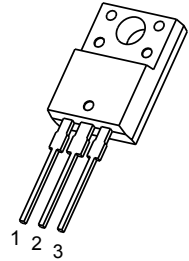
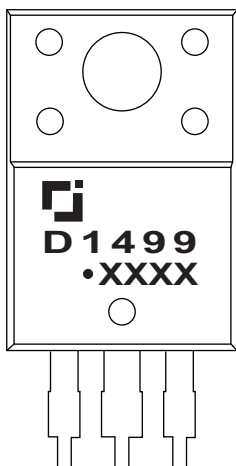


**TO-220F Plastic-Encapsulate Transistors****2SD1499** TRANSISTOR (NPN)**FEATURES**

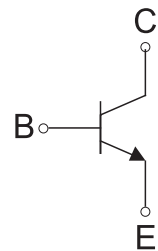
- Extremely Satisfactory Linearity of the Forward Current Transfer Ratio h_{FE}
- Wide Safe Operation Area
- High Transition Frequency f_T
- Full-pack Package which can be Installed to the Heat Sink with One Screw.

TO-220F

1. BASE
2. COLLECTOR
3. EMITTER

**MARKING**

D1499=Device code
Solid dot=Green mold 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	100	V
V_{CEO}	Collector-Emitter Voltage	100	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current -Continuous	5	A
P_C	Collector Power Dissipation	2	W
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55to+150	$^\circ\text{C}$

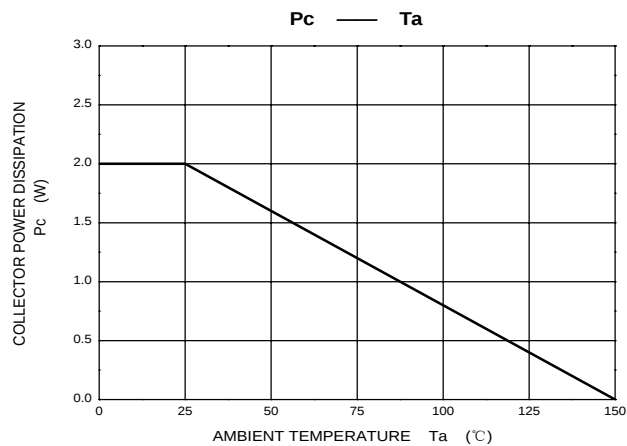
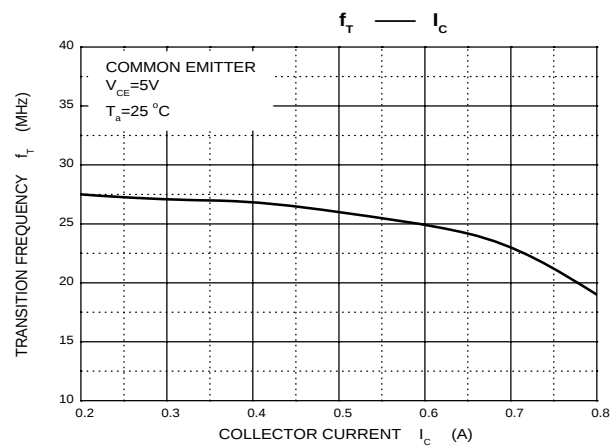
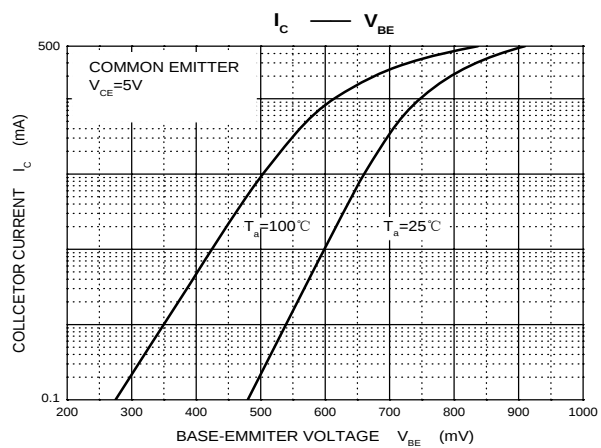
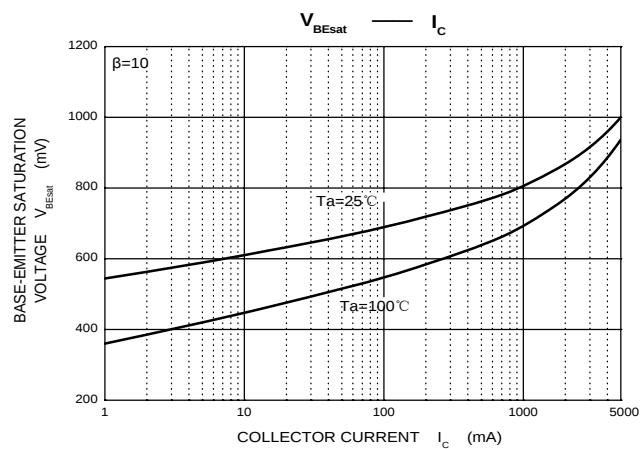
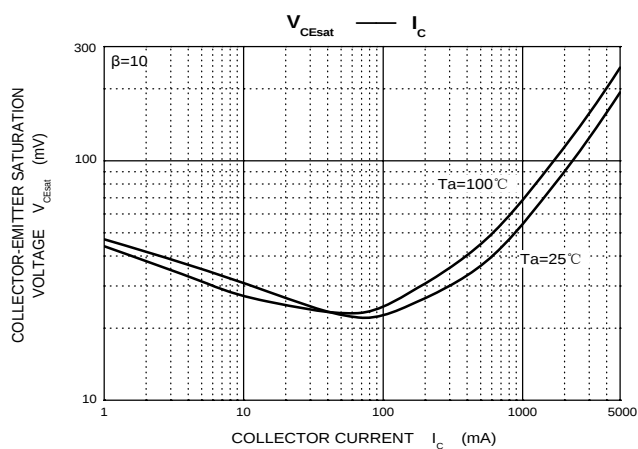
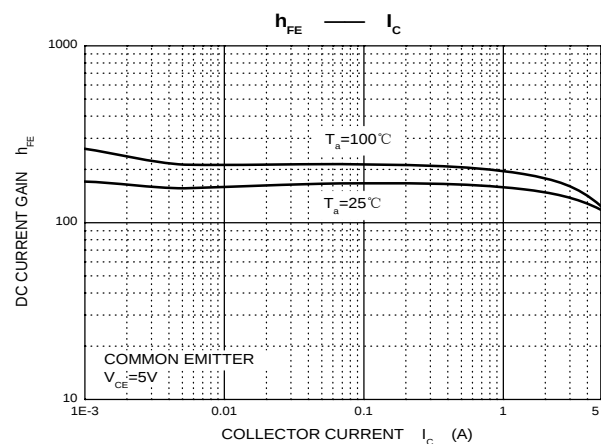
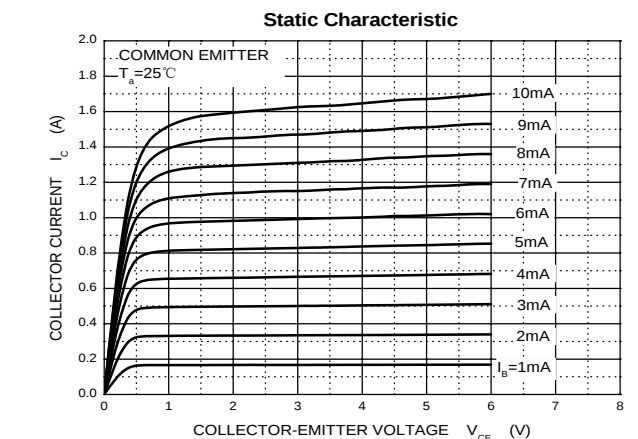
ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C =100 μA, I _E =0	100			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C =10mA, I _B =0	100			V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E =100 μA, I _C =0	5			V
Collector cut-off current	I _{CEO}	V _{CE} =50V, I _B =0			50	μA
Collector cut-off current	I _{CBO}	V _{CB} =100V, I _E =0			50	μA
Emitter cut-off current	I _{EBO}	V _{EB} =3V, I _C =0			50	μA
DC current gain	h _{FE(1)}	V _{CE} =5V, I _C =20mA	20			
	h _{FE(2)}	V _{CE} =5V, I _C =1A	60		200	
	h _{FE(3)}	V _{CE} =5V, I _C =3A	20			
Collector-emitter saturation voltage	V _{CE(sat)}	I _C =3A, I _B =0.3A			2	V
Base-emitter voltage	V _{BE}	V _{CE} =5V, I _C =3A			1.8	V
Collector output capacitance	C _{ob}	V _{CB} =10V, I _E =0, f=1MHz		90		pF
Transition frequency	f _T	V _{CE} = 5 V, I _C = 0.5 A, f = 1 MHz		20		MHz

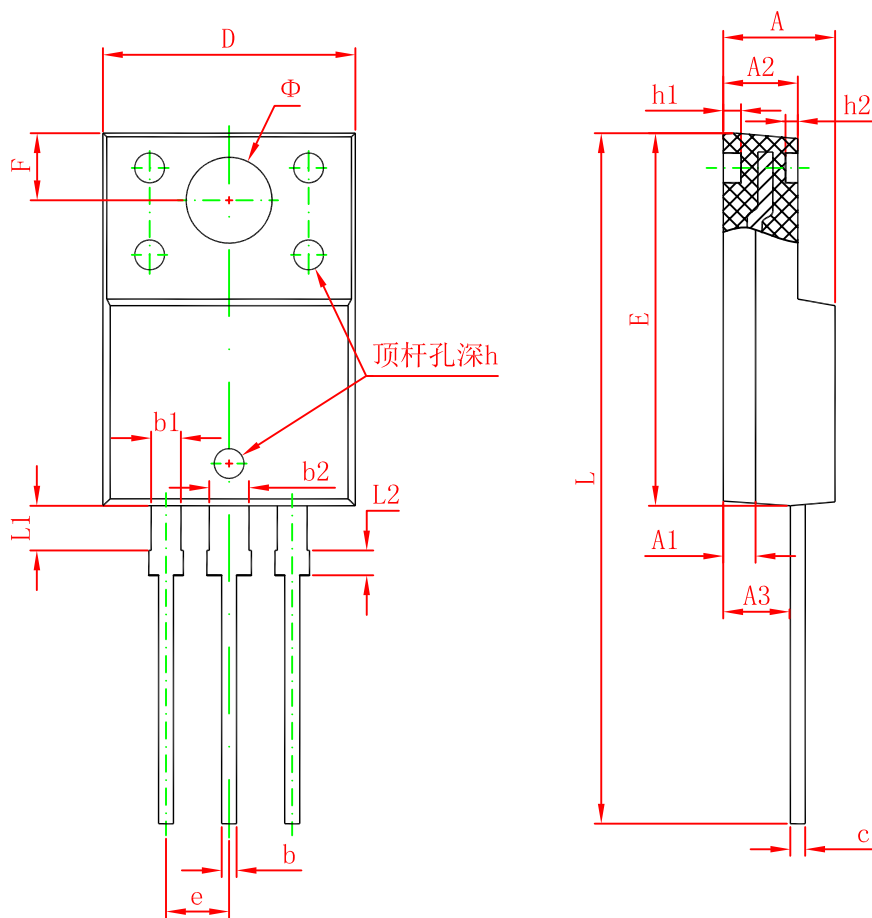
CLASSIFICATION OF h_{FE2}

Rank	Q	P
Range	60-120	100-200

Typical Characteristics



TO-220F Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.300	4.700	0.169	0.185
A1	1.300 REF.		0.051 REF.	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.500	0.750	0.020	0.030
b1	1.100	1.350	0.043	0.053
b2	1.500	1.750	0.059	0.069
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	2.540 TYP.		0.100 TYP.	
F	2.700 REF.		0.106 REF.	
Φ	3.500 REF.		0.138 REF.	
h	0.000	0.300	0.000	0.012
h1	0.800 REF.		0.031 REF.	
h2	0.500 REF.		0.020 REF.	
L	28.000	28.400	1.102	1.118
L1	1.700	1.900	0.067	0.075
L2	0.900	1.100	0.035	0.043