SANYO No.3340

2SA1783/2SC4641

PNP/NPN Epitaxial Planar Silicon Transistors

Low-Frequency General-Purpose Amp Applications

Features

- Capable of being used in the low frequency to high frequency range.

( ) : 2SA1783

Absolute Maximum Ratings at Ta = 25°C

			unit
Collector to Base Voltage	V_{CBO}	(−)55	V
Collector to Emitter Voltage	V_{CEO}	(−)50	V
Emitter to Base Voltage	V_{EBO}	(−)6	V
Collector Current	I_C	(−)150	mA
Collector Current (Pulse)	I_{CP}	(−)300	mA
Base Current	I_B	(−)30	mA
Collector Dissipation	P_C	500	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55 to +150	°C

Electrical Characteristics at Ta = 25°C

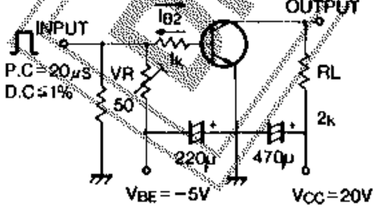
			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	V_{CB} = (−)35V, I_E = 0			(−)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB} = (−)4V, I_C = 0			(−)0.1	μA
DC Current Gain	h_{FE}	V_{CE} = (−)6V, I_C = (−)1mA	140※		560※	
Gain-Bandwidth Product	f_T	V_{CE} = (−)6V, I_C = (−)10mA		200 (180)		MHz
Output Capacitance	c_{ob}	V_{CB} = (−)6V, f = 1MHz		2.2 (3.5)		pF
C-E Saturation Voltage	$V_{CE(sat)}$	I_C = (−)50mA, I_B = (−)5mA		0.08 (−0.11)	(−)0.4	V
B-E Saturation Voltage	$V_{BE(sat)}$	I_C = (−)50mA, I_B = (−)5mA		(−)0.8	(−)1.0	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	I_C = (−)10μA, I_E = 0	(−)55			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	I_C = (−)1mA, R_{BE} = ∞	(−)50			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	I_E = (−)10μA, I_C = 0	(−)6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		0.15		μs
Storage Time	t_{stg}	〃		0.75 (0.60)		μs
Fall Time	t_f	〃		0.20		μs

※ : The 2SA1783/2SC4641 are classified by 1mA h_{FE} as follows :

140	S	280	200	T	400	280	U	560

h_{FE} rank : S, T, U

Switching Time Test Circuit



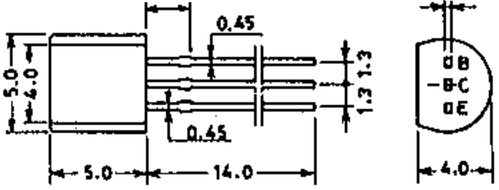
Unit(Resistance : Ω , Capacitance : F)

$10I_{B1} = -10I_{B2} = I_C = 10mA$

(For PNP, the polarity is reversed.)

Case Outline 2003A

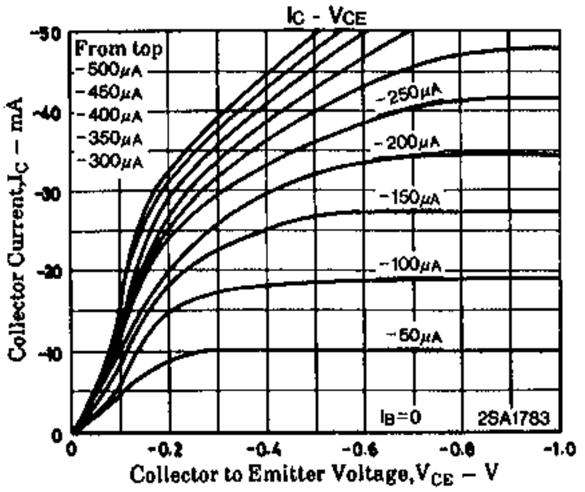
(unit : mm)

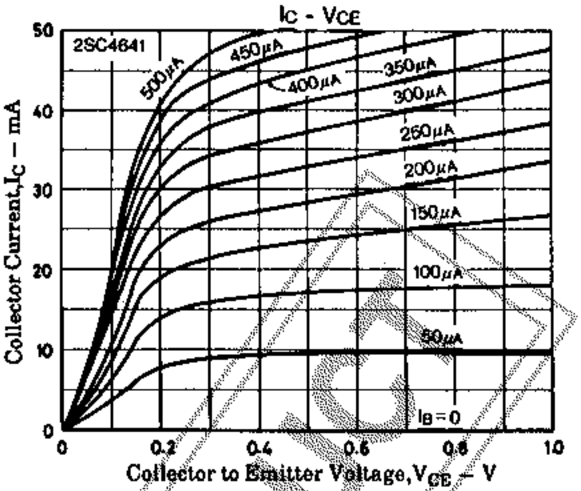


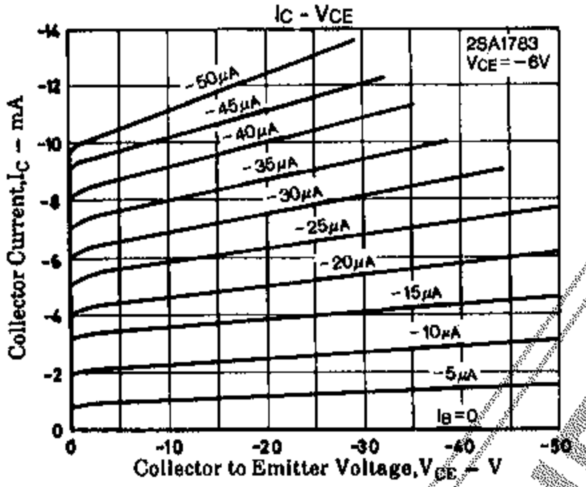
JEDEC: TO-92
EIAJ : SC-43
SANYO: NP

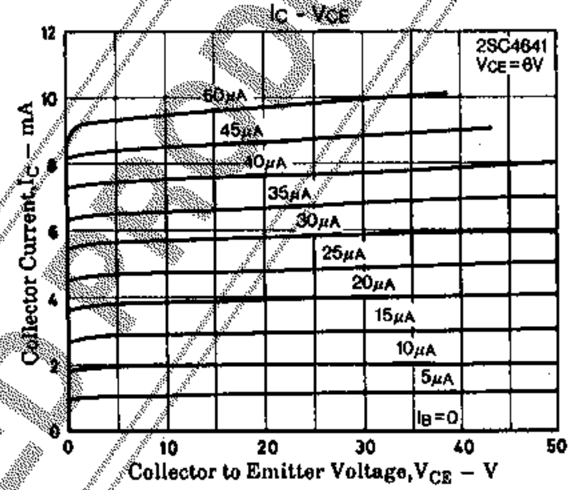
B: Base
C: Collector
E: Emitter

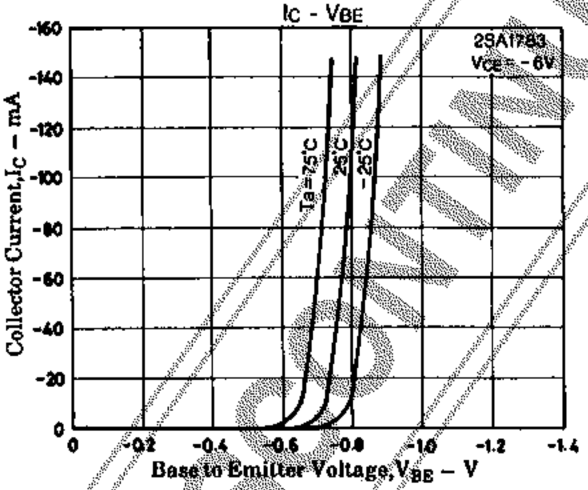
Specifications and information herein are subject to change without notice.

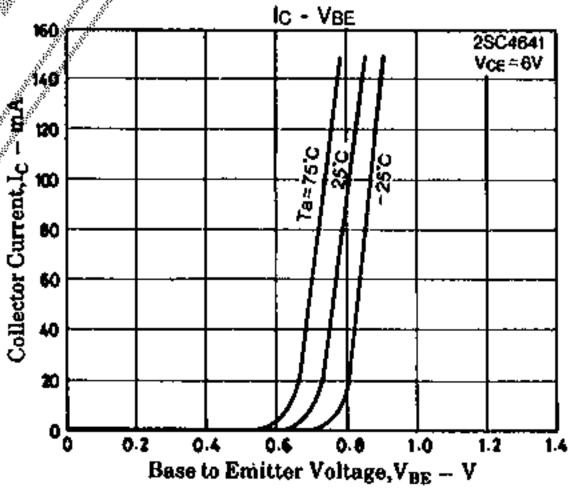

IC - VCE

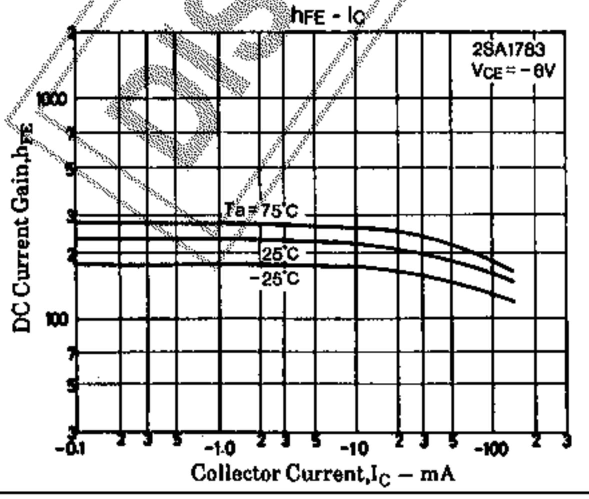

IC - VCE

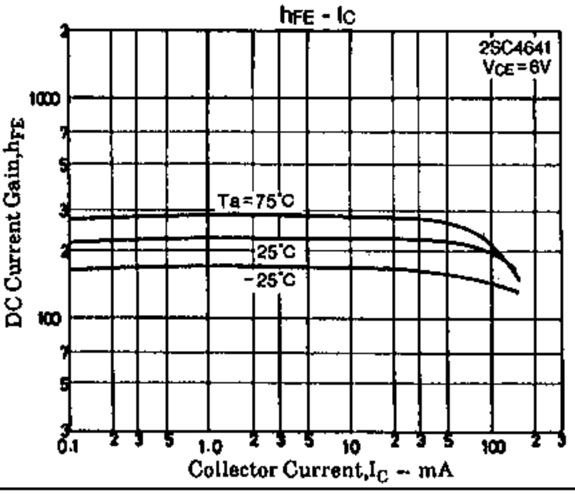

IC - VCE

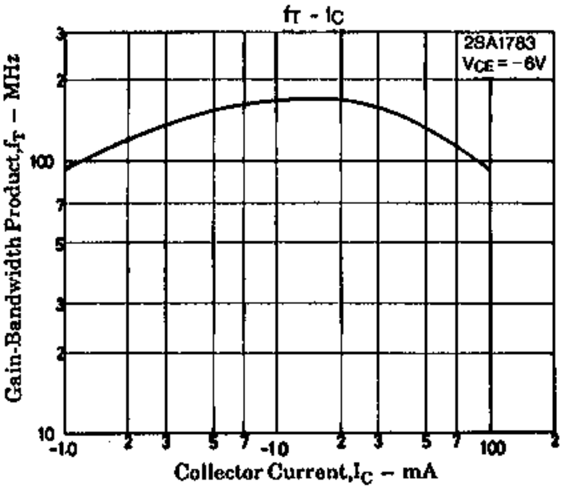

IC - VCE

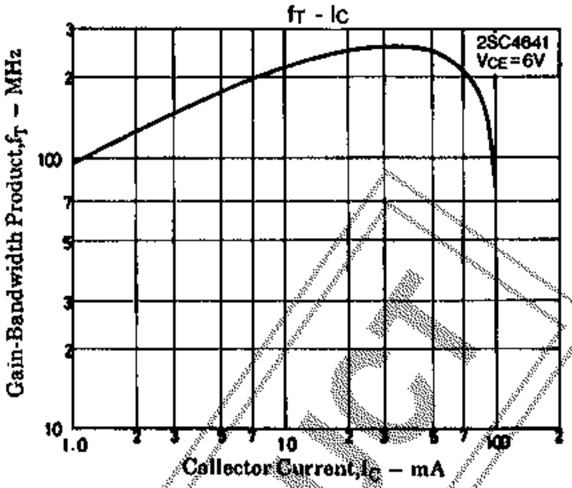

IC - VBE

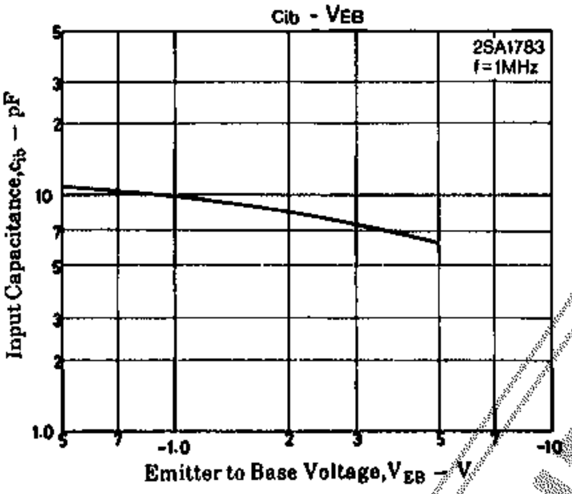

IC - VBE

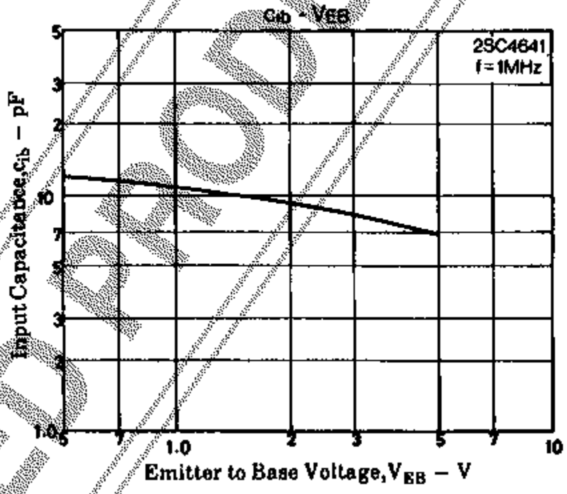

hFE - IC

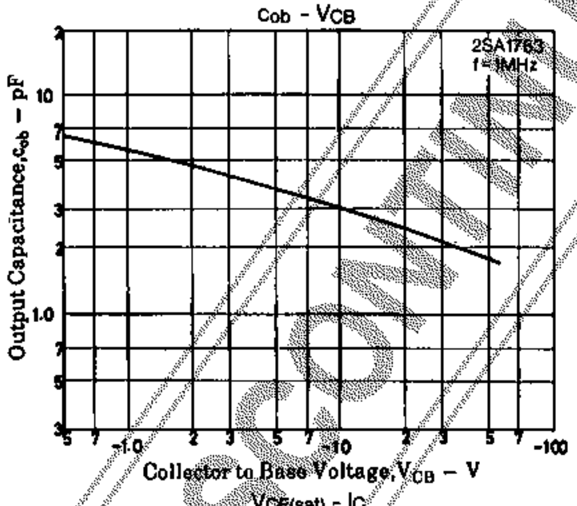

hFE - IC

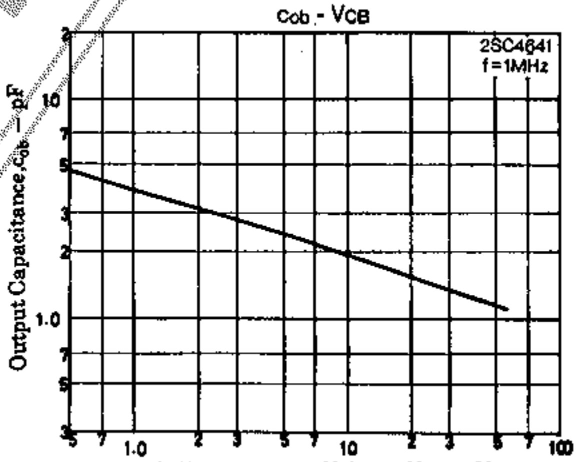

fT - IC
2SA1783
VCE = −6V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA
-1.0
-10
100
10
100

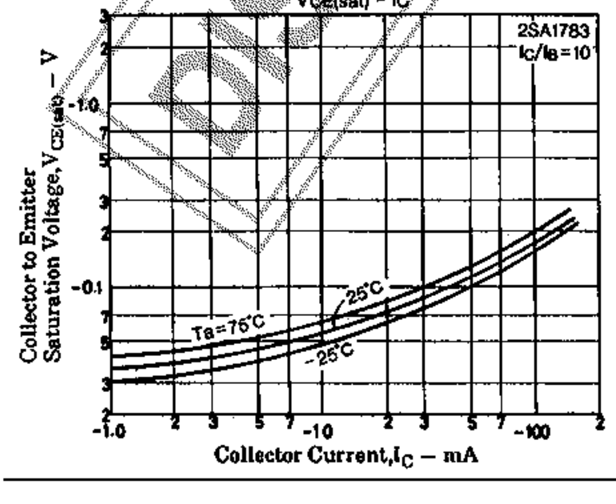

fT - IC
2SC4641
VCE = 6V
Gain-Bandwidth Product,fT – MHz
Collector Current,IC – mA
1.0
10
100
10
100

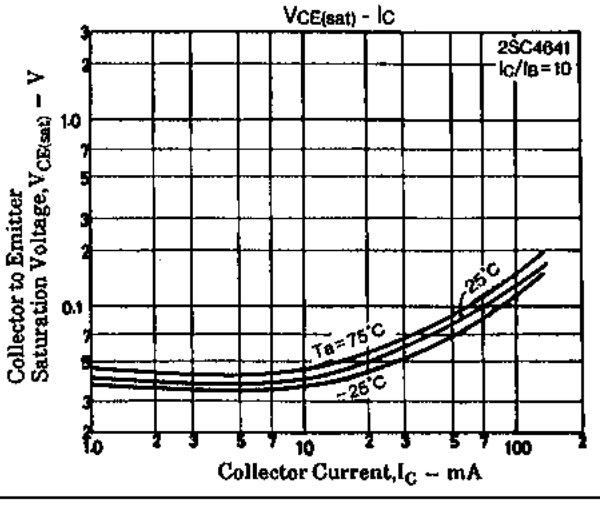

Cib - VEB
2SA1783
f = 1MHz
Input Capacitance,Cib – pF
Emitter to Base Voltage,VEB – V
-1.0
-10
1.0
10

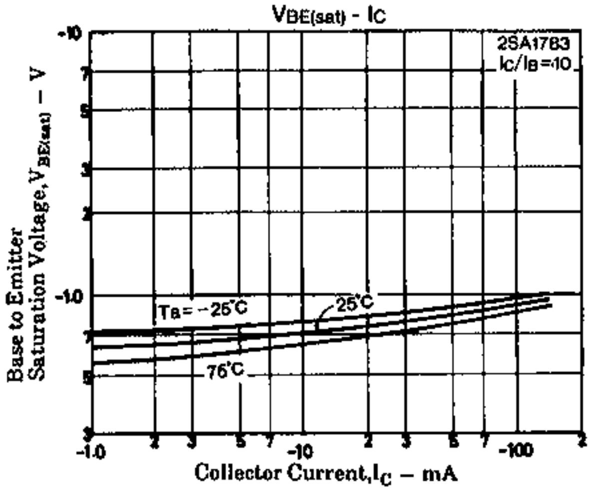

Cib - VEB
2SC4641
f = 1MHz
Input Capacitance,Cib – pF
Emitter to Base Voltage,VEB – V
1.0
10
1.0
10

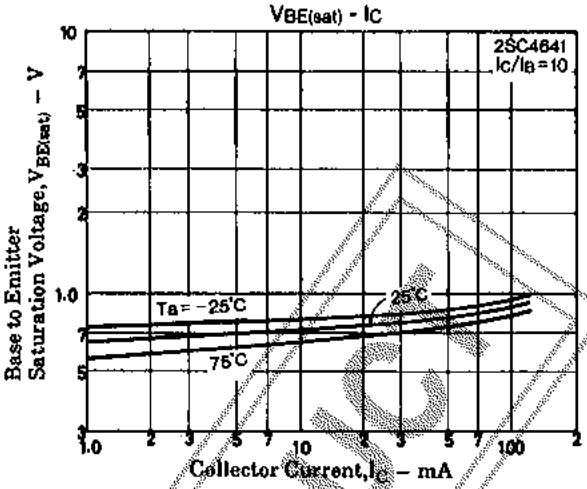

Cob - VCB
2SA1783
f = 1MHz
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V
-1.0
-10
-100
1.0
10

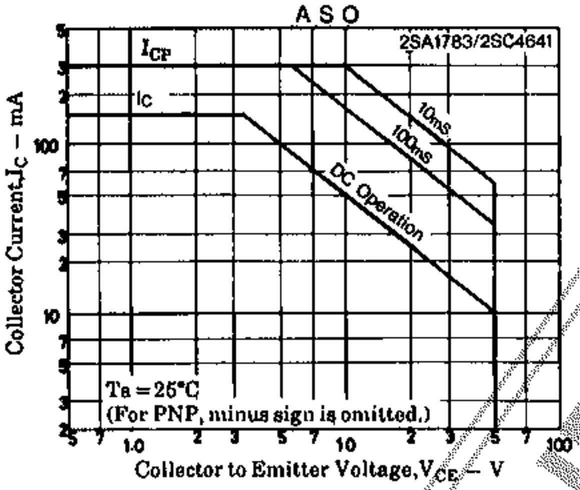

Cob - VCB
2SC4641
f = 1MHz
Output Capacitance,Cob – pF
Collector to Base Voltage,VCB – V
1.0
10
100
1.0
10

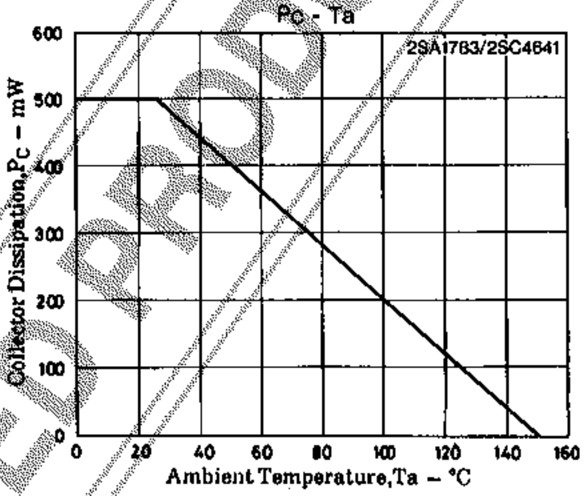

VCE(sat) - IC
2SA1783
IC/IB = 10
Collector to Emitter Saturation Voltage,VCE(sat) – V
Collector Current,IC – mA
Ta = 75°C
25°C
−25°C
-1.0
-10
-100
-1.0
-0.1


VCE(sat) - IC
2SC4641
IC/IB = 10
Collector to Emitter Saturation Voltage,VCE(sat) – V
Collector Current,IC – mA
Ta = 75°C
25°C
−25°C
1.0
10
100
1.0
0.1


VBE(sat) - IC
2SA1783
IC/IB=10
Ta=−25°C
25°C
75°C
Base to Emitter Saturation Voltage, VBE(sat) − V
−10
7
5
3
2
−1.0
7
5
3
−1.0
2
3
5
7
−10
2
3
5
7
−100
2
Collector Current, IC − mA


VBE(sat) - IC
2SC4641
IC/IB=10
Ta=−25°C
25°C
75°C
Base to Emitter Saturation Voltage, VBE(sat) − V
10
7
5
3
2
1.0
7
5
3
1.0
2
3
5
7
10
2
3
5
7
100
2
Collector Current, IC − mA


A S O
2SA1783/2SC4641
ICP
IC
10mS
100mS
DC Operation
Ta=25°C
(For PNP, minus sign is omitted.)
Collector Current, IC − mA
5
3
2
100
7
5
3
2
10
7
5
3
2
5
7
1.0
2
3
5
7
10
2
3
5
7
100
Collector to Emitter Voltage, VCE − V


PC - Ta
2SA1783/2SC4641
Collector Dissipation, PC − mW
600
500
400
300
200
100
0
0
20
40
60
80
100
120
140
160
Ambient Temperature, Ta − °C