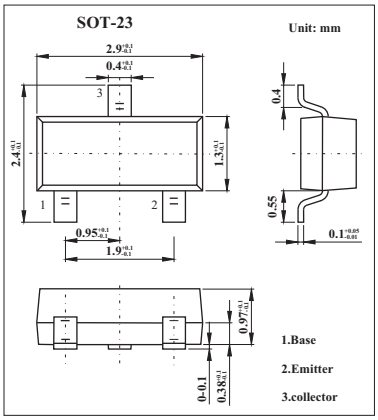
NPN Silicon Transistor

2SC945



Features

Collector current up to 150mA

High h_{FE} linearity

Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Collector to base voltage	V_{CBO}	60	V
Collector to emitter voltage	V_{CEO}	50	V
Emitter to base voltage	V_{EBO}	5	V
Collector current (DC)	I_C	150	mA
power dissipation	P_C	200	mW
Junction temperature	T_j	150	℃
Storage temperature range	T_{stg}	-55 to +150	℃

Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100 μA, I_E=0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA , I_B=0	50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=100 μA, I_C=0	5			V
Collector cutoff current	I_{CBO}	V_{CB} = 60V, I_E = 0			0.1	μA
Emitter cutoff current	I_{EBO}	V_{EB} = 5.0 V, I_C = 0			0.1	μA
DC current gain	h_{FE}	V_{CE} = 6.0V, I_C =1.0mA	130		400	
		V_{CE} = 6.0V, I_C =0.1mA	40			
Collector saturation voltage	$V_{CE(sat)}$	I_C=100mA,I_B=10mA			0.3	V
Base saturation voltage	$V_{BE(sat)}$	I_C=100mA,I_B=10mA			1.0	V
Collector to base capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0 , f = 1 MHz			3.0	pF
Noise figure	NF	V_{CE}=6V,I_C=0.1mA,R_g=10kΩ,f=1kMHZ		4	10	dB
Transition frequency	f_T	V_{CE}=6V,I_C=10mA,f =30 MHz	150			MHz

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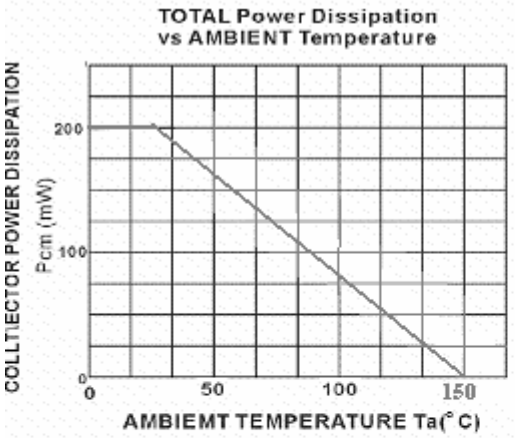
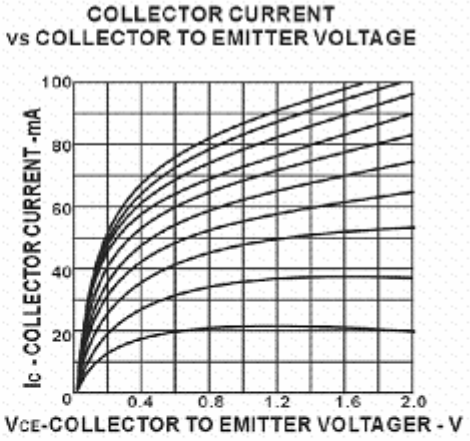
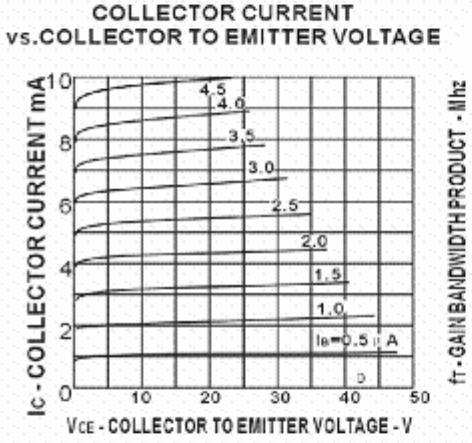
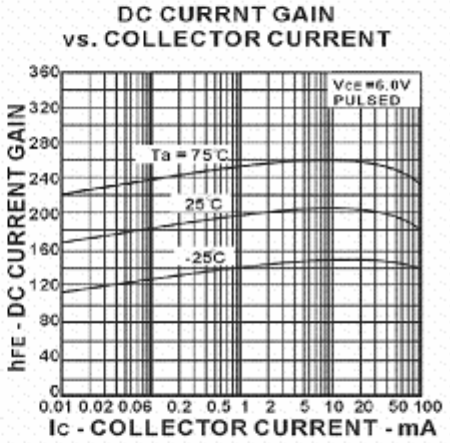
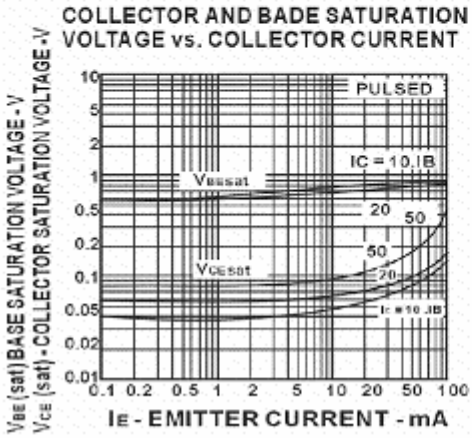
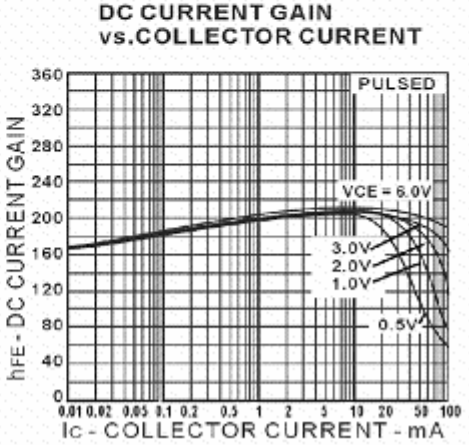

TOTAL Power Dissipation
vs AMBIENT Temperature
COLLTIECTOR POWER DISSIPATION
Pcm (mW)
200
100
0
0
50
100
150
AMBIEMT TEMPERATURE Ta(° C)


COLLECTOR CURRENT
vs COLLECTOR TO EMITTER VOLTAGE
Ic - COLLECTOR CURRENT -mA
100
80
60
40
20
0
0.4
0.8
1.2
1.6
2.0
VCE-COLLECTOR TO EMITTER VOLTAGER - V


COLLECTOR CURRENT
vs.COLLECTOR TO EMITTER VOLTAGE
Ic - COLLECTOR CURRENT mA
fT - GAIN BANDWIDTH PRODUCT - Mhz
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
IB=0.5 μA
10
8
6
4
2
0
10
20
30
40
50
VCE - COLLECTOR TO EMITTER VOLTAGE - V


DC CURRNT GAIN
vs. COLLECTOR CURRENT
hFE - DC CURRENT GAIN
VCE=6.0V
PULSED
Ta = 75°C
25°C
-25C
360
320
280
240
200
160
120
80
40
0
0.01 0.02 0.06 0.2 0.5 1 2 5 10 20 50 100
Ic - COLLECTOR CURRENT - mA


COLLECTOR AND BADE SATURATION
VOLTAGE vs. COLLECTOR CURRENT
VBE (sat) BASE SATURATION VOLTAGE - V
VCE (sat) - COLLECTOR SATURATION VOLTAGE -V
PULSED
IC = 10 IB
VBEsat
VCEsat
20
50
50
20
IC = 10 IB
10
5
2
1
0.5
0.2
0.1
0.05
0.02
0.01
0.1 0.2 0.5 1 2 5 10 20 50 100
IE - EMITTER CURRENT - mA


DC CURRENT GAIN
vs.COLLECTOR CURRENT
hFE - DC CURRENT GAIN
PULSED
VCE = 6.0V
3.0V
2.0V
1.0V
0.5V
360
320
280
240
200
160
120
80
40
0
0.01 0.02 0.05 0.1 0.2 0.5 1 2 5 10 20 50 100
Ic - COLLECTOR CURRENT - mA