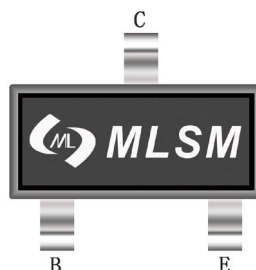
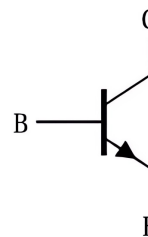


Features

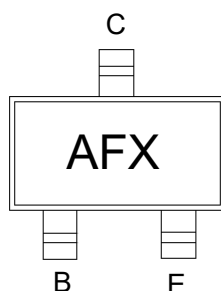
- Very low $V_{CE(sat)}$ · $V_{CE(sat)} < 0.4 \text{ V (Typ.)}$
 $(I_C / I_B = 500\text{mA} / 50\text{mA})$
- Complements to 2SB1197.



SOT-23 top view



Schematic diagram



Rank: X

Marking and pin assignment



Halogen-Free

Maximum Ratings (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	32	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current	800	mA
P_C	Collector Power Dissipation	200	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	625	°C/W
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	°C

Ordering Information (Example)

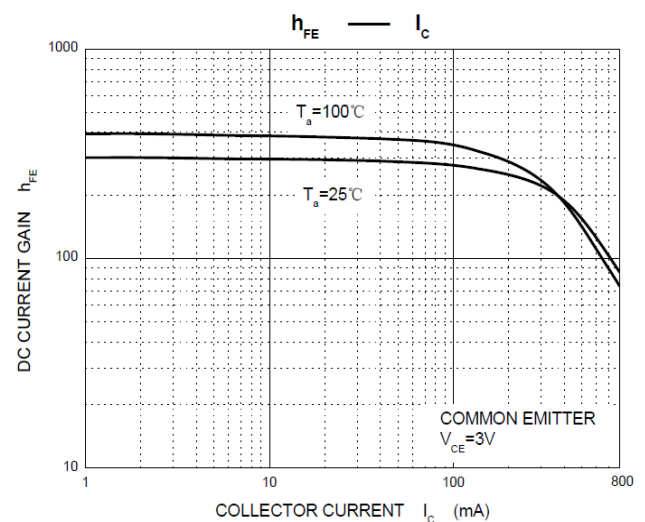
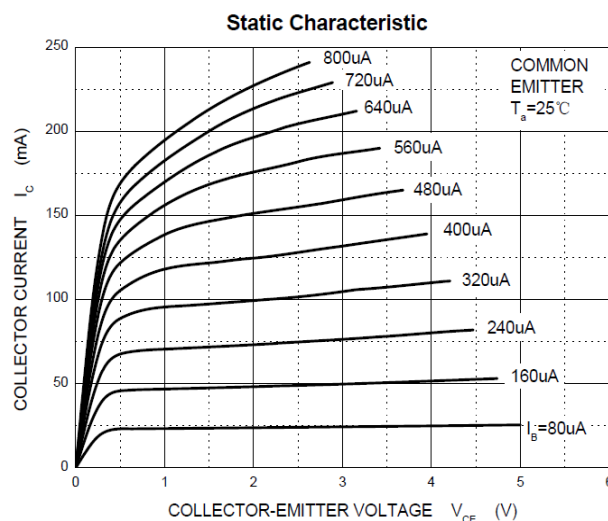
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
2SD1781	SOT-23	AFQ/AFR	3,000	45,000	180,000	7"reel

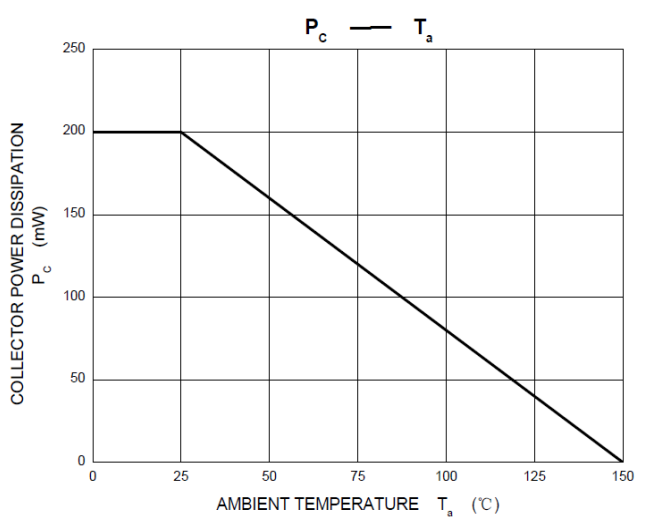
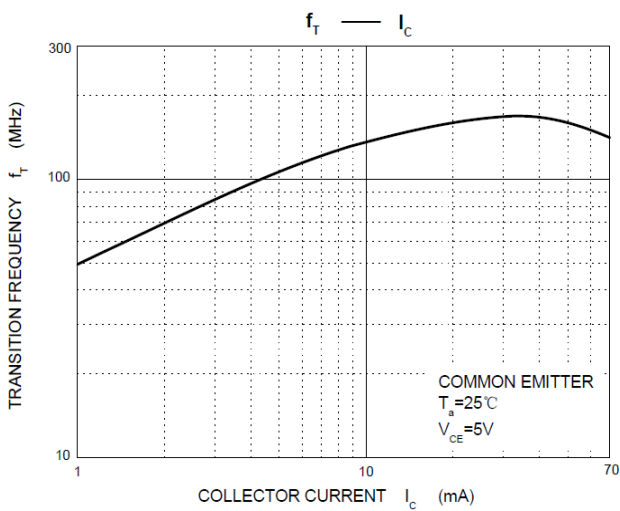
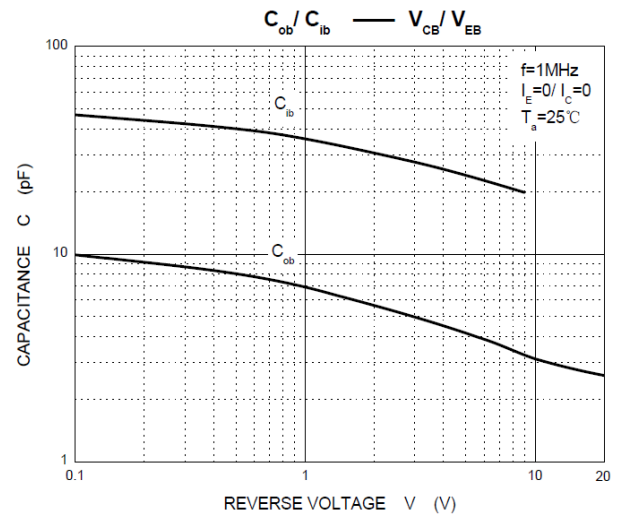
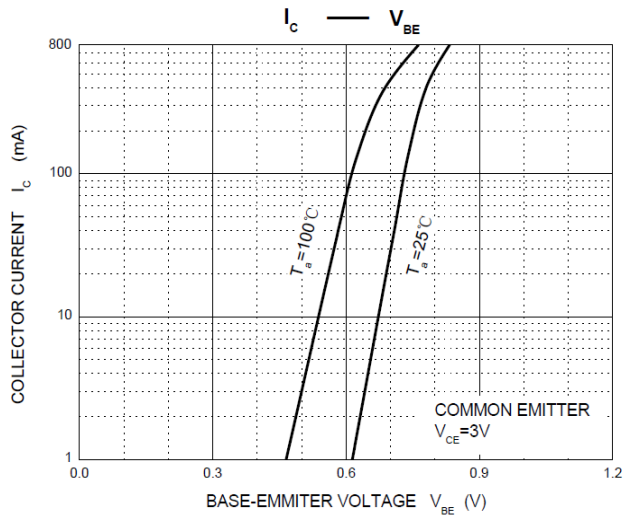
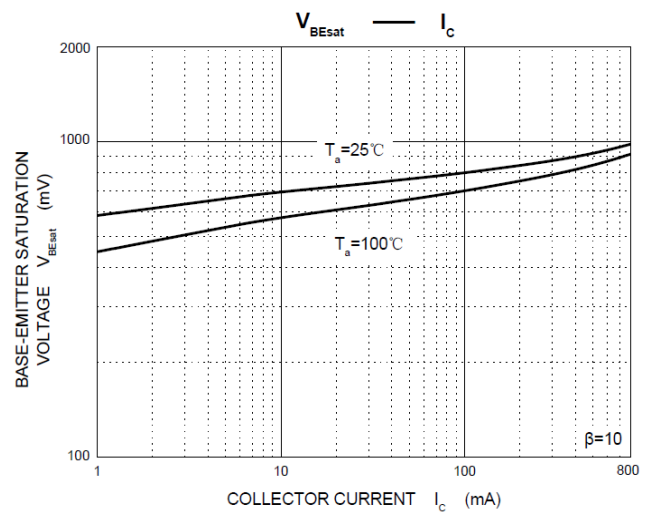
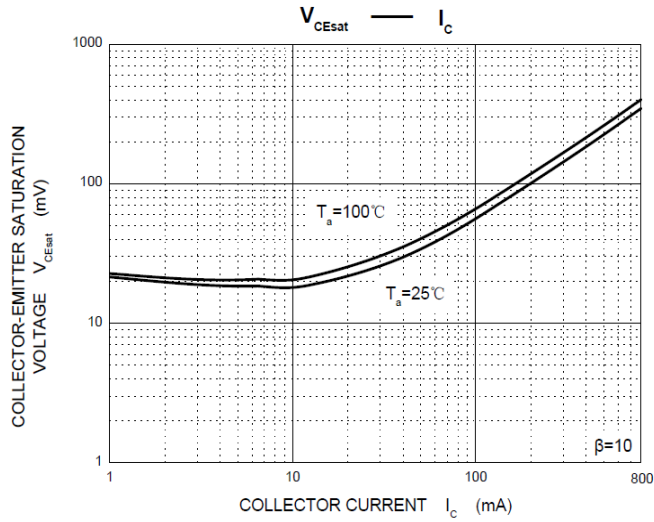
Electrical Characteristics (Ta=25°C unless otherwise specified)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C=50\mu A, I_E=0$	40	--	--	V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C=1mA, I_B=0$	32	--	--	V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E=50\mu A, I_C=0$	5	--	--	V
I_{CBO}	Collector cut-off current	$V_{CB}=20V, I_E=0$	--	--	0.5	μA
I_{EBO}	Emitter cut-off current	$V_{EB}=4V, I_C=0$	--	--	0.5	μA
$H_{FE(1)}$	DC current gain	$V_{CE}=3V, I_C=100mA$	120	--	390	
$V_{CE(sat)}$	Collector-emitter saturation voltage	$I_C=500mA, I_B=50mA$	--	--	0.4	V
C_{ob}	Collector output capacitance	$V_{CB}=10V, I_E=0, f=1MHz$	--	10	--	pF
f_T	Transition frequency	$V_{CE}=5V, I_C=50mA, f=100MHz$	--	150	--	MHz

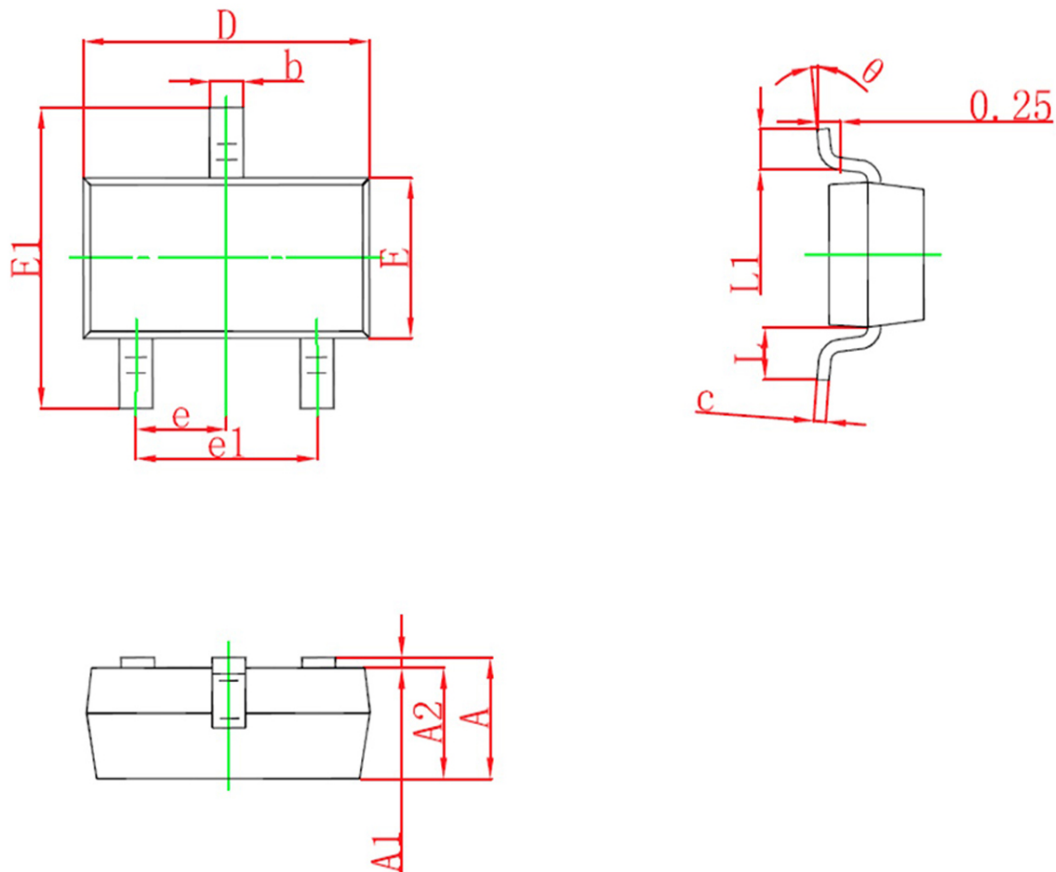
Classification of hFE

Rank	Q	R
Marking	AFQ	AFR
Range	120-270	180-390

Typical Operating Characteristics




SOT-23 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E1	2.250	2.550	0.088	0.100
E	1.200	1.400	0.047	0.055
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°