HITACHI

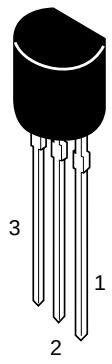
2SC4648

Silicon NPN Epitaxial
High Speed Medium Power Switching

Table 1 Absolute Maximum Ratings
(Ta = 25°C)

Item	Symbol	Rating	Unit
Collector to base voltage	V_{CBO}	70	V
Collector to emitter voltage	V_{CEO}	50	V
Emitter to base voltage	V_{EBO}	5	V
Collector current	I_C	0.5	A
Collector power dissipation	P_C	0.5	W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

TO-92 (1)

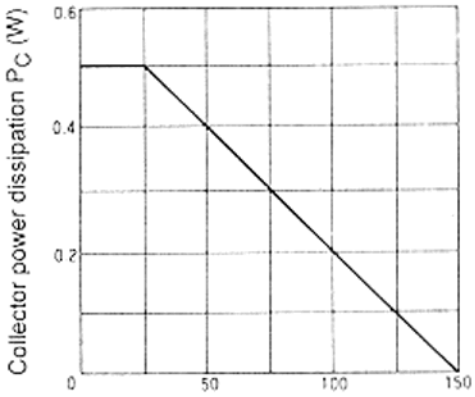


1. Emitter
2. Collector
3. Base

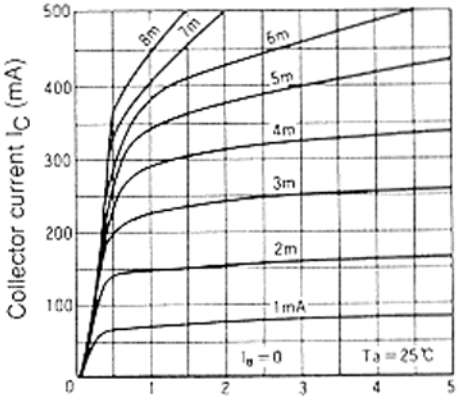
Table 2 Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test condition
Collector to base breakdown voltage	$V_{(BR)CBO}$	70	—	—	V	I_C = 100 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	50	—	—	V	I_C = 10 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	I_E = 100 µA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	100	µA	V_{CB} = 60 V, I_E = 0
DC current transfer ratio	$h_{FE}1$	30	—	—	—	V_{CE} = 1 V, I_C = 60 mA
DC current transfer ratio	$h_{FE}2$	20	—	—	—	V_{CE} = 1 V, I_C = 500 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.8	V	I_C = 500 mA, I_B = 25 mA
Base to emitter saturation voltage	$V_{BE(sat)}$	0.8	—	1.2	V	I_C = 500 mA, I_B = 25 mA
Turn on time	ton	—	—	45	ns	$I_C = 10I_{B1} = -10I_{B2}$ = 300 mA
Turn off time	toff	—	—	70	ns	$I_C = 10I_{B1} = -10I_{B2}$ = 300 mA

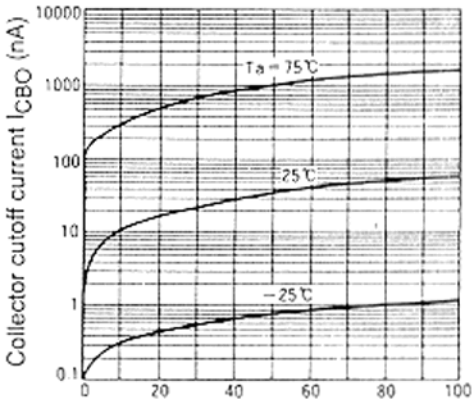
Maximum collector dissipation curve



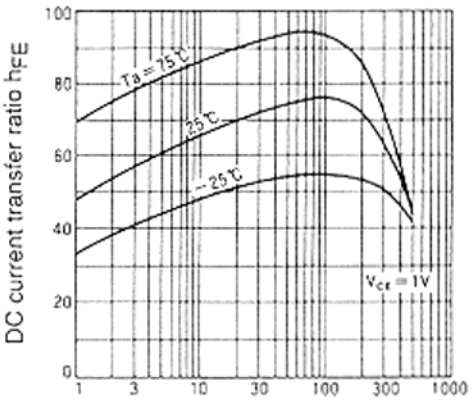
Typical output characteristics



Collector cutoff current
vs. collector to emitter voltage

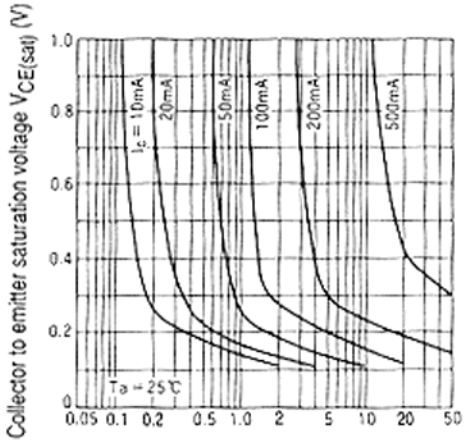


DC current transfer ratio
vs. collector current

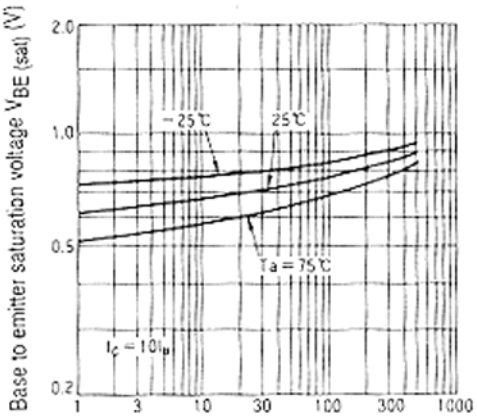


2SC4648

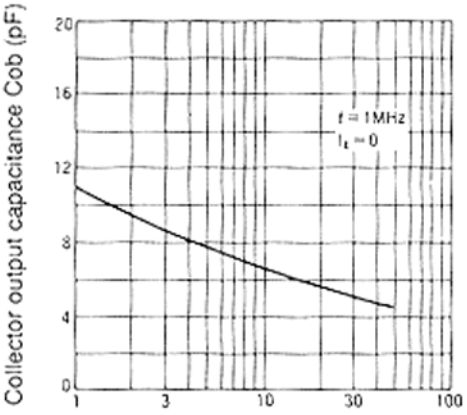
Collector to emitter saturation voltage vs. base current



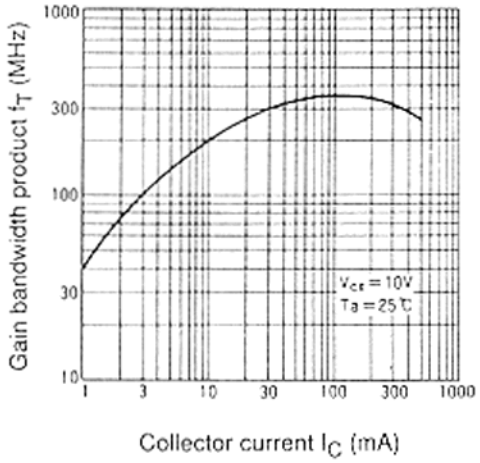
Base to emitter saturation voltage vs. collector current



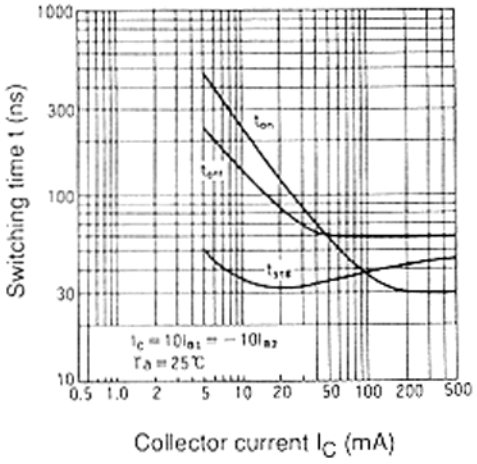
Collector output capacitance vs. collector to base voltage



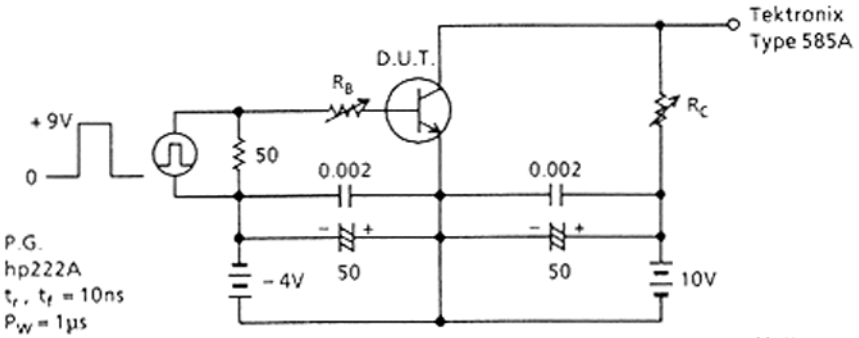
Gain bandwidth product vs. collector current



Switching time vs. collector current



Switching time test circuit



P.G.
hp222A
t_r , t_f = 10ns
P_W = 1μs
duty ratio = 10%

Unit
R : Ω
C : μF

Transient thermal resistance