2SB1072(L), 2SB1072(S)

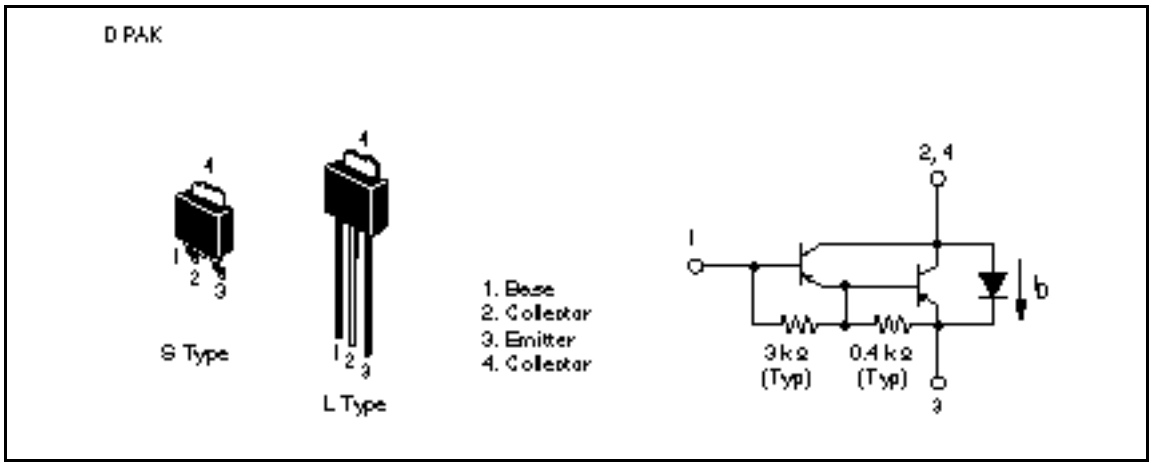
Silicon PNP Triple Diffused

HITACHI

Application

Medium speed power amplifier

Outline



Absolute Maximum Ratings (Ta = 25°C)

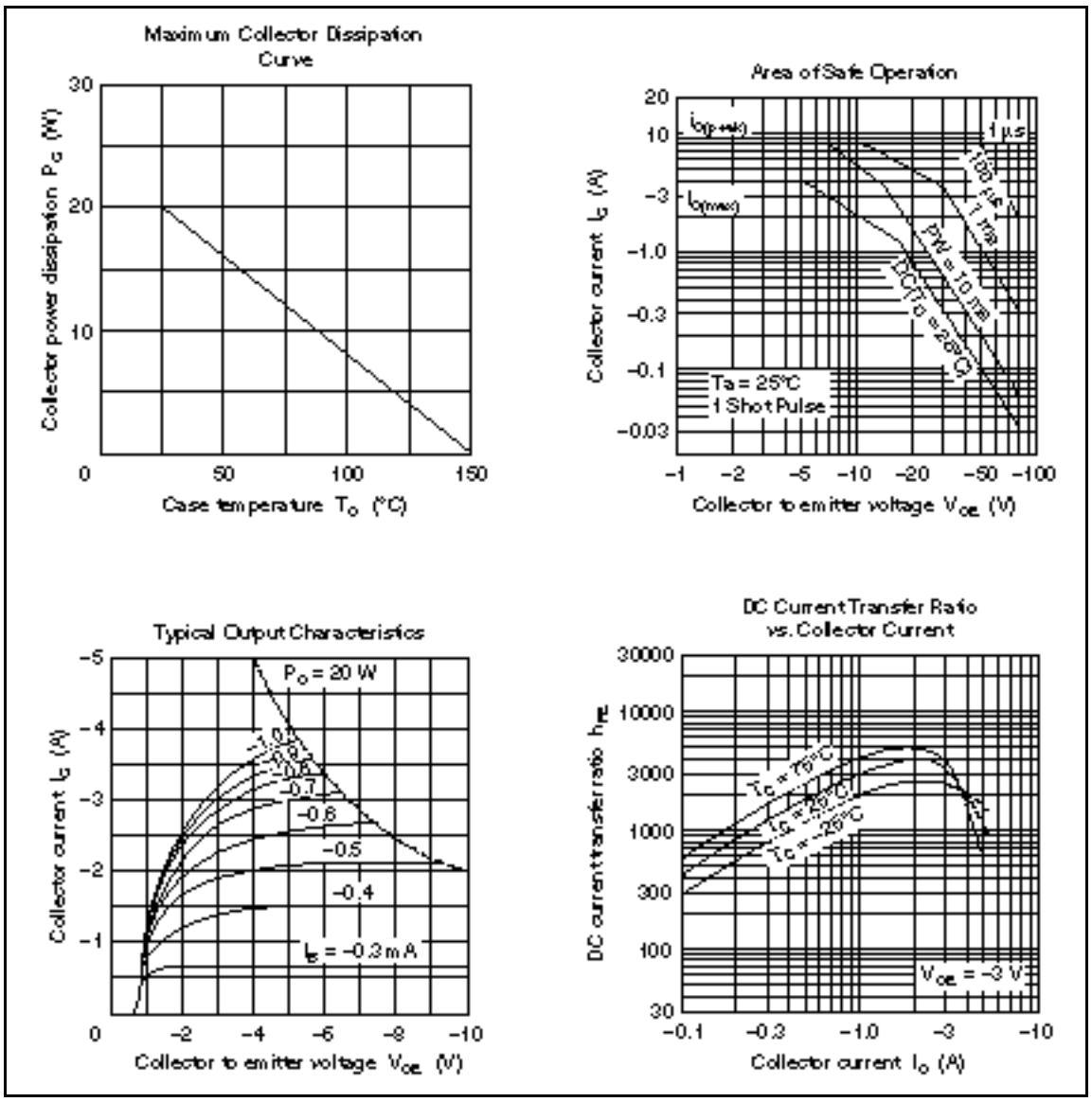
Item	Symbol	Rating	Unit
Collector to base voltage	V_{CBO}	–100	V
Collector to emitter voltage	V_{CEO}	–80	V
Emitter to base voltage	V_{EBO}	–7	V
Collector current	I_C	–4	A
C to E diode forward current	I_D*[1]	4	A
Collector peak current	$I_{C(peak)}$	–8	A
Collector power dissipation	P_C*[1]	20	W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

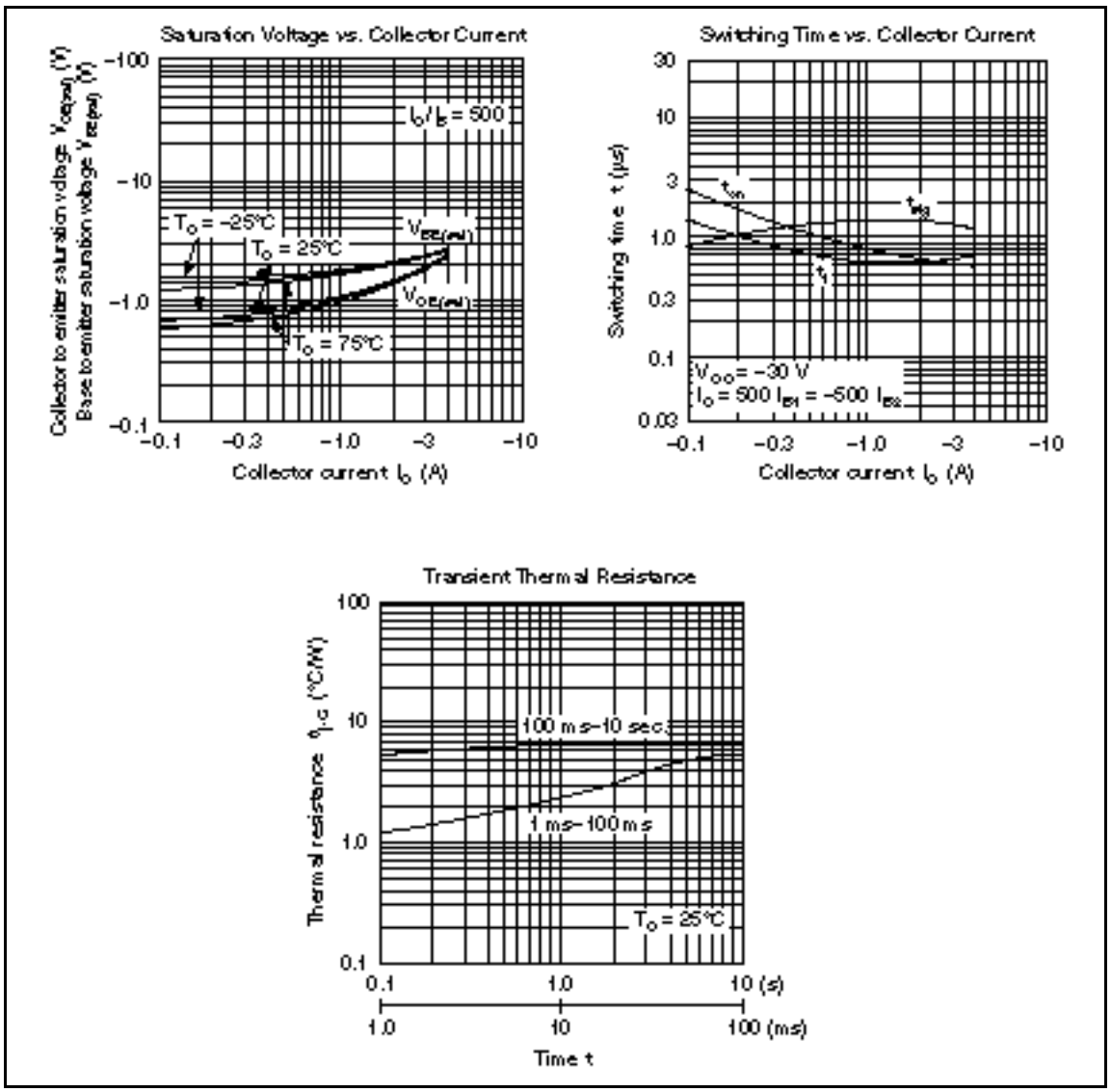
Note: 1. Value at T_C = 25°C

Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	–80	—	—	V	I_C = –25 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	–7	—	—	V	I_E = –50 mA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	–100	µA	V_{CB} = –80 V, I_E = 0
	I_{CEO}	—	—	–10	µA	V_{CE} = –60 V, R_{BE} = ∞
DC current transfer ratio	h_{FE}	1000	—	20000		V_{CE} = –3 V, I_C = –2 A*[1]
Collector to emitter saturation voltage	$V_{CE(sat)1}$	—	—	–1.5	V	I_C = –2 A, I_B = –4 mA*[1]
	$V_{CE(sat)2}$	—	—	–3.0	V	I_C = –4 A, I_B = –40 mA*[1]
Base to emitter saturation voltage	$V_{BE(sat)1}$	—	—	–2.0	V	I_C = –2 A, I_B = –4 mA*[1]
	$V_{BE(sat)2}$	—	—	–3.5	V	I_C = –4 A, I_B = –40 mA*[1]
C to E diode forward voltage	V_D	—	—	3.0	V	I_D = 4 A*[1]
Turn on time	t_{on}	—	0.5	—	µs	I_C = –2 A, I_{B1} = $-I_{B2}$ = –4 mA
Storage time	t_{stg}	—	1.5	—	µs	
Fall time	t_f	—	1.0	—	µs	

Note: 1. Pulse test.


Maximum Collector Dissipation Curve
Collector power dissipation P_C (W)
30
20
10
0
50
100
150
Case temperature T_C (°C)
Area of Safe Operation
Collector current I_C (A)
20
10
−3
−1.0
−0.3
−0.1
−0.03
1 µs
100 µs
1 ms
PW = 10 ms
DC Tc = 25°C
Ta = 25°C
1 Shot Pulse
−1
−2
−5
−10
−20
−50
−100
Collector to emitter voltage V_{CE} (V)
Typical Output Characteristics
Collector current I_C (A)
−5
−4
−3
−2
−1
P_C = 20 W
−1.0
−0.9
−0.8
−0.7
−0.6
−0.5
−0.4
I_B = −0.3 mA
0
−2
−4
−6
−8
−10
Collector to emitter voltage V_{CE} (V)
DC Current Transfer Ratio vs. Collector Current
DC current transfer ratio h_{FE}
30000
10000
3000
1000
300
100
30
Tc = 75°C
25°C
−25°C
V_{CE} = −3 V
−0.1
−0.3
−1.0
−3
−10
Collector current I_C (A)


Saturation Voltage vs. Collector Current
Collector to emitter saturation voltage $V_{CE(sat)}$ (V)
Base to emitter saturation voltage $V_{BE(sat)}$ (V)
I_C / I_B = 500
T_C = −25°C
T_C = 25°C
T_C = 75°C
$V_{BE(sat)}$
$V_{CE(sat)}$
Collector current I_C (A)
Switching Time vs. Collector Current
Switching time t (µs)
t_{stg}
t_f
V_{CC} = −30 V
I_C = 500 I_{B1} = −500 I_{B2}
Collector current I_C (A)
Transient Thermal Resistance
Thermal resistance θ_{j-c} (°C/W)
100 ms–10 sec
1 ms–100 ms
T_C = 25°C
Time t

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