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2SB791(K)

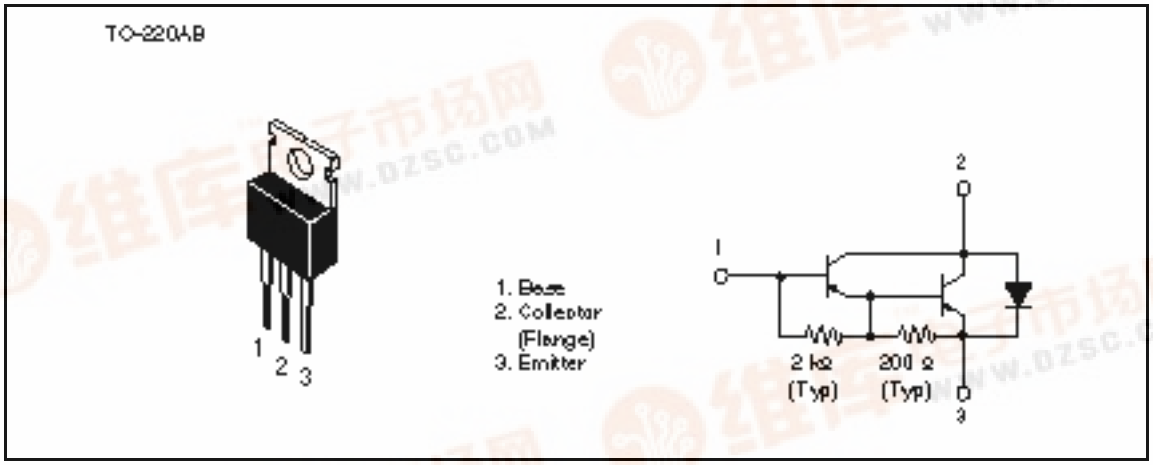
Silicon PNP Epitaxial

HITACHI

Application

Medium speed and power switching complementary pair with 2SD970(K)

Outline



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rating	Unit
Collector to base voltage	V_{CBO}	–120	V
Collector to emitter voltage	V_{CEO}	–120	V
Emitter to base voltage	V_{EBO}	–7	V
Collector current	I_C	–8	A
Collector peak current	$I_{C(peak)}$	–12	A
Collector power dissipation	P_C*[1]	40	W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

Note: 1. Value at T_C = 25°C

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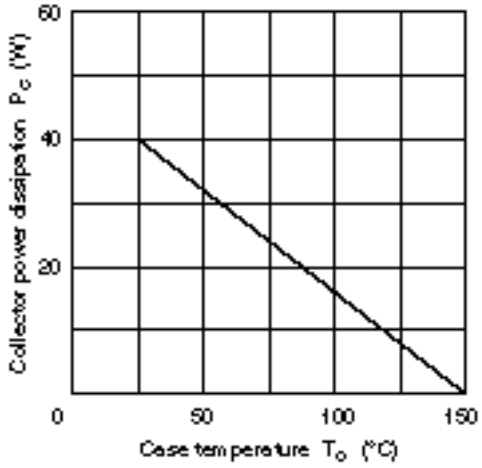
Electrical Characteristics (Ta = 25°C)

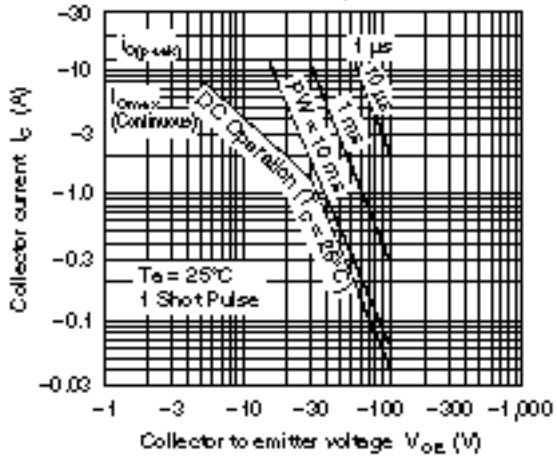
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	–120	—	—	V	I_C = –25 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	–7	—	—	V	I_E = –50 mA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	–100	µA	V_{CB} = –120 V, I_E = 0
	I_{CEO}	—	—	–10	µA	V_{CE} = –100 V, R_{BE} = ∞
DC current transfer ratio	h_{FE}	1000	—	20000		V_{CE} = –3 V, I_C = –4 A*[1]
Collector to emitter saturation	$V_{CE(sat)(1)}$	—	—	–1.5	V	I_C = –4 A, I_B = –8 mA*[1]
voltage	$V_{CE(sat)(2)}$	—	—	–3.0	V	I_C = –8 A, I_B = –80 mA*[1]
Base to emitter saturation	$V_{BE(sat)(1)}$	—	—	–2.0	V	I_C = –4 A, I_B = –8 mA*[1]
voltage	$V_{BE(sat)(2)}$	—	—	–3.5	V	I_C = –8 A, I_B = –80 mA*[1]
Turn on time	t_{on}	—	0.5	—	µs	I_C = –4 A, I_{B1} = I_{B2} = –8 mA
Storage time	t_{stg}	—	1.6	—	µs	
Fall time	t_f	—	1.5	—	µs	

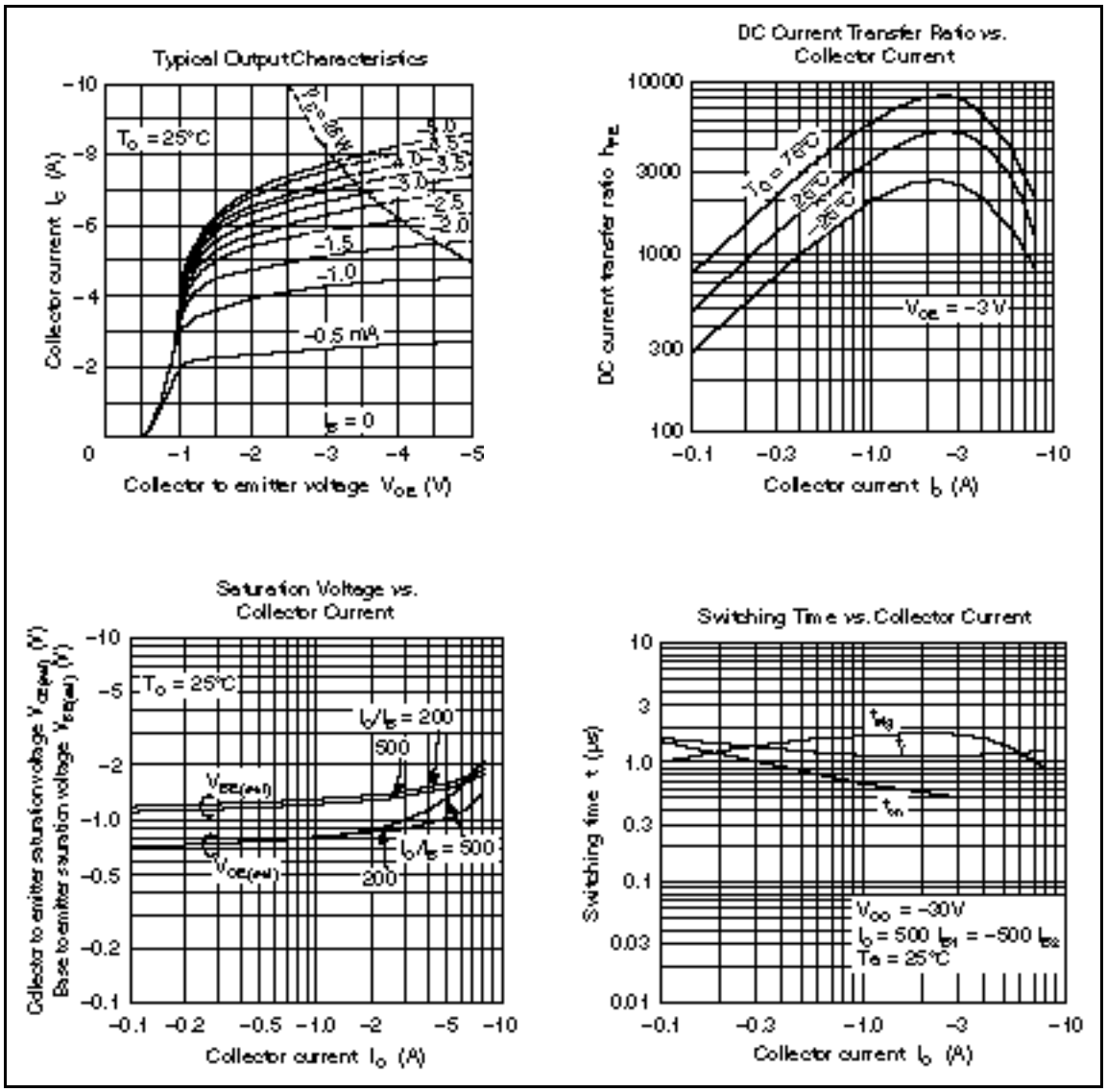
Note: 1. Pulse test

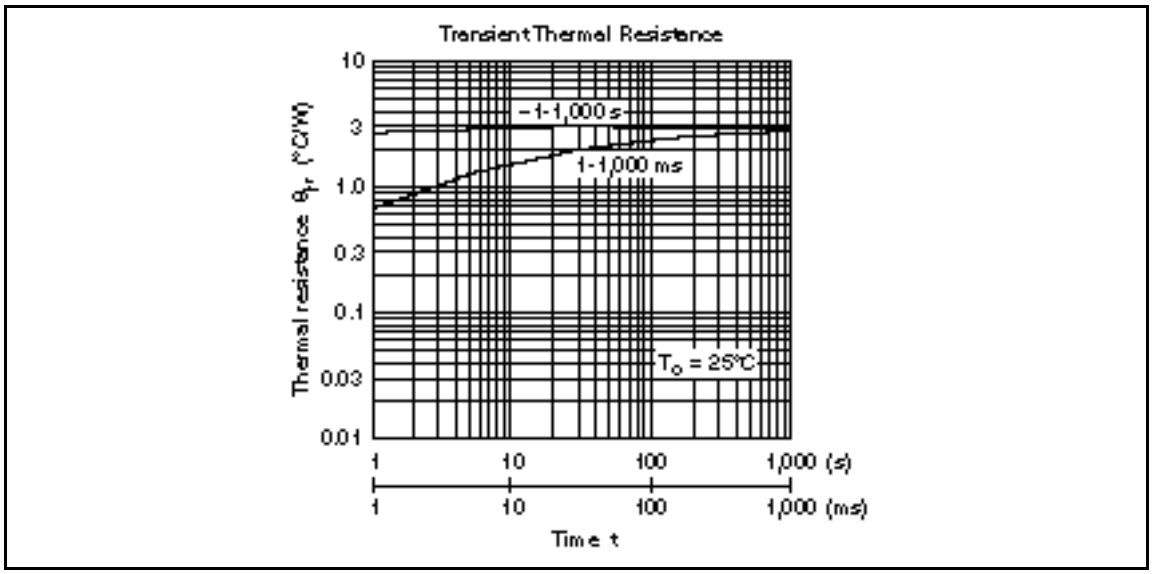
Maximum Collector Dissipation Curve



Area of Safe Operation




Typical Output Characteristics
T_a = 25°C
Collector current I_C (A)
Collector to emitter voltage V_{CE} (V)
I_B = 0
−0.5 mA
−1.0
−1.5
DC Current Transfer Ratio vs. Collector Current
T_a = 75°C
25°C
−25°C
V_{CE} = −3 V
DC current transfer ratio h_{FE}
Collector current I_C (A)
Saturation Voltage vs. Collector Current
T_a = 25°C
I_C/I_B = 200
500
200
I_C/I_B = 500
$V_{CE(sat)}$
$V_{BE(sat)}$
Collector to emitter saturation voltage $V_{CE(sat)}$ (V)
Base to emitter saturation voltage $V_{BE(sat)}$ (V)
Collector current I_C (A)
Switching Time vs. Collector Current
t_{stg}
t_f
t_{on}
V_{CC} = −30V
I_C = 500 I_{B1} = −500 I_{B2}
T_a = 25°C
Switching time t (µs)
Collector current I_C (A)


Transient Thermal Resistance
Thermal resistance θ_{ch} (°C/W)
10
3
1.0
0.3
0.1
0.03
0.01
1-1,000 s
1-1,000 ms
T_c = 25°C
1
10
100
1,000 (s)
1
10
100
1,000 (ms)
Time t

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