

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

FEATURES

- Very low $V_{CE(sat)}$. $V_{CE(sat)} < 0.4\text{ V}$ (Typ.)
($I_C / I_B = 500\text{mA} / 50\text{mA}$)
- Complements to 2SB1197

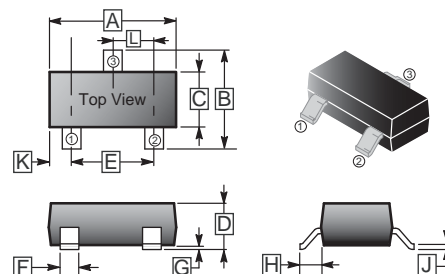
CLASSIFICATION OF h_{FE}

Product-Rank	2SD1781-Q	2SD1781-R
Range	120 ~ 270	180 ~ 390
Marking	AFQ	AFR

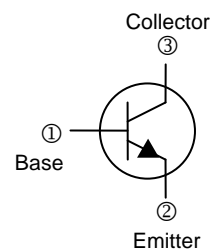
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7' inch

SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.80	3.00	G	0.10 REF.	
B	2.25	2.55	H	0.55 REF.	
C	1.20	1.40	J	0.08	0.15
D	0.90	1.15	K	0.5 REF.	
E	1.80	2.00	L	0.95 TYP.	
F	0.30	0.50			



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	V_{CBO}	40	V
Collector to Emitter Voltage	V_{CEO}	32	V
Emitter to Base Voltage	V_{EBO}	5	V
Collector Current - Continuous	I_C	0.8	A
Collector Power Dissipation	P_C	200	mW
Junction and Storage Temperature	T_J, T_{STG}	150, -55~150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector-Base Breakdown Voltage	BV_{CBO}	40	-	-	V	$I_C = 50\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	BV_{CEO}	32	-	-	V	$I_C = 1\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	BV_{EBO}	5	-	-	V	$I_E = 50\mu\text{A}, I_C = 0$
Collector Cut-off Current	I_{CBO}	-	-	0.5	μA	$V_{CB} = 20\text{V}, I_E = 0$
Emitter Cut-off Current	I_{EBO}	-	-	0.5	μA	$V_{EB} = 4\text{V}, I_C = 0$
DC Current Gain	h_{FE}	120	-	390		$I_C = 100\text{mA}, V_{CE} = 3\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	0.4	V	$I_C = 500\text{mA}, I_B = 50\text{mA}$
Transition Frequency	f_T	-	150	-	MHz	$V_{CE} = 5\text{V}, I_C = 50\text{mA}, f = 100\text{MHz}$
Collector Output Capacitance	C_{ob}	-	10	-	pF	$V_{CB} = 10\text{V}, I_E = 0, f = 1.0\text{MHz}$

CHARACTERISTICS CURVE

Fig.1 Grounded emitter propagation characteristics

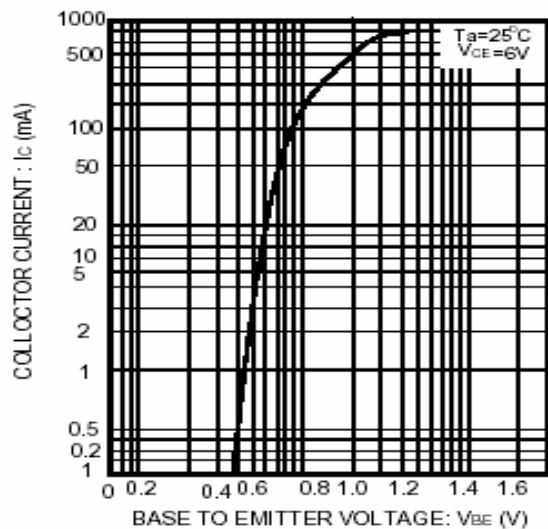


Fig.2 Grounded emitter output characteristics

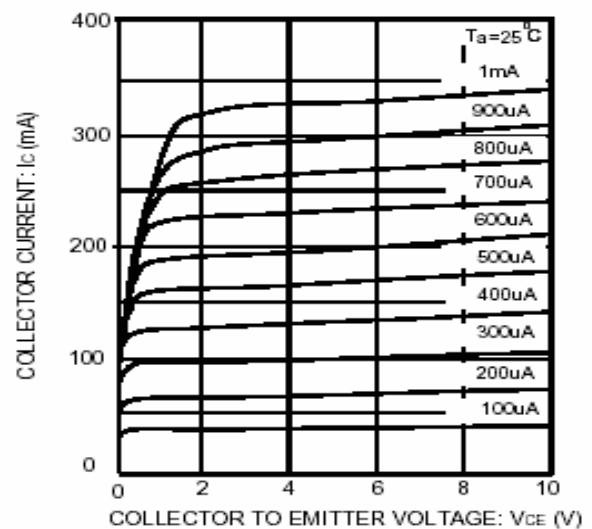


Fig.3 DC Current gain vs. collector current

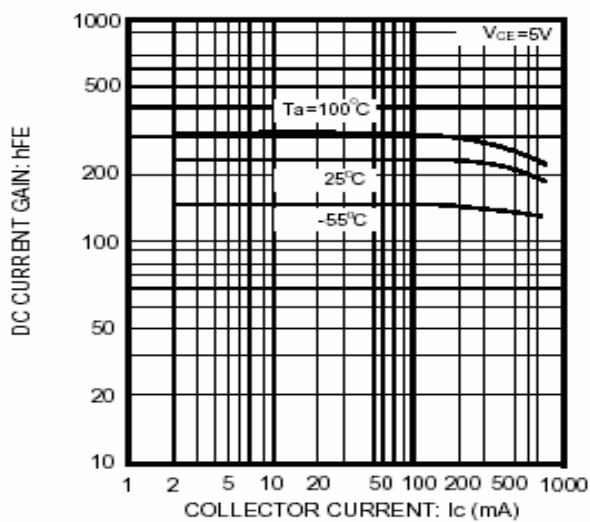
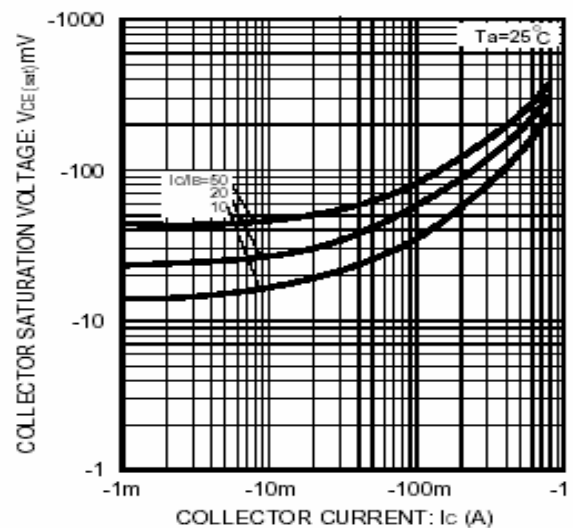


Fig.4 Collector-emitter saturation voltage vs. collector current (1)



CHARACTERISTICS CURVE

Fig.5 Collector-emitter saturation voltage vs. collector current (2)

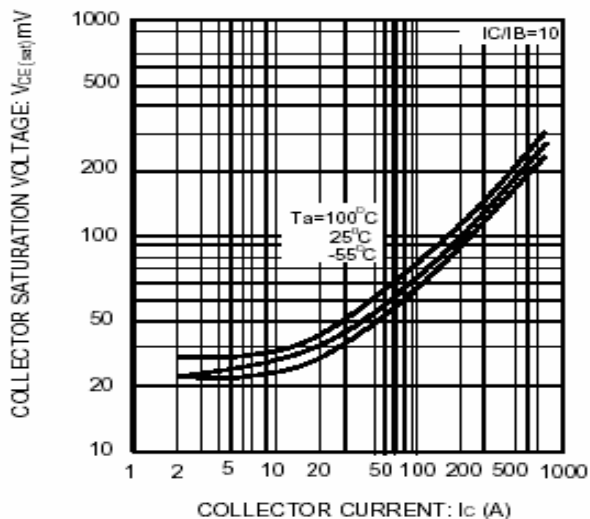


Fig.6 Gain bandwidthproduct vs. emitter current

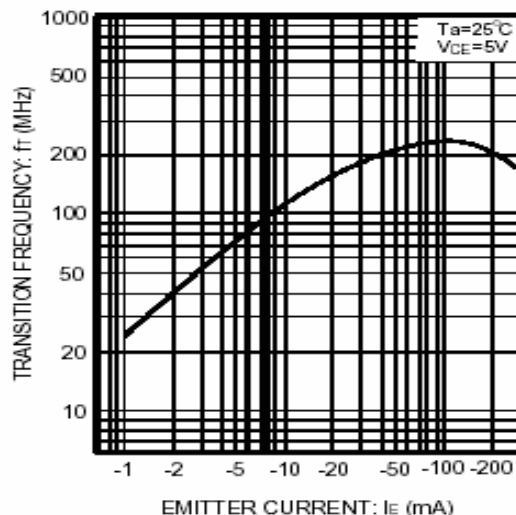


Fig.7 Collector output capacitance vs. collector-base voltage

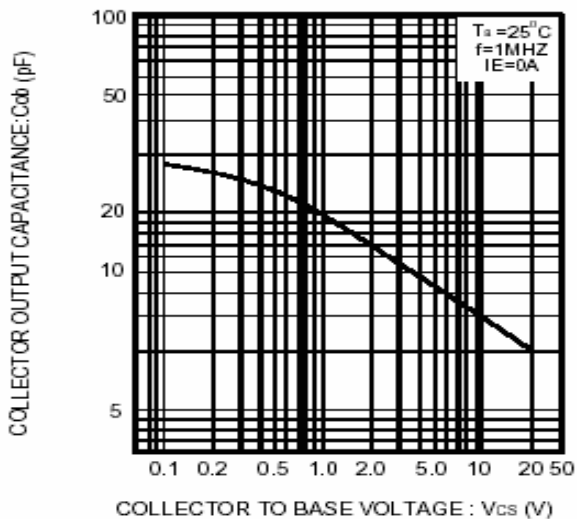


Fig.8 Emitter input capacitance vs emitter-base voltage

