

# Medium Power Transistor (32V, 0.8A)

## 2SD1781K

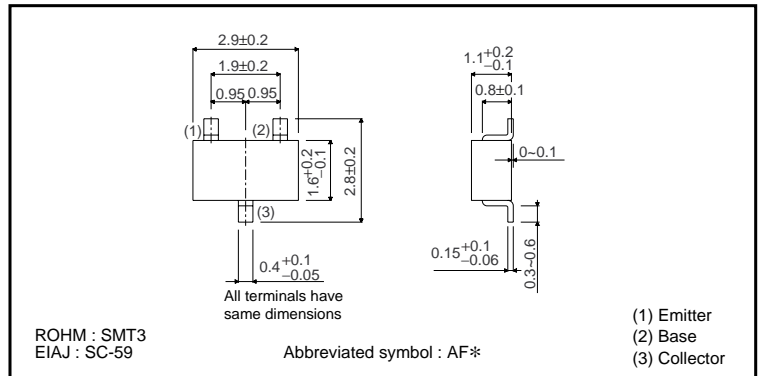
### ●Features

- 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 (Ta=25°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	°C
Storage temperature	$T_{stg}$	-55 to +150	°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 <sub>CB0</sub>	40	–	–	V	I <sub>C</sub> =50μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	32	–	–	V	I <sub>C</sub> =1mA
Emitter-base breakdown voltage	BV <sub>EB0</sub>	5	–	–	V	I <sub>E</sub> =50μA
Collector cutoff current	I <sub>CB0</sub>	–	–	0.5	μA	V <sub>CB</sub> =20V
Emitter cutoff current	I <sub>EB0</sub>	–	–	0.5	μA	V <sub>EB</sub> =4V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	–	0.1	0.4	V	I <sub>C</sub> /I <sub>B</sub> =500mA/50mA
DC current transfer ratio	h <sub>FE</sub>	120	–	390	–	V <sub>CE</sub> =3V, I <sub>C</sub> =100mA
Transition frequency	f <sub>T</sub>	–	150	–	MHz	V <sub>CE</sub> =5V, I <sub>E</sub> =–50mA, f=100MHz
Output capacitance	C <sub>ob</sub>	–	15	–	pF	V <sub>CB</sub> =10V, I <sub>E</sub> =0A, f=1MHz

●Packaging specifications and h<sub>FE</sub>

Type	h <sub>FE</sub>	Package	Taping
		Code	T146
		Basic ordering unit (pieces)	3000
		2SD1781K	QR

h<sub>FE</sub> values are classified as follows :

Item	Q	R
h <sub>FE</sub>	120 to 270	180 to 390

●Electrical characteristic curves

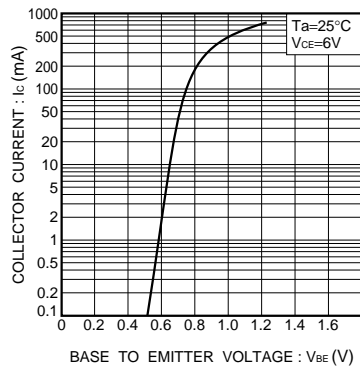


Fig.1 Grounded emitter propagation characteristics

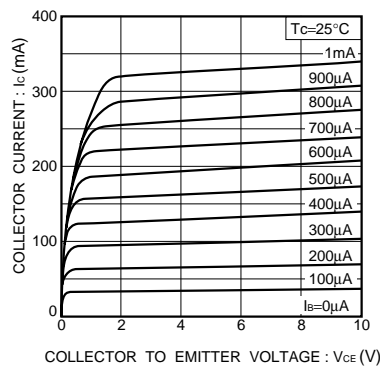


Fig.2 Grounded emitter output characteristics

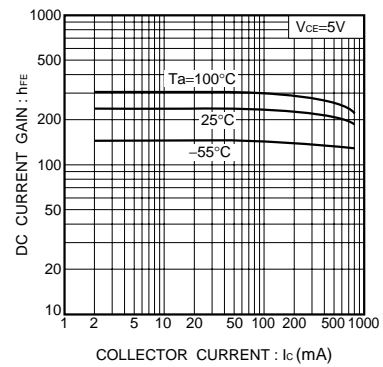


Fig.3 DC current gain vs. collector current

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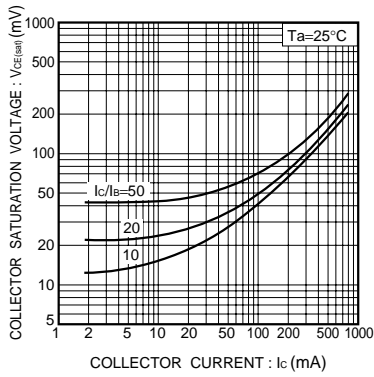


Fig.4 Collector-emitter saturation voltage vs. collector current ( I )

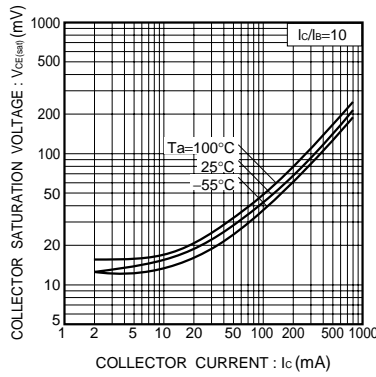


Fig.5 Collector-emitter saturation voltage vs. collector current ( II )

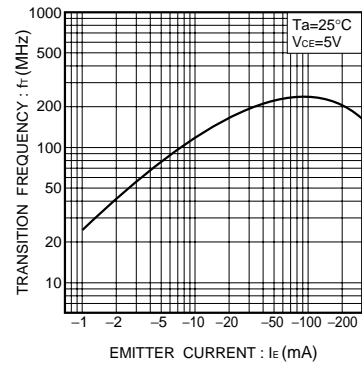


Fig.6 Gain bandwidth product vs. emitter current

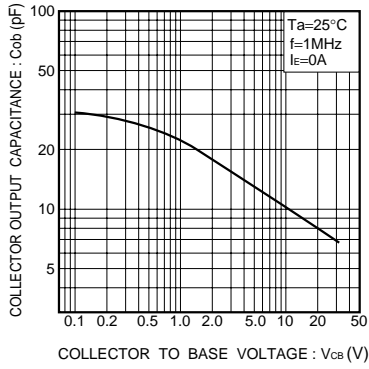


Fig.7 Collector output capacitance vs. collector-base voltage

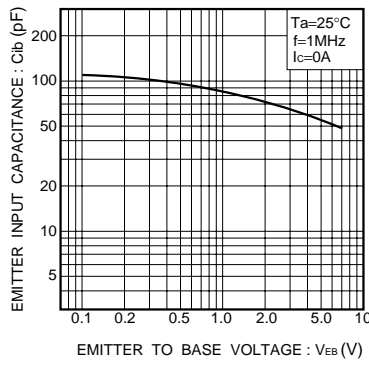


Fig.8 Emitter input capacitance vs. emitter-base voltage

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