Medium Power Transistor (32V, 0.8A)

2SD1781K

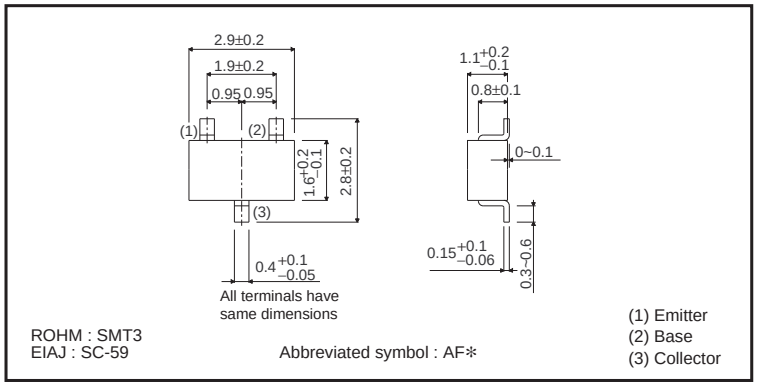
●Features

1) Very Low $V_{CE(sat)}$.
   $V_{CE(sat)}$ = –0.1V(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 h_{FE}

●Absolute maximum ratings (Ta=25°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)
	I_{CP}	1.5	A (Pulse) ∗
Collector power dissipation	P_C	200	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

∗ Single pulse Pw=100ms

●**Electrical characteristics** (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	40	–	–	V	I_C=50μA
Collector-emitter breakdown voltage	BV_{CEO}	32	–	–	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	5	–	–	V	I_E=50μA
Collector cutoff current	I_{CBO}	–	–	0.5	μA	V_{CB}=20V
Emitter cutoff current	I_{EBO}	–	–	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	Cob	–	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**

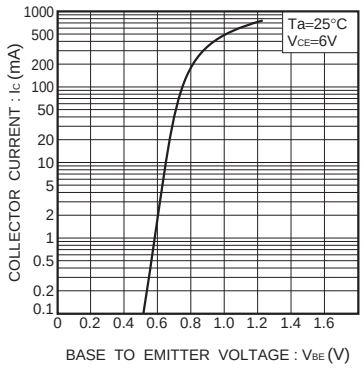


Fig.1 Grounded emitter propagation characteristics

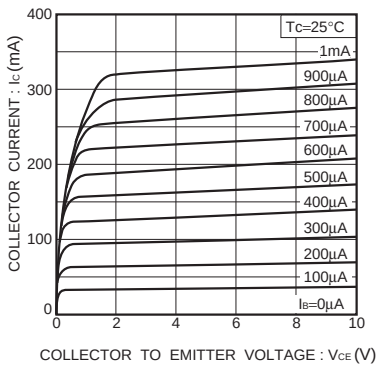


Fig.2 Grounded emitter output characteristics

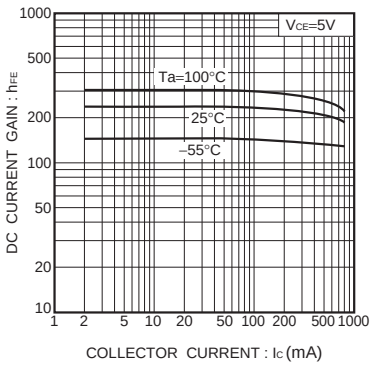


Fig.3 DC current gain vs. collector current

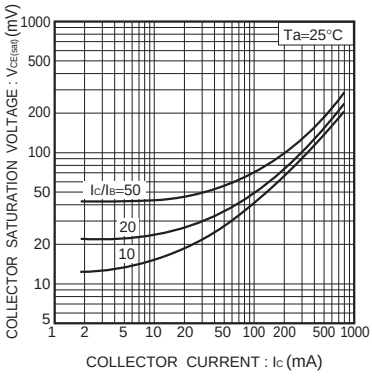


Fig.4 Collector-emitter saturation voltage vs. collector current (I)

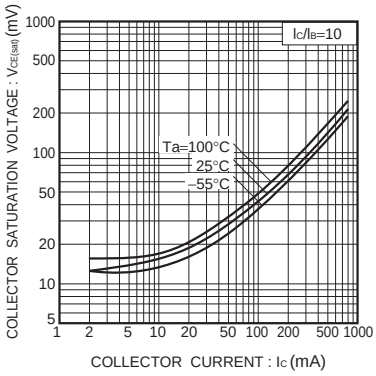


Fig.5 Collector-emitter saturation voltage vs. collector current (II)

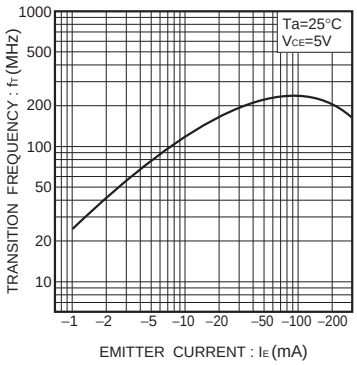


Fig.6 Gain bandwidth product vs. emitter current

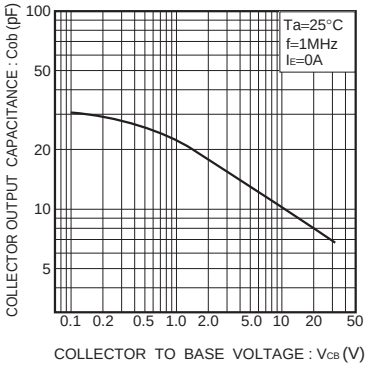


Fig.7 Collector output capacitance vs. collector-base voltage

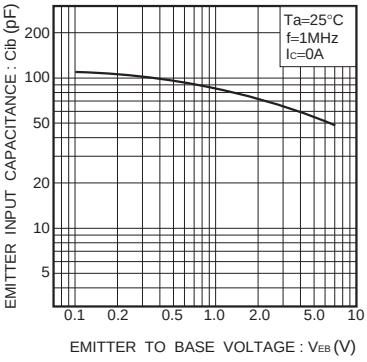


Fig.8 Emitter input capacitance vs. emitter-base voltage

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