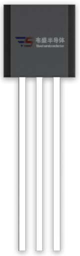
D965 TRANSISTOR (NPN)

FEATURES

- Audio Amplifier
- Flash Unit of Camera
- Switching Circuit



1.EMITTER

2.COLLECTOR

3.BASE

TO-92

ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
D965	TO-92	Bulk	1000pcs/Bag
D965-TA	TO-92	Tape	2000pcs/Box

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

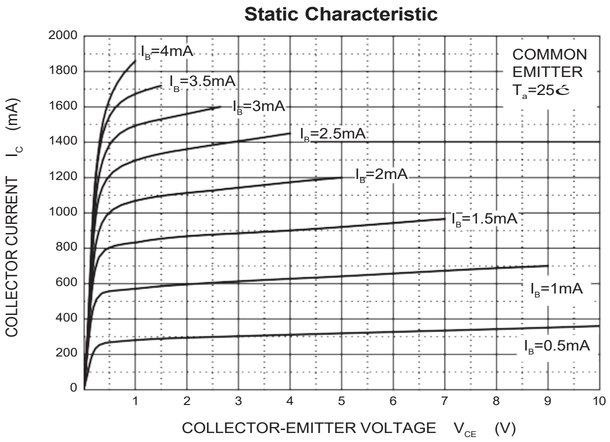
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	42	V
V_{CEO}	Collector-Emitter Voltage	22	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current -Continuous	5	A
P_D	Collector Power Dissipation	750	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	166.7	℃ /W
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	℃

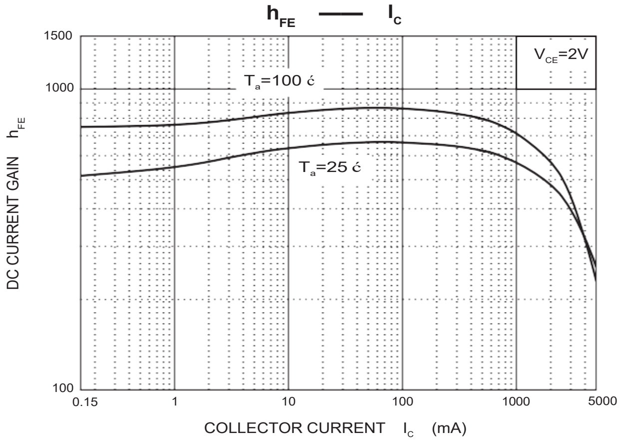
T_a=25℃ unless otherwise specified

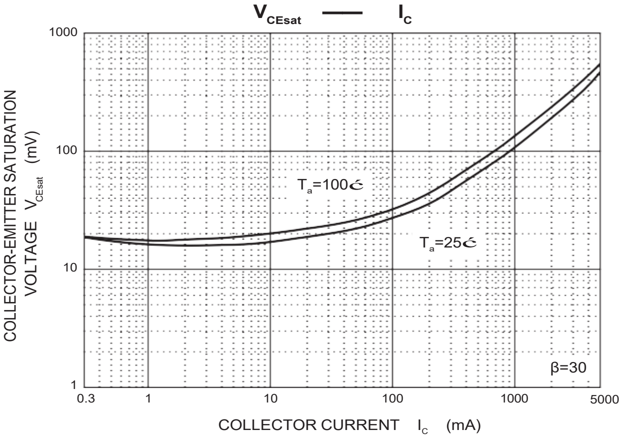
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=0.1mA, I_E=0	42			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA, I_B=0	22			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E= 10μA, I_C=0	6			V
Collector cut-off current	I_{CBO}	V_{CB}=30V,I_E=0			0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=6V, I_C=0			0.1	μA
DC current gain	$h_{FE(1)}$	V_{CE}=2V, I_C= 0.15 mA	150			
	$h_{FE(2)}$	V_{CE}= 2V,I_C = 500 mA	340		2000	
	$h_{FE(3)}$	V_{CE}=2V, I_C = 2A	150			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=3000mA,I_B=100 mA			0.35	V
Transition frequency	f_T	V_{CE}=6V, I_C=50mA,f=30MHz		150		MHz

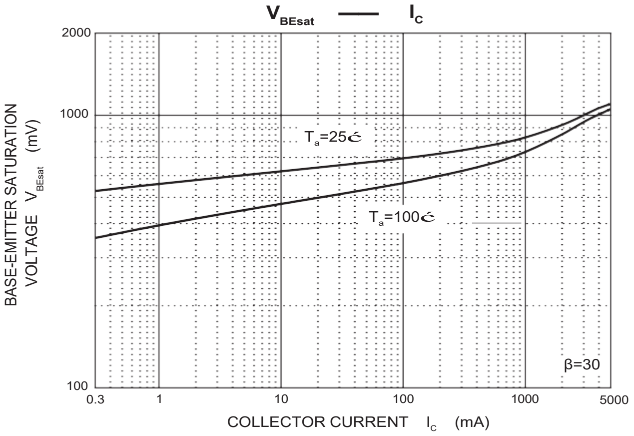
CLASSIFICATION OF $h_{FE(2)}$

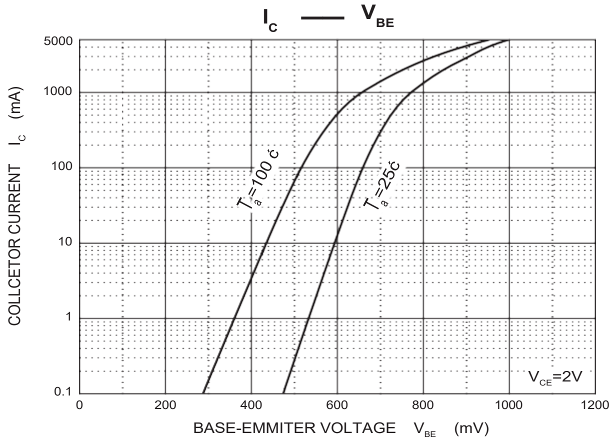
Rank	R	T	V
Range	340-600	560-950	900-2000

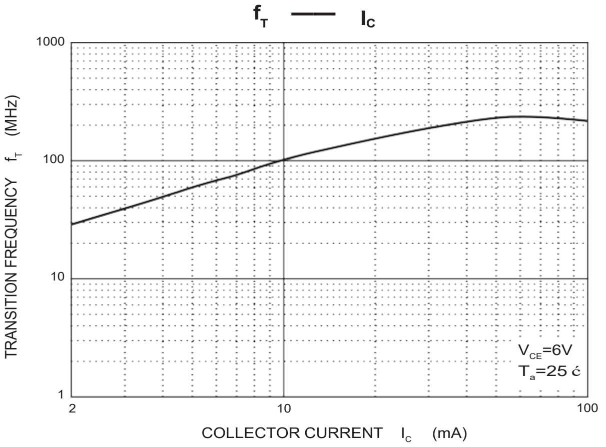

Static Characteristic
COLLECTOR CURRENT I_C (mA)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
I_B=4mA
I_B=3.5mA
I_B=3mA
I_B=2.5mA
I_B=2mA
I_B=1.5mA
I_B=1mA
I_B=0.5mA
COMMON EMITTER
T_a=25℃
1 2 3 4 5 6 7 8 9 10
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

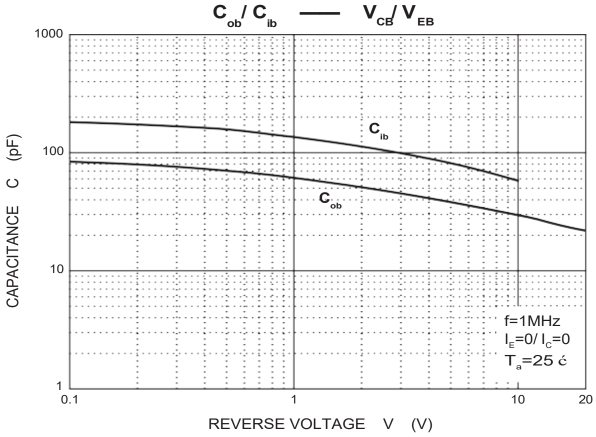

h_{FE} —— I_C
DC CURRENT GAIN h_{FE}
1500
1000
100
V_{CE}=2V
T_a=100 ℃
T_a=25 ℃
0.15 1 10 100 1000 5000
COLLECTOR CURRENT I_C (mA)

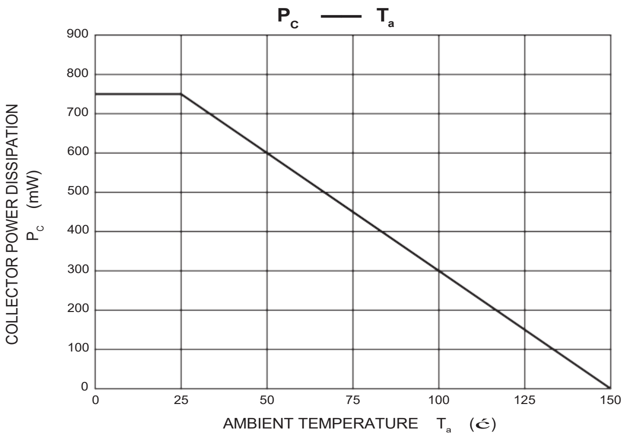

V_{CEsat} —— I_C
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
1000
100
10
1
T_a=100℃
T_a=25℃
β=30
0.3 1 10 100 1000 5000
COLLECTOR CURRENT I_C (mA)


V_{BEsat} —— I_C
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (mV)
2000
1000
100
T_a=25℃
T_a=100℃
β=30
0.3 1 10 100 1000 5000
COLLECTOR CURRENT I_C (mA)


I_C —— V_{BE}
COLLCETOR CURRENT I_C (mA)
5000
1000
100
10
1
0.1
T_a=100 ℃
T_a=25℃
V_{CE}=2V
0 200 400 600 800 1000 1200
BASE-EMMITER VOLTAGE V_{BE} (mV)


f_T —— I_C
TRANSITION FREQUENCY f_T (MHz)
1000
100
10
1
V_{CE}=6V
T_a=25 ℃
2 10 100
COLLECTOR CURRENT I_C (mA)


C_{ob} / C_{ib} —— V_{CB}/ V_{EB}
CAPACITANCE C (pF)
1000
100
10
1
C_{ib}
C_{ob}
f=1MHz
I_E=0/ I_C=0
T_a=25 ℃
0.1 1 10 20
REVERSE VOLTAGE V (V)


P_C —— T_a
COLLECTOR POWER DISSIPATION P_C (mW)
900
800
700
600
500
400
300
200
100
0
0 25 50 75 100 125 150
AMBIENT TEMPERATURE T_a (℃)