

Medium Power Transistor (32V, 0.8A)

2SD1781K

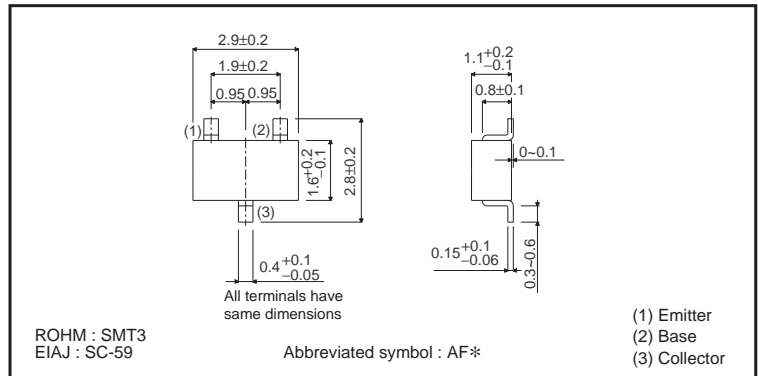
●Features

- 1) Very Low $V_{CE(sat)}$.
 $V_{CE(sat)} = -0.1V(\text{Typ.})$
 $(I_c / I_B = 500mA / 50mA)$
- 2) High current capacity in compact package.
- 3) Complements the 2SB1197K.

●Structure

Epitaxial planar type
 NPN silicon transistor

●External dimensions (Unit : mm)



* Denotes hFE

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

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CB0}	40	V
Collector-emitter voltage	V_{CE0}	32	V
Emitter-base voltage	V_{EB0}	5	V
Collector current	I_c	0.8	A (DC)
	I_{cP}	1.5	A (Pulse) *
Collector power dissipation	P_c	200	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

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

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●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CB0}	40	–	–	V	I _C =50μA
Collector-emitter breakdown voltage	BV _{CE0}	32	–	–	V	I _C =1mA
Emitter-base breakdown voltage	BV _{EB0}	5	–	–	V	I _E =50μA
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)}	–	0.1	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}	–	15	–	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 to 270	180 to 390

●Electrical characteristic curves

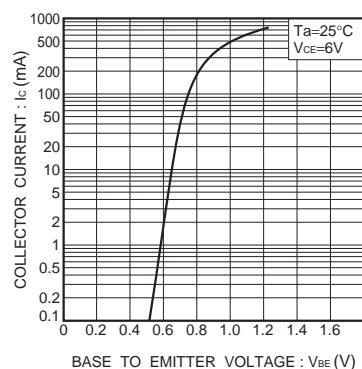


Fig.1 Grounded emitter propagation characteristics

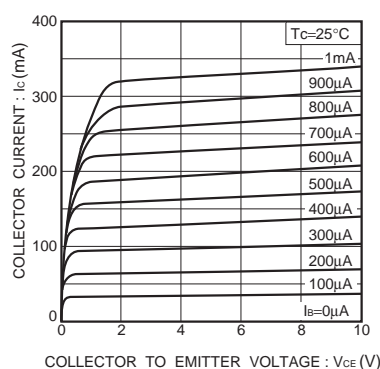


Fig.2 Grounded emitter output characteristics

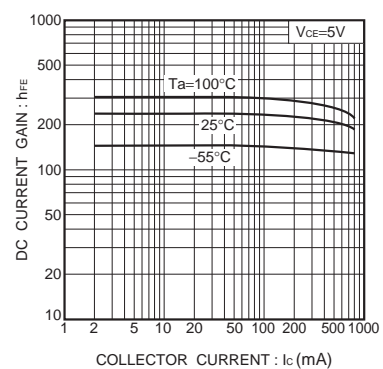


Fig.3 DC current gain vs. collector current

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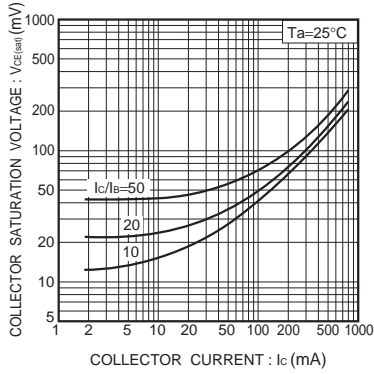


Fig.4 Collector-emitter saturation voltage vs. collector current (I)

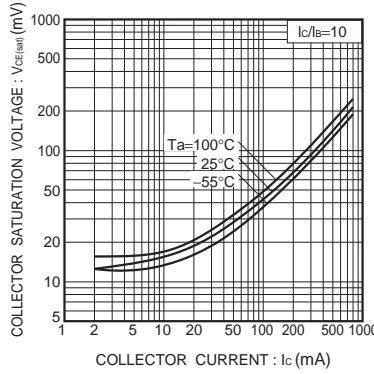


Fig.5 Collector-emitter saturation voltage vs. collector current (II)

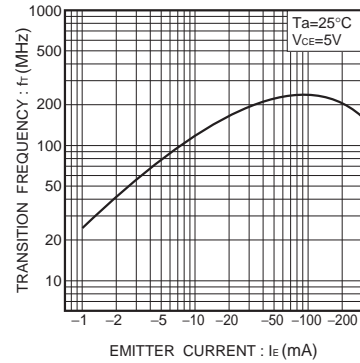


Fig.6 Gain bandwidth product vs. emitter current

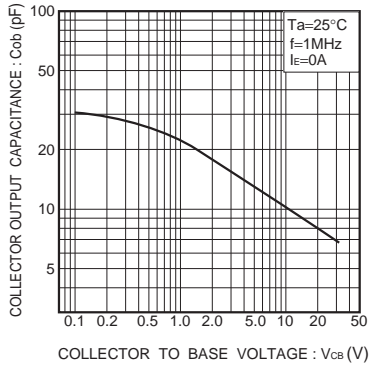


Fig.7 Collector output capacitance vs. collector-base voltage

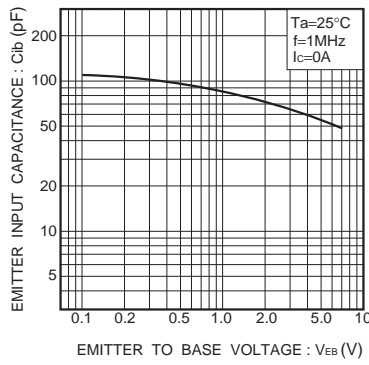


Fig.8 Emitter input capacitance vs. emitter-base voltage

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