



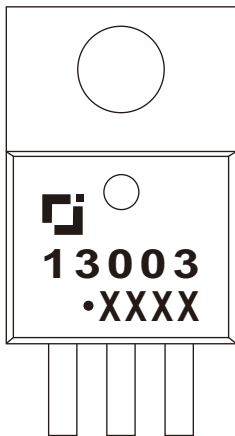
TO-220-3L Plastic-Encapsulate Transistors

3DD13003 TRANSISTOR (NPN)

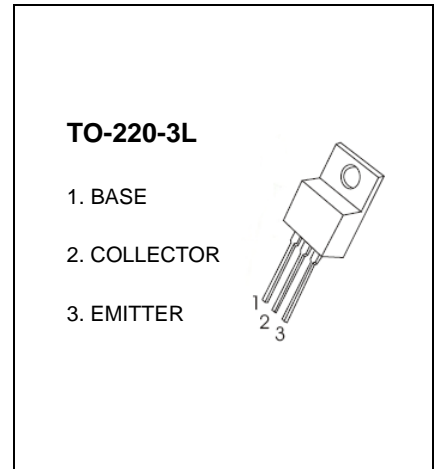
FEATURES

- power switching applications

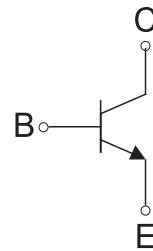
MARKING



13003=Device code
 Solid dot=Green moldinn compound device,
 if none,the normal device
 XXXX=Code



Equivalent Circuit



MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{CBO}	Collector-Base Voltage	700	V
V _{CEO}	Collector-Emitter Voltage	400	V
V _{EBO}	Emitter-Base Voltage	9	V
I _C	Collector Current -Continuous	1.5	A
P _C	Collector Power Dissipation	2	W
T _J ,T _{stg}	Operation Junction and Storage Temperature Range	-55~150	°C

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

Parameter	Symbol	Test conditions	Min	T		Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C =5mA, I _E =0	700			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C =10mA, I _B =0	400			V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E =2mA, I _C =0	9			V
Collector cut-off current	I _{CBO}	V _{CB} =700V, I _E =0			1	mA
Collector cut-off current	I _{CEO}	V _{CE} =400V, I _B =0			0.5	mA
Emitter cut-off current	I _{EBO}	V _{EB} =9V, I _C =0			1	mA
DC current gain	h _{FE1}	V _{CE} =5V, I _C = 0.5 A	20		40	
	h _{FE2}	V _{CE} =5V, I _C = 1.5A	5			
Collector-emitter saturation voltage	V _{CE(sat)}	I _C =1A, I _B =0.25A			0.6	V
Base-emitter saturation voltage	V _{BE(sat)}	I _C =1A, I _B =0.25A			1.2	V
Transition frequency	f _T	V _{CE} =10V, I _C =100mA, f =1MHz	5			MHz
Fall time	t _f	I _C =1A, I _{B1} =-I _{B2} =0.2A, V _{CC} =100V			0.5	μs
Storage time	t _s	I _C =250mA (UI9600)	2		4	μs

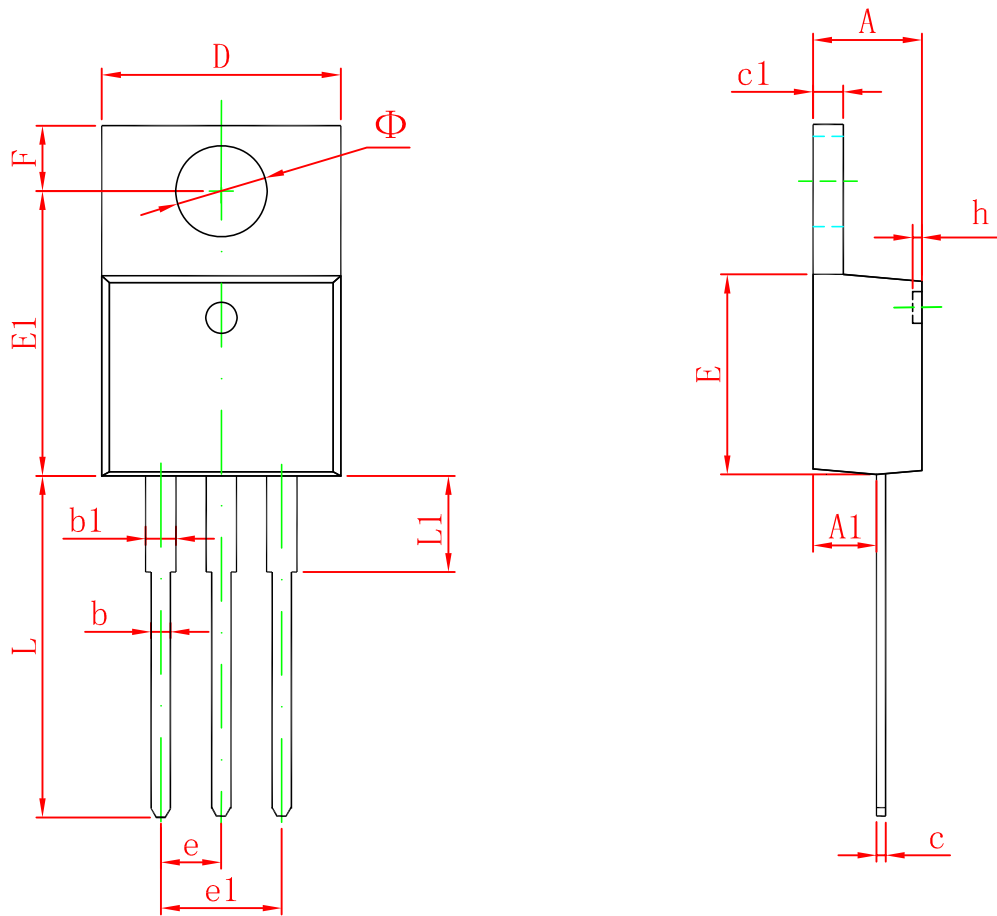
CLASSIFICATION OF h_{FE(1)}

Range	20-30	30-40

CLASSIFICATION OF t_s

Rank	A	B
Range	2.0-3.0 (μs)	3.0-4.0(μs)

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