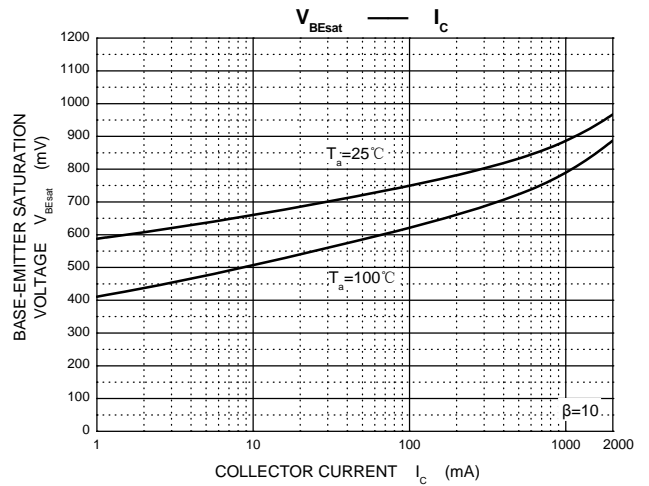
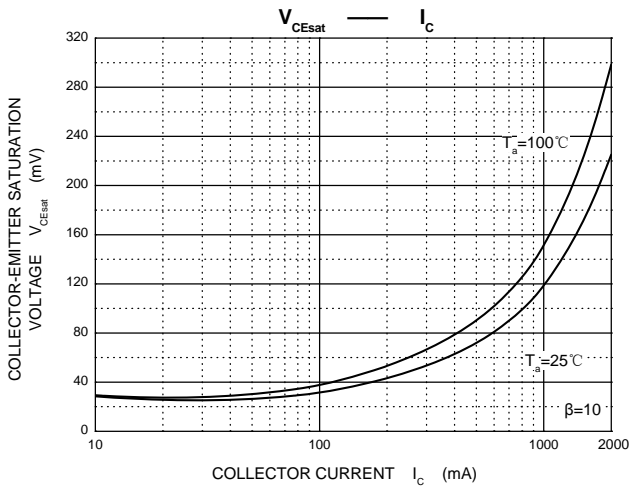
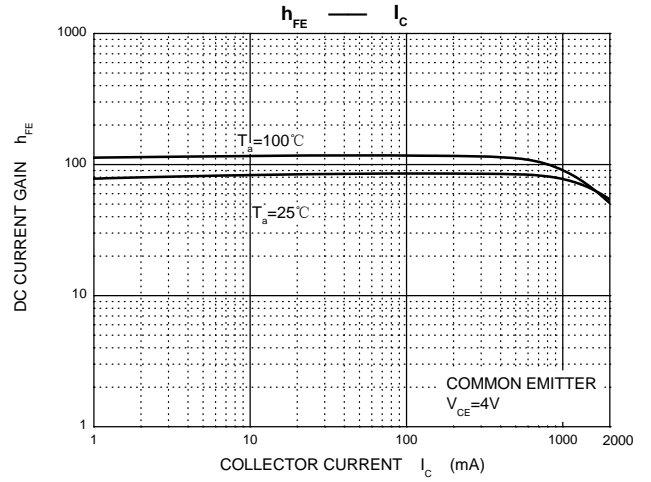
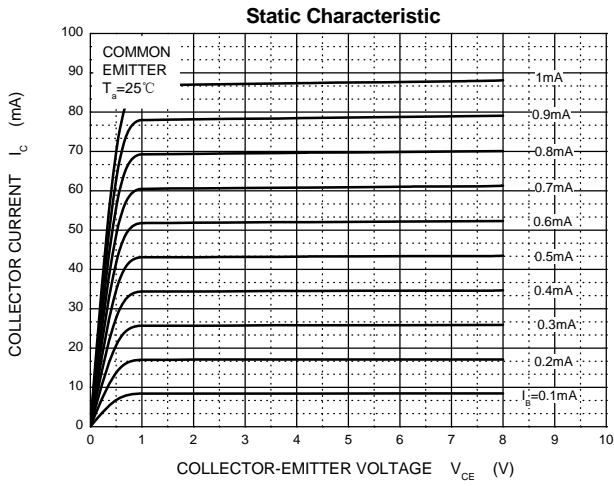
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C =5mA, I _E =0	200			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C =50mA, I _B =0	150			V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E =5mA, I _C =0	6			V
Collector cut-off current	I _{CBO}	V _{CB} =120V, 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} =4V, I _C =50mA	60		200	
	h _{FE (2)}	V _{CE} =10V, I _C =500mA	60			
Collector-emitter saturation voltage	V _{CE(sat)}	I _C =500mA, I _B =50mA			3	V
Base-emitter voltage	V _{BE}	V _{CE} =4V, I _C =50mA			1	V
Collector output capacitance	C _{ob}	V _{CB} =10V, I _E =0, f=1MHz		30		pF

*Pulse test: pulse width ≤300μs, duty cycle ≤ 2.0%.

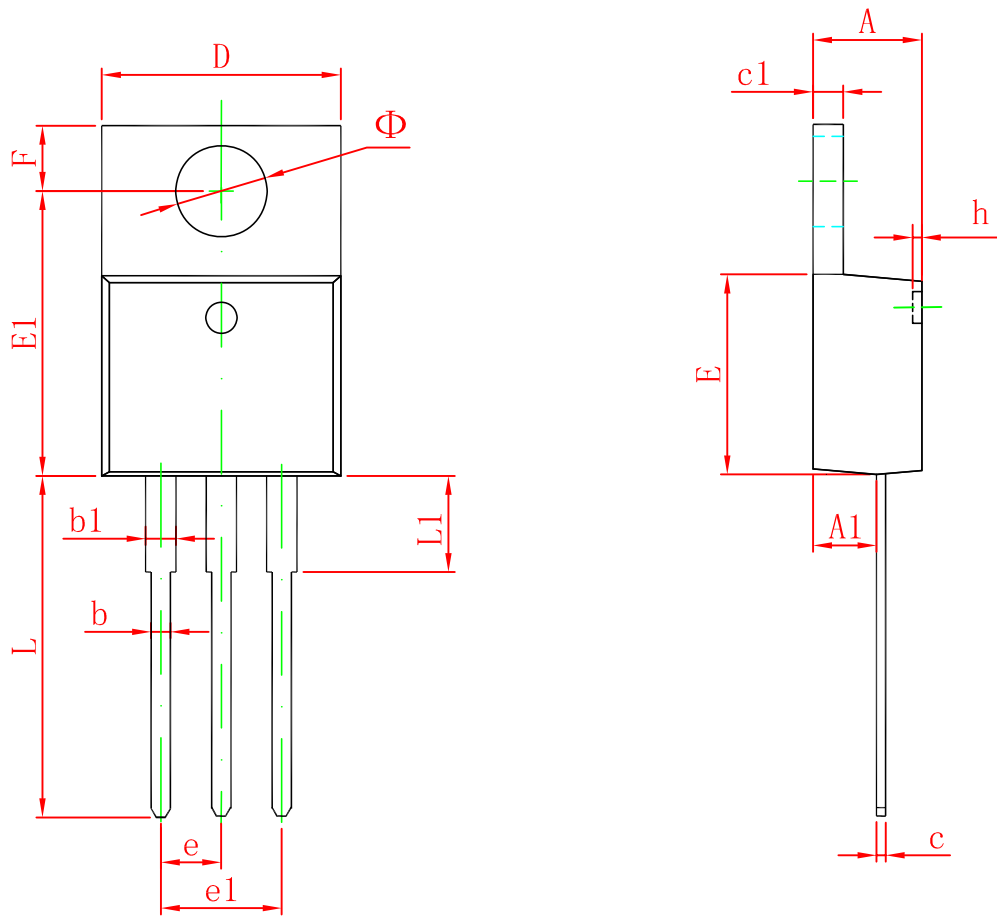
CLASSIFICATION OF h_{FE(1)}

RANK	B	C
RANGE	60-120	100-200

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