

Medium Power Transistor (32V, 0.8A)

2SD1781K

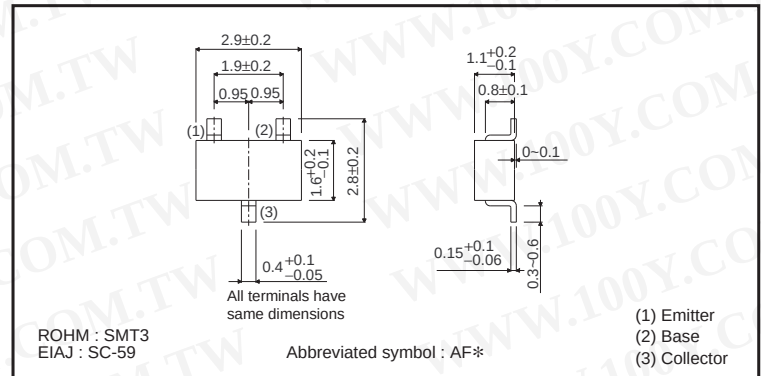
●Features

- 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 ($T_a = 25^\circ C$)

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	T_j	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

* Single pulse $P_w = 100ms$

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●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	40	—	—	V	$I_C=50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	32	—	—	V	$I_C=1mA$
Emitter-base breakdown voltage	BV_{EBO}	5	—	—	V	$I_E=50\mu A$
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	$I_C/I_E=500mA/50mA$
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

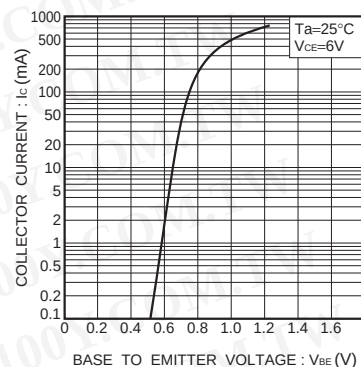


Fig.1 Grounded emitter propagation characteristics

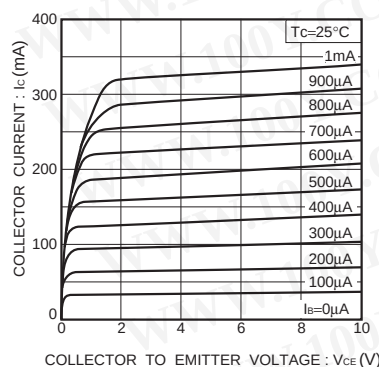


Fig.2 Grounded emitter output characteristics

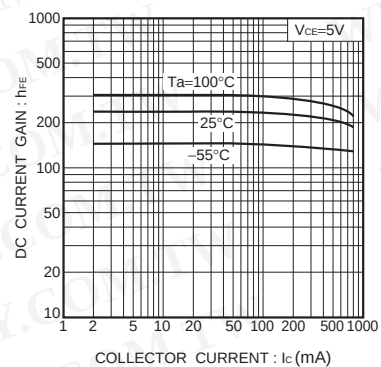


Fig.3 DC current gain vs. collector current

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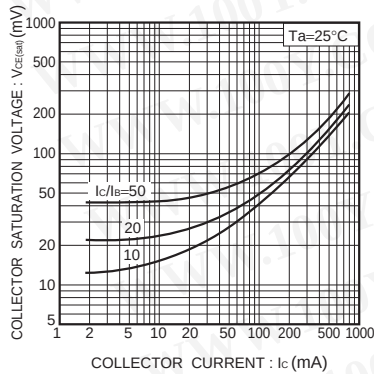


Fig.4 Collector-emitter saturation voltage vs. collector current (I)

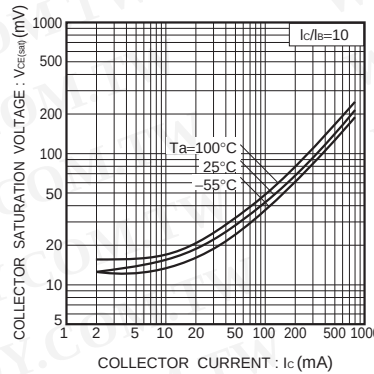


Fig.5 Collector-emitter saturation voltage vs. collector current (II)

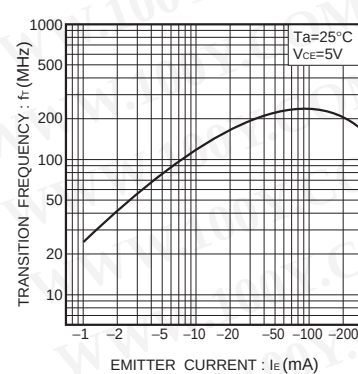


Fig.6 Gain bandwidth product vs. emitter current

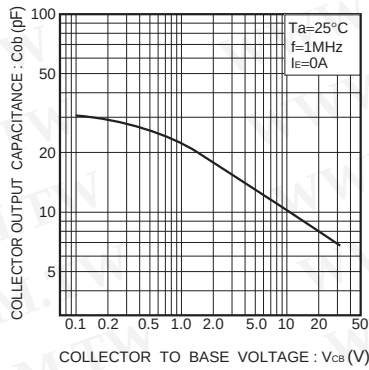


Fig.7 Collector output capacitance vs. collector-base voltage

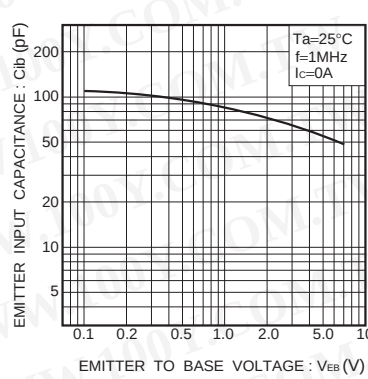


Fig.8 Emitter input capacitance vs. emitter-base voltage

Appendix

Notes

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