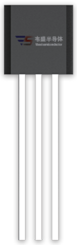
S8050 TRANSISTOR (NPN)

FEATURES

- Complimentar to S8550
- Collector current: I_C=0.5A



1.EMITTER

2.COLLECTOR

3.BASE

TO-92

ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
S8050	TO-92	Bulk	1000pcs/Bag
S8050-TA	TO-92	Tape	2000pcs/Box

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

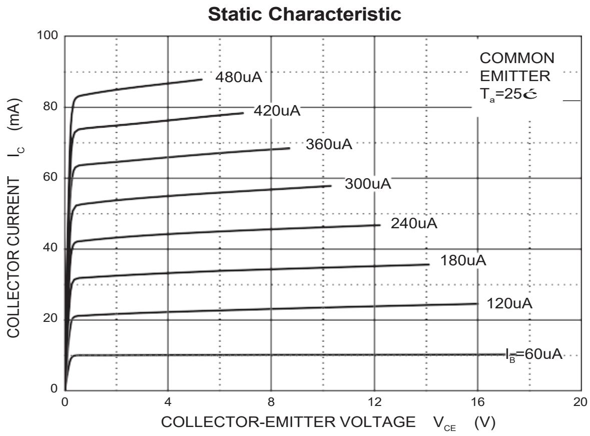
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	25	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current -Continuous	0.5	A
P_D	Collector Power Dissipation	625	mW
$R_{\theta JA}$	Thermal Resistance rom Junction o Ambient	200	℃ /W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	℃

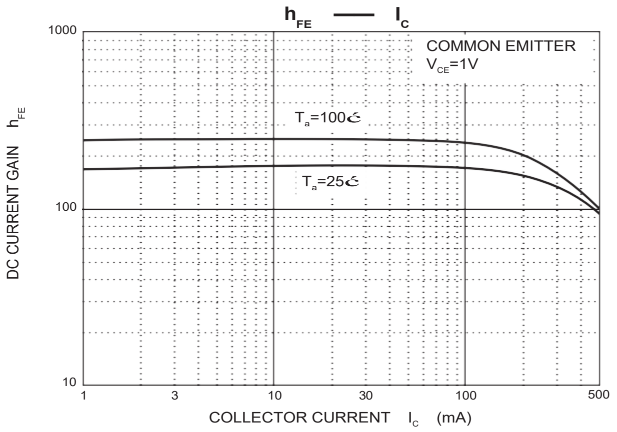
T_a=25℃ unless otherwise specified

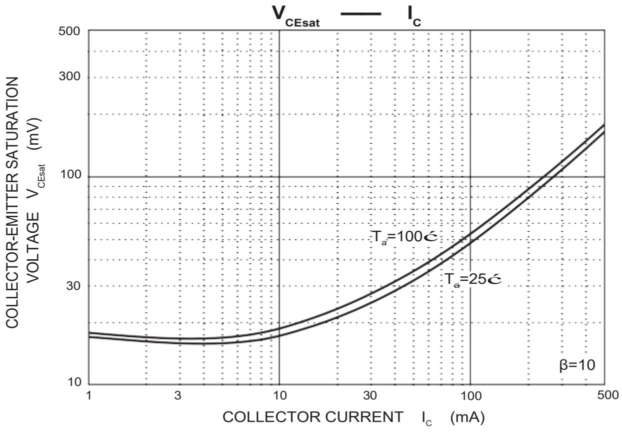
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C= 100μA, I_E=0	40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C= 0.1mA, I_B=0	25			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E= 100μA, I_C=0	5			V
Collector cut-off current	I_{CBO}	V_{CB}= 40 V , I_E=0			0.1	μA
Collector cut-off current	I_{CEO}	V_{CE}= 20 V , I_B=0			0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}= 5V, I_C=0			0.1	μA
DC current gain	$h_{FE(1)}$	V_{CE}= 1V, I_C= 50mA	85		400	
	$h_{FE(2)}$	V_{CE}= 1V, I_C= 500mA	50			
Collector-emitter saturation voltage	V_{CE}(sat)	I_C=500mA, I_B=50mA			0.6	V
Base-emitter saturation voltage	V_{BE}(sat)	I_C=500mA, I_B=50mA			1.2	V
Transition frequency	f_T	V_{CE}= 6V, I_C=20mA f =30MHz	150			MHz

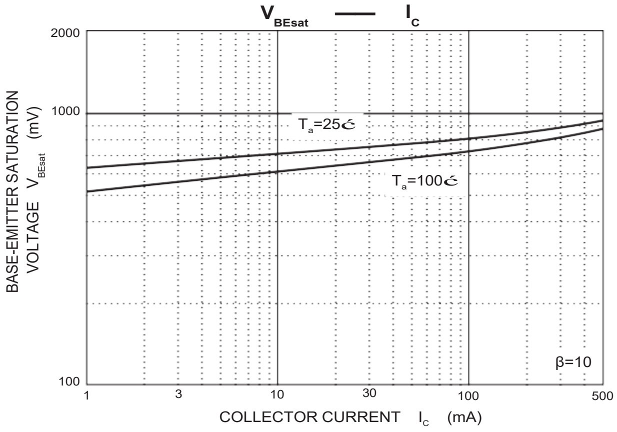
CLASSIFICATION OF $h_{FE(1)}$

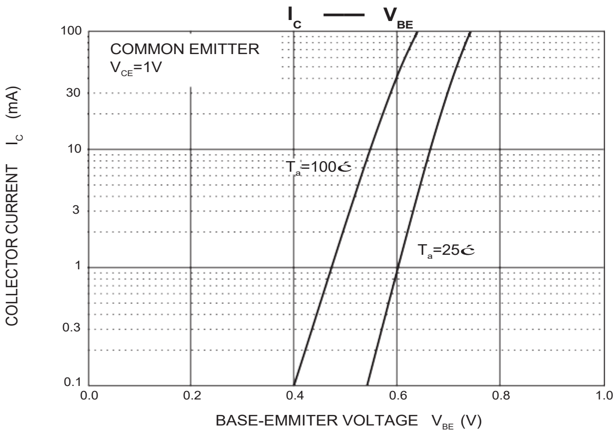
Rank	B	C	D	D3
Range	85-160	120-200	160-300	300-400

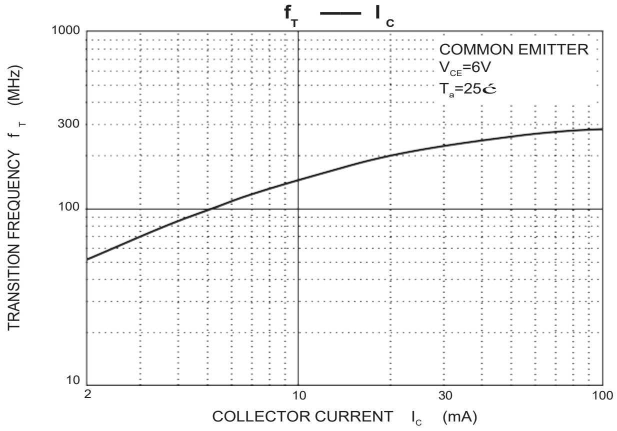

Static Characteristic
COMMON
EMITTER
T_a=25℃
480uA
420uA
360uA
300uA
240uA
180uA
120uA
I_B=60uA
COLLECTOR CURRENT I_C (mA)
0
20
40
60
80
100
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)
0
4
8
12
16
20

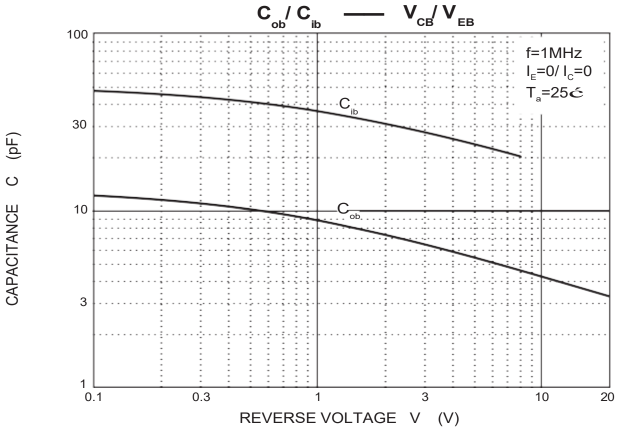

h_{FE} — I_C
COMMON EMITTER
V_{CE}=1V
T_a=100℃
T_a=25℃
DC CURRENT GAIN h_{FE}
10
100
1000
COLLECTOR CURRENT I_C (mA)
1
3
10
30
100
500

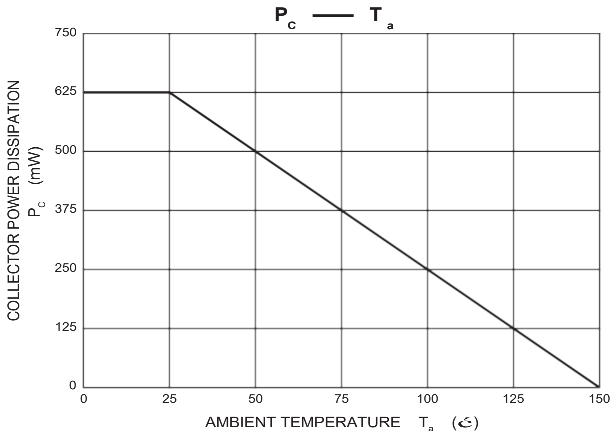

V_{CEsat} — I_C
T_a=100℃
T_a=25℃
β=10
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
10
30
100
300
500
COLLECTOR CURRENT I_C (mA)
1
3
10
30
100
500


V_{BEsat} — I_C
T_a=25℃
T_a=100℃
β=10
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (mV)
100
1000
2000
COLLECTOR CURRENT I_C (mA)
1
3
10
30
100
500


I_C — V_{BE}
COMMON EMITTER
V_{CE}=1V
T_a=100℃
T_a=25℃
COLLECTOR CURRENT I_C (mA)
0.1
0.3
1
3
10
30
100
BASE-EMMITER VOLTAGE V_{BE} (V)
0.0
0.2
0.4
0.6
0.8
1.0


f_T — I_C
COMMON EMITTER
V_{CE}=6V
T_a=25℃
TRANSITION FREQUENCY f_T (MHz)
10
100
300
1000
COLLECTOR CURRENT I_C (mA)
2
10
30
100


C_{ob}/ C_{ib} — V_{CB}/ V_{EB}
f=1MHz
I_E=0/ I_C=0
T_a=25℃
C_{ib}
C_{ob}
CAPACITANCE C (pF)
1
3
10
30
100
REVERSE VOLTAGE V (V)
0.1
0.3
1
3
10
20


P_C — T_a
COLLECTOR POWER DISSIPATION P_C (mW)
0
125
250
375
500
625
750
AMBIENT TEMPERATURE T_a (℃)
0
25
50
75
100
125
150