

Medium Power Transistor (32V, 0.8A) 2SD1781K

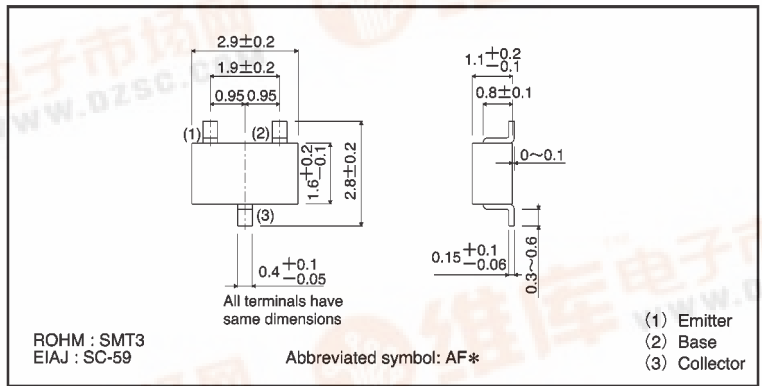
●Features

- 1) Very low $V_{CE(sat)}$.
 $V_{CE(sat)} < 0.4\text{ V}$ (Typ.)
($I_c / I_B = 500\text{mA} / 50\text{mA}$)
- 2) High current capacity in compact package.
- 3) Complements the 2SB1197K..

●Structure

Epitaxial planar type
NPN silicon transistor

●External dimensions (Units: mm)



* Denotes h_{FE}

●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	40	V
Collector-emitter voltage	V_{CEO}	32	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_c	0.8	A (DC)
		1.5	A (Pulse) *
Collector power dissipation	P_c	200	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55~+150	$^\circ\text{C}$

* Single pulse $P_w = 100\text{ms}$

● Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CB0}	40	—	—	V	I _c =50 μA
Collector-emitter breakdown voltage	BV _{CE0}	32	—	—	V	I _c =1mA
Emitter-base breakdown voltage	BV _{EB0}	5	—	—	V	I _E =50 μA
Collector cutoff current	I _{CB0}	—	—	0.5	μA	V _{CB} =20V
Emitter cutoff current	I _{EB0}	—	—	0.5	μA	V _{EB} =4V
Collector-emitter saturation voltage	V _{CE(sat)}	—	—	0.4	V	I _c /I _B =500mA/50mA
DC current transfer ratio	h _{FE}	120	—	390	—	V _{CE} =3V, I _c =100mA
Transition frequency	f _T	—	150	—	MHz	V _{CE} =5V, I _E =-50mA, f=100MHz
Output capacitance	C _{ob}	—	10	—	pF	V _{CB} =10V, I _E =0A, f=1MHz

● Packaging specifications and h_{FE}

Type	h _{FE}	Package	Taping
		Code	T146
		Basic ordering unit (pieces)	3000
		2SD1781K	QR

h_{FE} values are classified as follows :

Item	Q	R
h _{FE}	120~270	180~390

● Electrical characteristic curves

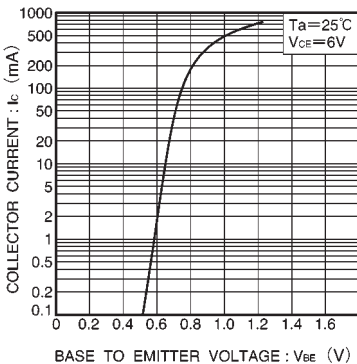


Fig.1 Grounded emitter propagation characteristics

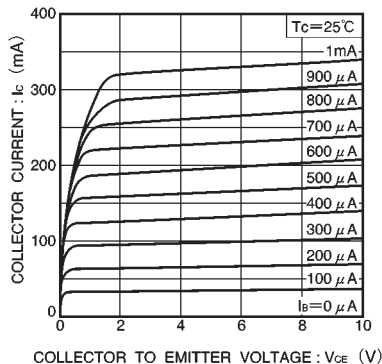


Fig.2 Grounded emitter output characteristics



Fig.3 DC current gain vs. collector current

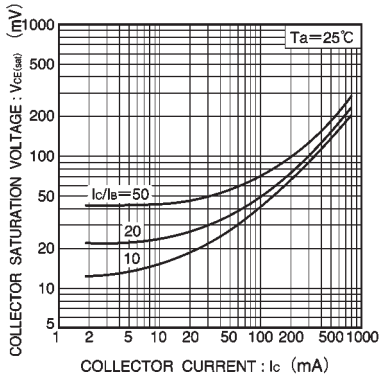


Fig.4 Collector-emitter saturation voltage vs. collector current (I)

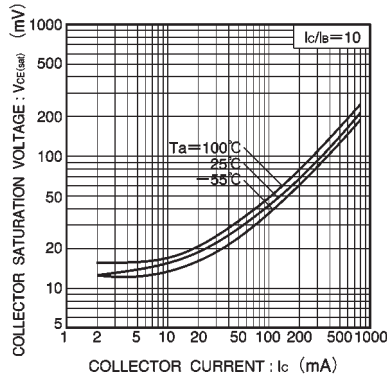


Fig.5 Collector-emitter saturation voltage vs. collector current (II)

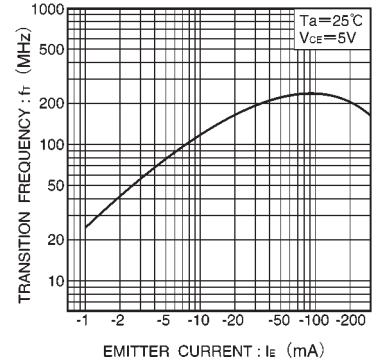


Fig.6 Gain bandwidth product vs. emitter current

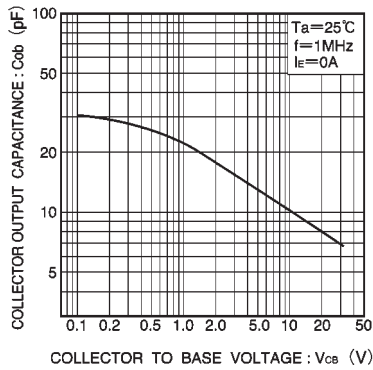


Fig.7 Collector output capacitance vs. collector-base voltage

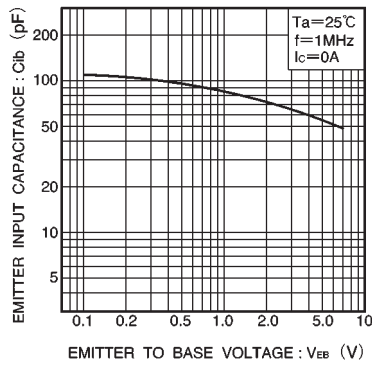


Fig.8 Emitter input capacitance vs. emitter-base voltage