2SC4501(L)/(S)

Silicon NPN Epitaxial

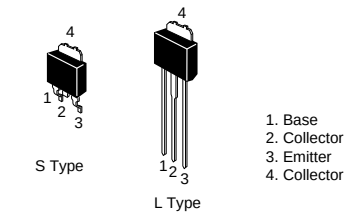
HITACHI

Application

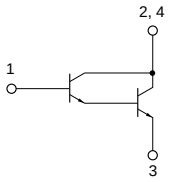
High gain amplifier and medium speed switching

Outline

DPAK



1. Base
2. Collector
3. Emitter
4. Collector



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	30	V
Emitter to base voltage	V_{EBO}	7	V
Collector current	I_C	3	A
Collector peak current	$I_{C\ (peak)}$	4	A
Collector power dissipation	P_C*[1]	10	W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

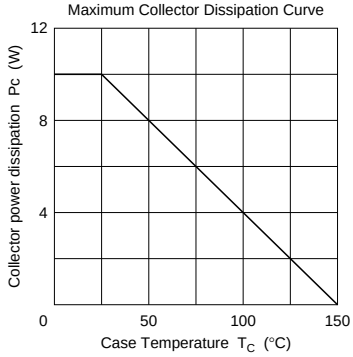
Note: 1. Value at T_C = 25°C.

Electrical Characteristics (Ta = 25°C)

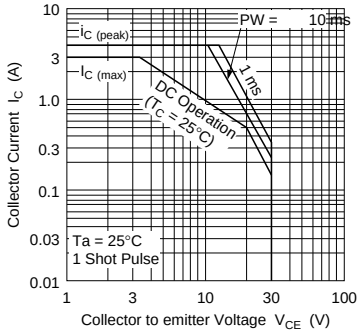
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	I_C = 0.1 mA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	30	—	—	V	I_C = 1 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	7	—	—	V	I_E = 0.1 mA, I_C = 0
Collector cutoff current	I_{CEO}	—	—	20	µA	V_{CB} = 24 V, R_{BE} = ∞
DC current transfer ratio	h_{FE}	2000	—	50000		V_{CE} = 3 V, I_C = 1.5 A*[1]
Collector to emitter saturation voltage	$V_{CE\ (sat)}$	—	—	1.5	V	I_C = 1.5 A, I_B = 3 mA*[1]
	$V_{CE\ (sat)}$	—	—	2.0		I_C = 3 A, I_B = 30 mA*[1]
Base to emitter saturation voltage	$V_{BE\ (sat)}$	—	—	2.0	V	I_C = 1.5 A, I_B = 3 mA*[1]
	$V_{BE\ (sat)}$	—	—	3.5		I_C = 3 A, I_B = 30 mA*[1]
Turn on time	t_{on}	—	0.4	—	µs	I_C = 1.5 A,
Turn off time	t_{off}	—	1.2	—	µs	I_{B1} = –I_{B2} = 3 mA,
Storage time	t_{stg}	—	0.8	—	µs	V_{CC} = 30 V

Note: 1. Pulse test.

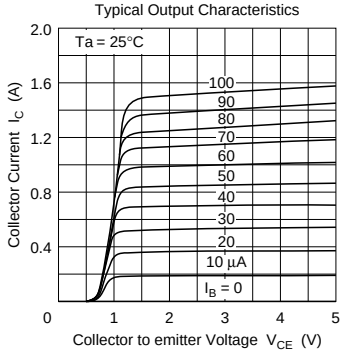
Maximum Collector Dissipation Curve

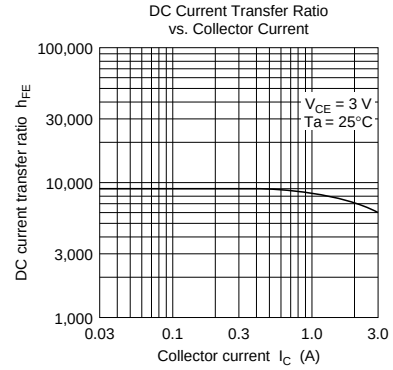


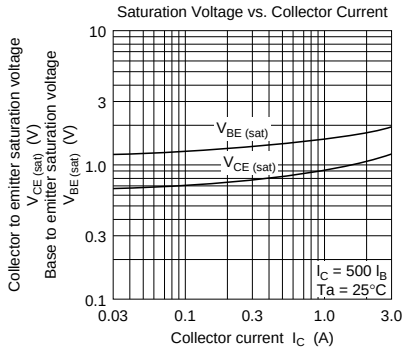
Area of Safe Operation



Typical Output Characteristics




DC Current Transfer Ratio
vs. Collector Current
DC current transfer ratio h_{FE}
100,000
30,000
10,000
3,000
1,000
0.03
0.1
0.3
1.0
3.0
Collector current I_C (A)
V_{CE} = 3 V
Ta = 25°C


Saturation Voltage vs. Collector Current
Collector to emitter saturation voltage $V_{CE (sat)}$ (V)
Base to emitter saturation voltage $V_{BE (sat)}$ (V)
10
3
1.0
0.3
0.1
0.03
0.1
0.3
1.0
3.0
Collector current I_C (A)
$V_{BE (sat)}$
$V_{CE (sat)}$
I_C = 500 I_B
Ta = 25°C

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