2SD1748, 2SD1748A

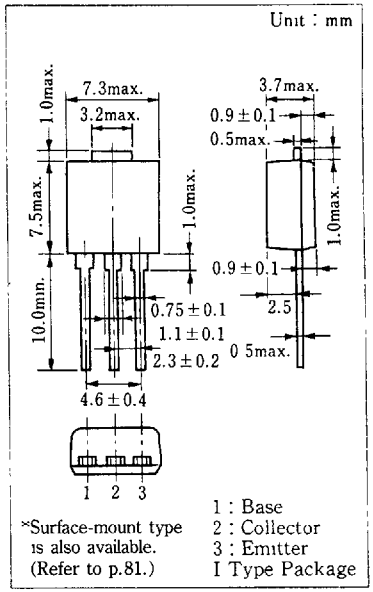
Silicon NPN Triple-Diffused Planar Darlington Type

AF Power Amplifier
Complementary Pair with 2SB1178, 2SB1178A

■ Features

- High DC current gain (h_{FE})
- High speed switching
- "I Type" package configuration with a cooling fin for direct soldering on PC board of a small-size electronic equipment

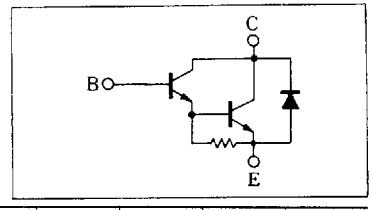
■ Package Dimensions



■ Absolute Maximum Ratings (Tc=25°C)

Item		Symbol	Value	Unit
Collector-base voltage	2SB1748	V_{CBO}	60	V
	2SB1748A		80	
Collector-emitter voltage	2SD1748	V_{CEO}	60	V
	2SD1748A		80	
Emitter-base voltage		V_{EBO}	5	V
Peak collector current		I_{CP}	4	A
Collector voltage		I_C	2	A
Collector power dissipation	Tc=25°C	P_C	15	W
	Ta=25°C		1.3	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55~+150	°C

■ Inner Circuit



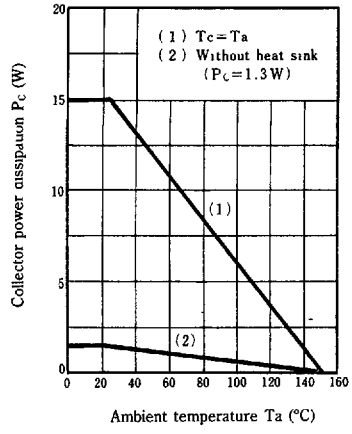
■ Electrical Characteristics (Tc=25°C)

Item		Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	2SD1748	I_{CBO}	V_{CB}=60 V, I_E=0			1	mA
	2SD1748A		V_{CB}=80 V, I_B=0			1	
Collector cutoff current	2SD1748	I_{CEO}	V_{CE}=30 V, I_B=0			2	mA
	2SD1748A		V_{CE}=40 V, I_B=0			2	
Emitter cutoff current		I_{EBO}	V_{EB}=5 V, I_C=0			2	mA
Collector-emitter voltage	2SD1748	V_{CEO}	I_C=30 mA, I_B=0	60			V
	2SD1748A			80			
DC current gain		h_{FE1}	V_{CE}=4 V, I_C=1 A	1000			
		h_{FE2}*	V_{CE}=4V, I_C=2 A	1000		10000	
Base-emitter voltage		V_{BE}	V_{CE}=4 V, I_C=2 A			2.8	V
Collector-emitter saturation voltage		$V_{CE(sat)}$	I_C=2 A, I_B=8 mA			2.5	V
Transition frequency		f_T	V_{CF}=10V, I_C=0.5A, f=1MHz		20		MHz
Turn-on time		t_{on}	I_C=2A, I_{B1}=8mA, I_{B2}=−8mA V_{CC}=50V		0.5		μs
Storage time		t_{stg}			4		μs
Fall time		t_f			1		μs

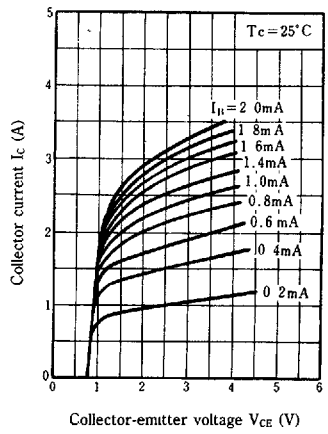
*h_{FE2} Classifications

Class	R	Q	P
h_{FE2}	1000~2500	2000~5000	4000~10000

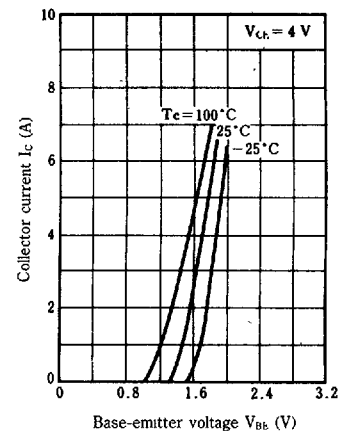
$P_C - Ta$



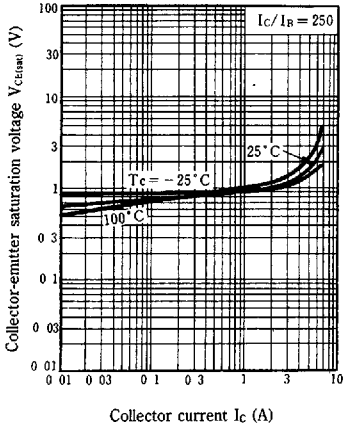
$I_C - V_{CE}$



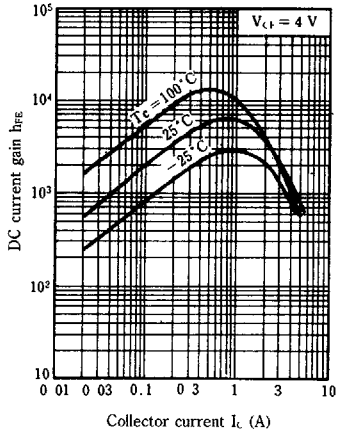
$I_C - V_{BE}$



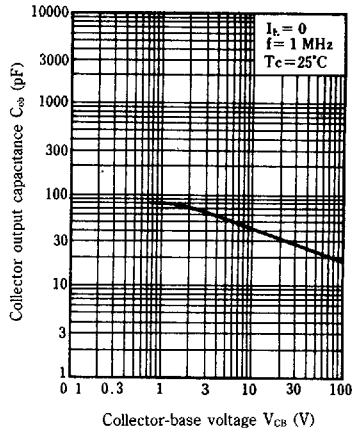
$V_{CE(sat)} - I_C$



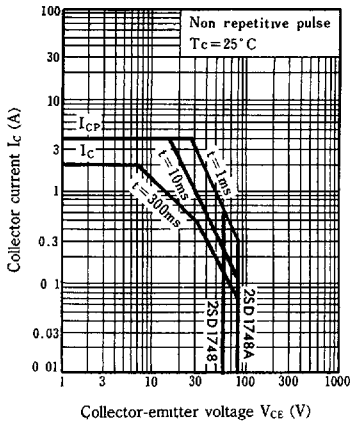
$h_{FE} - I_C$



$C_{ob} - V_{CB}$



Area of safe operation (ASO)



$R_{th(t)} - t$