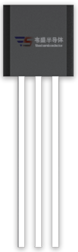
A42 TRANSISTOR (NPN)

FEATURES

- High voltage



1.EMITTER

2.COLLECTOR

3.BASE

TO-92

ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
A42	TO-92	Bulk	1000pcs/Bag
A42-TA	TO-92	Tape	2000pcs/Box

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

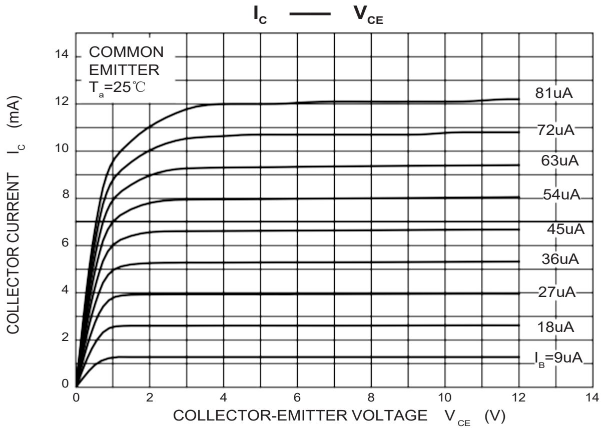
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	310	V
V_{CEO}	Collector-Emitter Voltage	305	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current -Continuous	200	mA
I_{CM}	Collector Current - Pulsed	500	mA
P_C	Collector Power Dissipation	625	mW
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55-150	℃
$R_{\theta JA}$	Thermal Resistance, junction to Ambient	200	℃ /mW
$R_{\theta JC}$	Thermal Resistance, junction to Case	83.3	℃ /mW

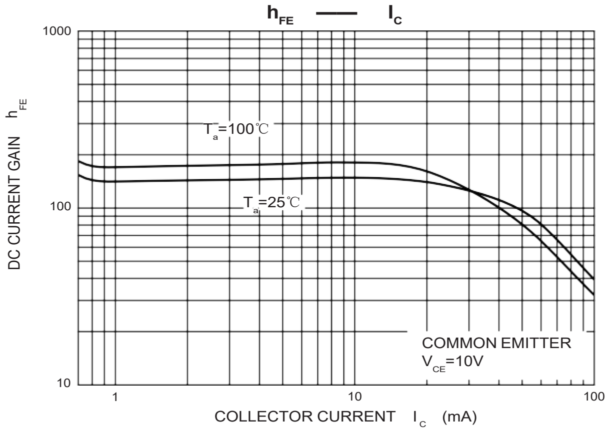
T_a=25℃ unless otherwise specified

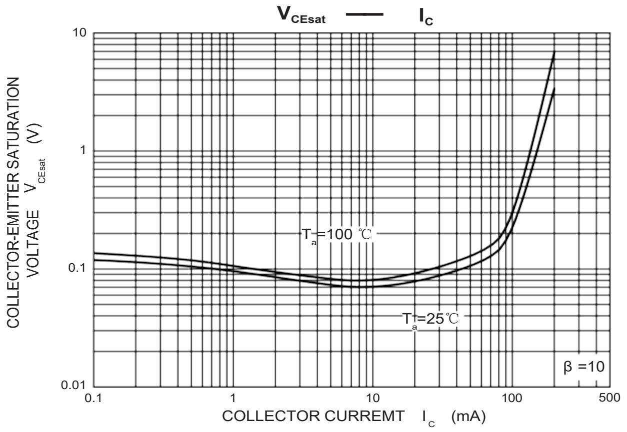
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100uA, I_E=0	310			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA, I_B=0	305			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=100μA, I_C=0	5			V
Collector cut-off current	I_{CBO}	V_{CB}=200V, I_E=0			0.25	μA
Emitter cut-off current	I_{EBO}	V_{EB}=5V, I_C=0			0.1	μA
DC current gain	$h_{FE(1)}$	V_{CE}=10V, I_C=1mA	60			
	$h_{FE(2)}$	V_{CE}=10V, I_C=10mA	80		250	
	$h_{FE(3)}$	V_{CE}=10V, I_C=30mA	75			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=20mA, I_B=2mA			0.2	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=20mA, I_B=2mA			0.9	V
Transition frequency	f_T	V_{CE}=20V, I_C=10mA,f=30MH_Z	50			MHz

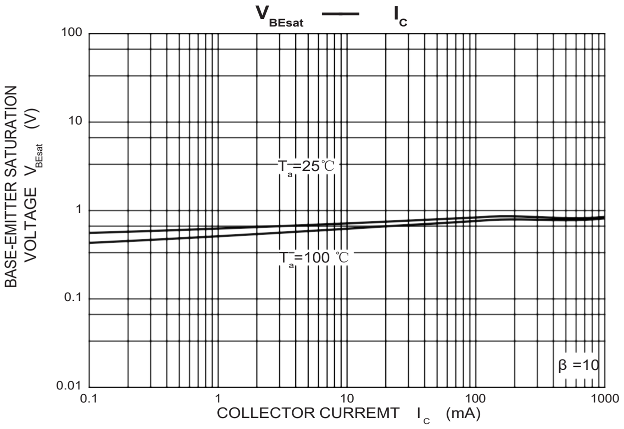
CLASSIFICATION OF $h_{FE(2)}$

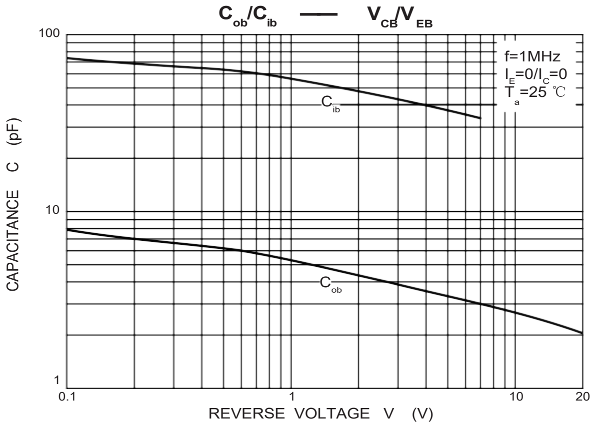
Rank	A	B	C
Range	80-100	100-200	200-250

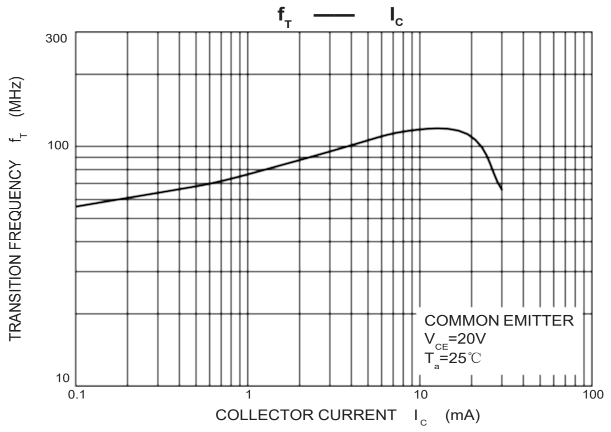

I_C —— V_CE
COMMON
EMITTER
T_a=25℃
COLLECTOR CURRENT I_C (mA)
14
12
10
8
6
4
2
0
81uA
72uA
63uA
54uA
45uA
36uA
27uA
18uA
I_B=9uA
0
2
4
6
8
10
12
14
COLLECTOR-EMITTER VOLTAGE V_CE (V)

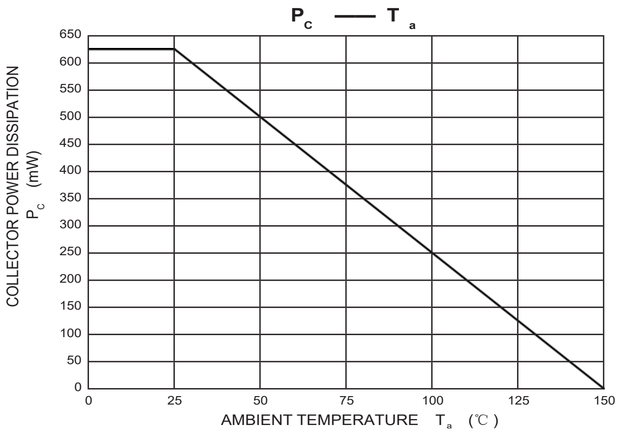

h_FE —— I_C
DC CURRENT GAIN h_FE
1000
100
10
T_a=100℃
T_a=25℃
COMMON EMITTER
V_CE=10V
1
10
100
COLLECTOR CURRENT I_C (mA)


V_CEsat —— I_C
COLLECTOR-EMITTER SATURATION
VOLTAGE V_CEsat (V)
10
1
0.1
0.01
T_a=100 ℃
T_a=25℃
β =10
0.1
1
10
100
500
COLLECTOR CURREMT I_C (mA)


V_BEsat —— I_C
BASE-EMITTER SATURATION
VOLTAGE V_BEsat (V)
100
10
1
0.1
0.01
T_a=25℃
T_a=100 ℃
β =10
0.1
1
10
100
1000
COLLECTOR CURREMT I_C (mA)


C_ob/C_ib —— V_CB/V_EB
CAPACITANCE C (pF)
100
10
1
f=1MHz
I_E=0/I_C=0
T_a=25 ℃
C_ib
C_ob
0.1
1
10
20
REVERSE VOLTAGE V (V)


f_T —— I_C
TRANSITION FREQUENCY f_T (MHz)
300
100
10
COMMON EMITTER
V_CE=20V
T_a=25℃
0.1
1
10
100
COLLECTOR CURRENT I_C (mA)


P_C —— T_a
COLLECTOR POWER DISSIPATION
P_C (mW)
650
600
550
500
450
400
350
300
250
200
150
100
50
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE T_a (℃)