

2SC 3198
2SC 3198 Ⓛ

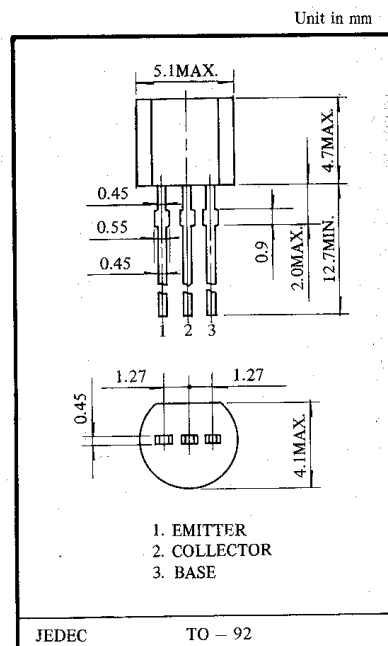
SILICON NPN TRANSISTOR EPITAXIAL PLANAR TYPE (PCT PROCESS)

APPLICATIONS

- Low Frequency Amplifiers
- Low Noise Amplifiers

FEATURES

- Excellent h_{FE} Linearity, $h_{FE}(0.1mA)/h_{FE}(2mA) = 0.95$ (Typ.)
- High h_{FE} (70~700).
- Excellent Safe Operation Area.
- Low Noise 2SC3198 NF=1dB (TYP), 10dB (Max).
 2SC3198Ⓛ NF=0.2dB (TYP), 3dB (Max).
- Complementary to the 2SA1266/2SA1266Ⓛ.



MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT	CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	60	V	Emitter Current	I_E	—150	mA
Collector-Emitter Voltage	V_{CEO}	50	V	Collector Power Dissipation	P_C	400	mW
Emitter-Base Voltage	V_{EBO}	5	V	Junction Temperature	T_j	125	°C
Collector Current	I_C	150	mA	Storage Temperature Range	T_{stg}	—55~125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut off Current	I_{CBO}	$V_{CB}=60V, I_E=0$	—	—	0.1	μA
Emitter Cut off Current	I_{EBO}	$V_{EB}=5V, I_C=0$	—	—	0.1	μA
DC Current Gain(1)	$h_{FE(1)}$	$V_{CE}=6V, I_C=2mA$	70	—	700	—
DC Current Gain(2)	$h_{FE(2)}$	$V_{CE}=6V, I_C=150mA$	25	—	—	—
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=100mA, I_B=10mA$	—	0.1	0.25	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=100mA, I_B=100mA$	—	—	0.1	V
Transition Frequency	f_T	$V_{CE}=10V, I_E=-1mA$	80	—	—	MHz
Output Capacitance	C_{ob}	$V_{CB}=10V, I_E=0, f=1MHz$	—	2.0	3.0	pF
Base Spreading Resistance	$r_{bb'}$	$V_{CB}=10V, I_E=-1mA, f=30MHz$	—	50	—	Ω
Noise Figure	2SC3198	$V_{CE}=-6V, I_C=0.1mA$ $R_g=10k\Omega, f=1KHz$	—	1	10	dB
	2SC3198Ⓛ		—	0.2	3	

■ NOTE: According to h_{FE} (1), Classified as follows

O	70-140	Y	120~240	GR	200~400	BL	350~700
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ST 2SC3198

NPN Silicon Epitaxial Planar Transistor

for switching and AF amplifier applications.

The transistor is subdivided into four groups, O, Y, G and L, according to its DC current gain.

On special request, these transistors can be manufactured in different pin configurations.



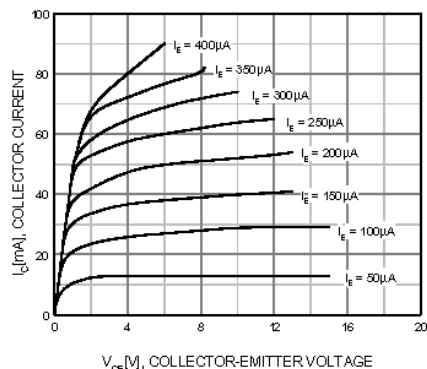
1. Emitter 2. Collector 3. Base
TO-92 Plastic Package

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

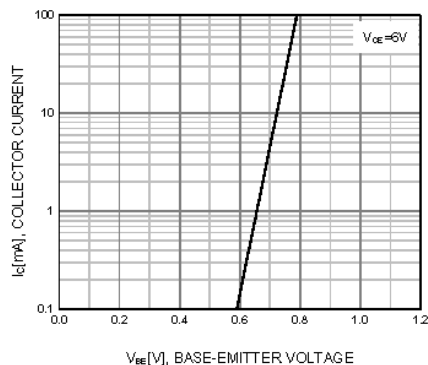
Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	60	V
Collector Emitter Voltage	V_{CEO}	50	V
Emitter Base Voltage	V_{EBO}	5	V
Collector Current	I_C	150	mA
Base Current	I_B	50	mA
Power Dissipation	P_{tot}	500	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ\text{C}$

Characteristics at $T_a = 25^\circ\text{C}$

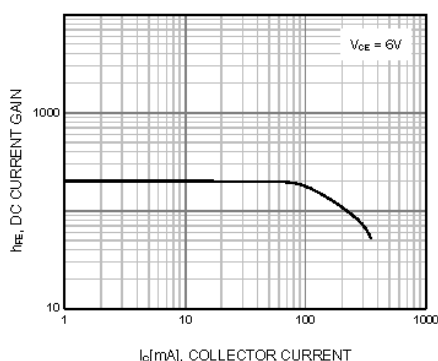
Parameter	Symbol	Min.	Typ.	Max.	Unit	
DC Current Gain at V _{CE} = 6 V, I _C = 2 mA	Current Gain Group O Y G L	h _{FE}	70	-	140	-
		h _{FE}	120	-	240	-
		h _{FE}	200	-	400	-
		h _{FE}	350	-	700	-
		h _{FE}	25	100	-	-
at V _{CE} = 6 V, I _C = 150 mA						
Collector Base Cutoff Current at V _{CB} = 60 V	I _{CBO}	-	-	0.1	μA	
Emitter Base Cutoff Current at V _{EB} = 5 V	I _{EBO}	-	-	0.1	μA	
Collector Emitter Saturation Voltage at I _C = 100 mA, I _B = 10 mA	V _{CE(sat)}	-	0.1	0.25	V	
Base Emitter Saturation Voltage at I _C = 100 mA, I _B = 10 mA	V _{BE(sat)}	-	-	1	V	
Transition Frequency at V _{CE} = 10 V, I _C = 1 mA	f _T	80	-	-	MHz	
Collector Output Capacitance at V _{CB} = 10 V, f = 1 MHz	C _{ob}	-	2	3.5	pF	
Base Intrinsic Resistance at V _{CB} = 10 V, I _C = 1 mA, f = 30 MHz	R _{bb'}	-	50	-	Ω	
Noise Figure at V _{CE} = 6 V, I _C = 0.1 mA, f = 1 KHz, R _G = 10 KΩ	NF	-	1	10	dB	



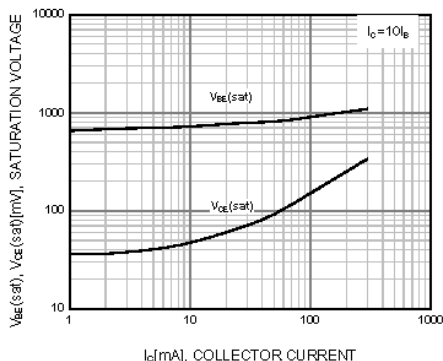
Static Characteristic



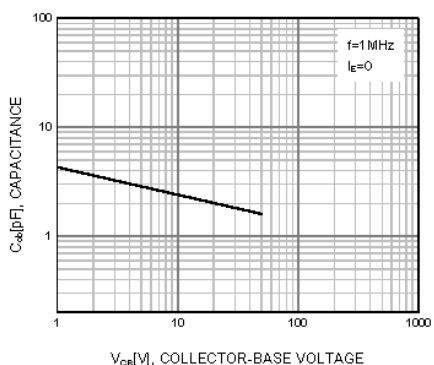
Transfer Characteristic



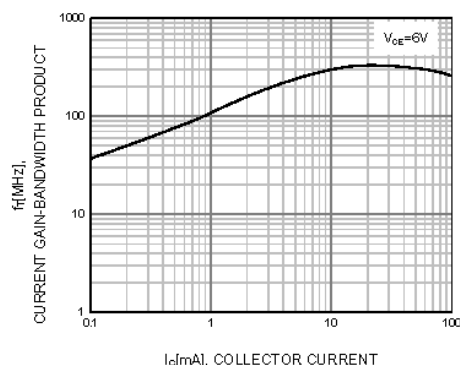
DC current Gain



Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage



Output Capacitance



Current Gain Bandwidth Product

