2SB727(K)

Silicon PNP Epitaxial

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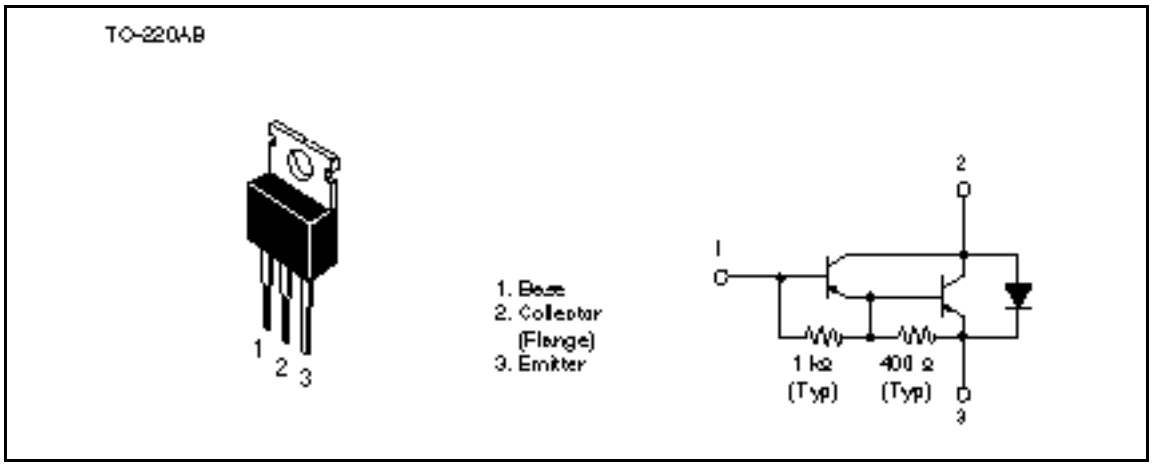
Application

Medium speed and power switching complementary pair with 2SD768(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	–6	A
Collector peak current	$I_{C(peak)}$	–10	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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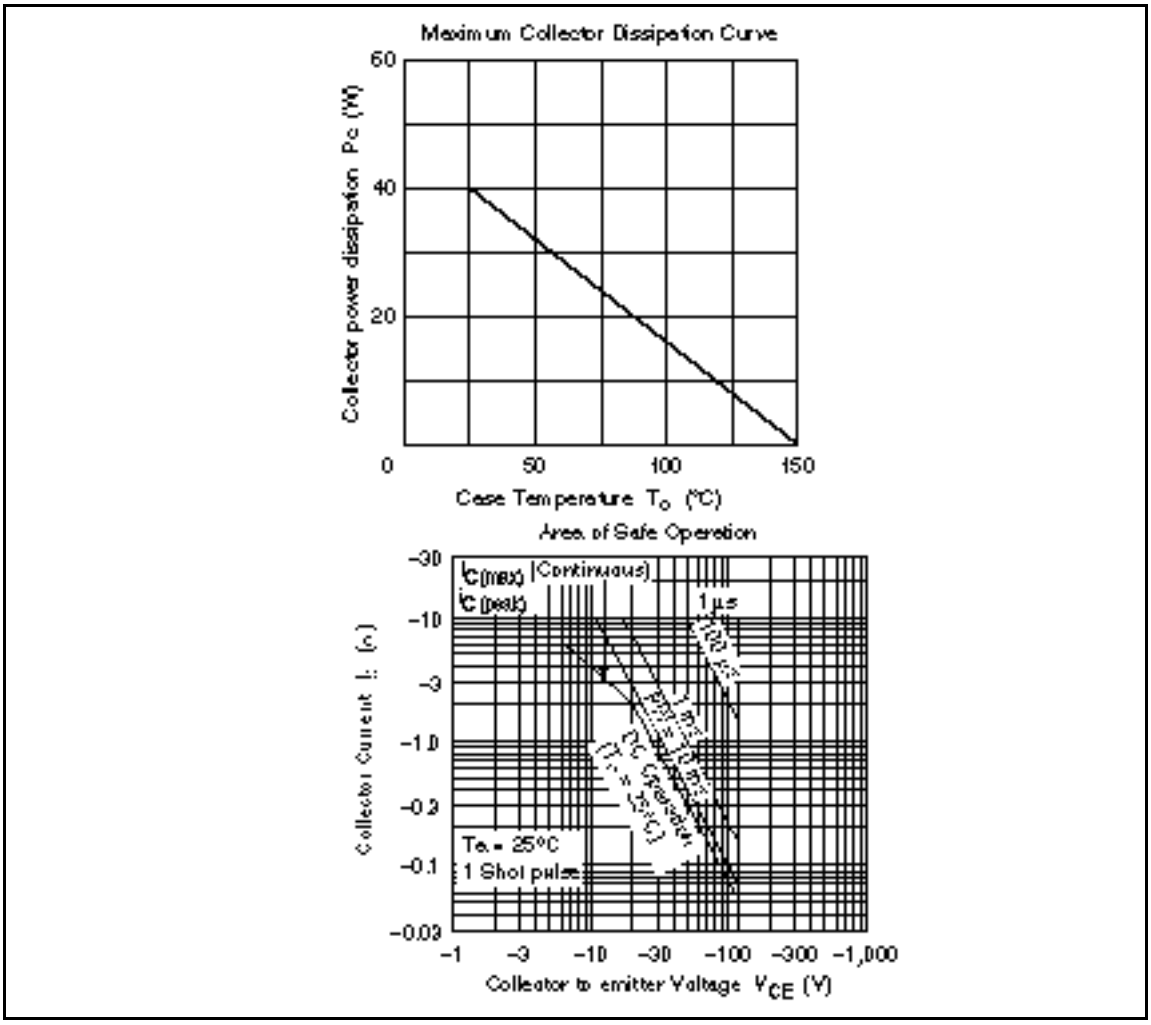
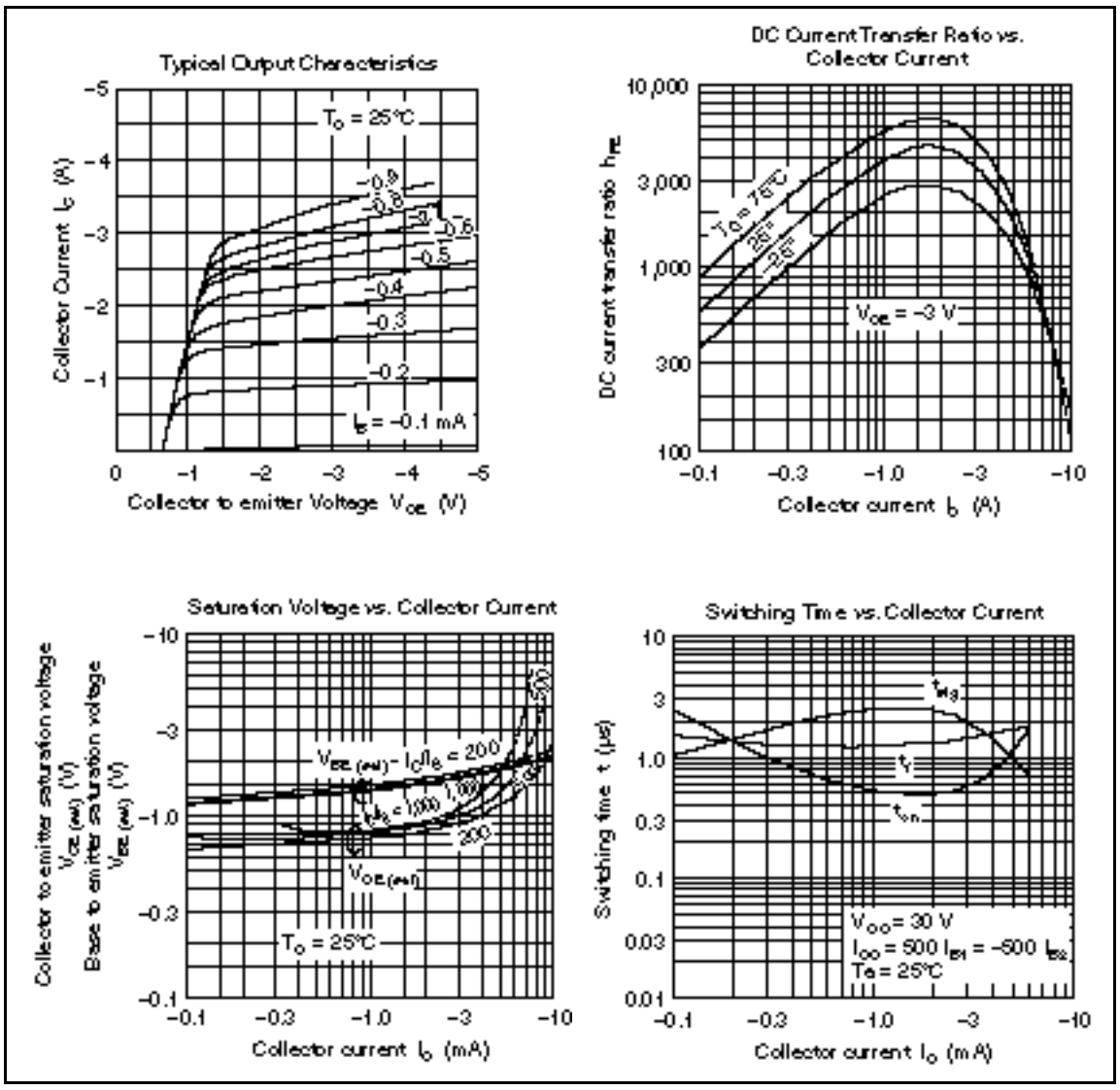
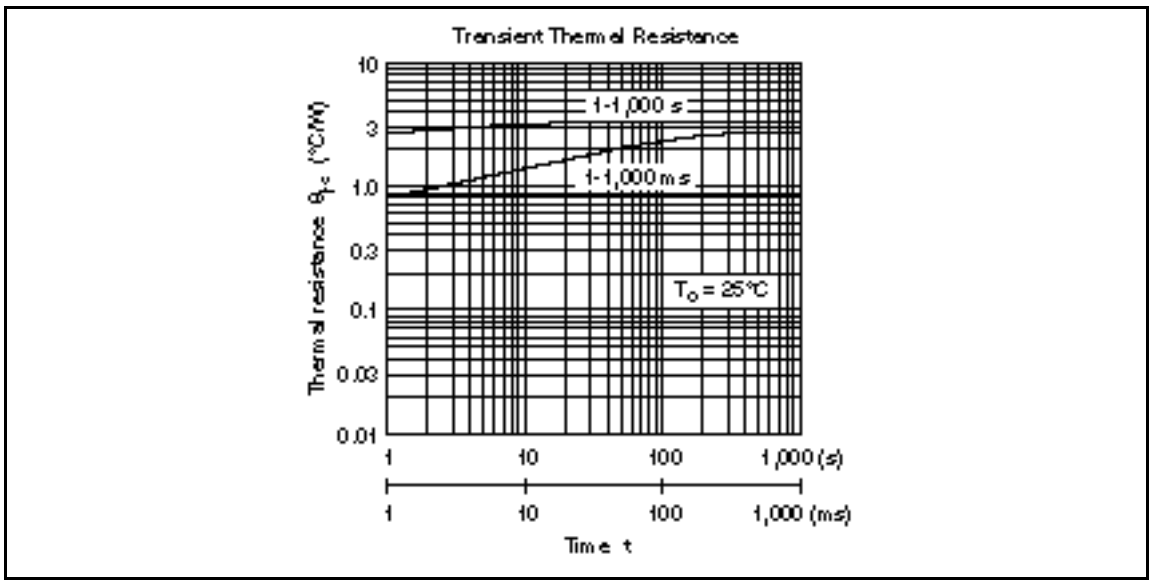
Electrical Characteristics (Ta = 25°C)

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 = –3 A*[1]
Collector to emitter saturation voltage	$V_{CE(sat)1}$	—	—	–1.5	V	I_C = –3 A, I_B = –6 mA*[1]
	$V_{CE(sat)2}$	—	—	–3.0	V	I_C = –6 A, I_B = –60 mA*[1]
Base to emitter saturation voltage	$V_{BE(sat)1}$	—	—	–2.0	V	I_C = –3 A, I_B = –6 mA*[1]
	$V_{BE(sat)2}$	—	—	–3.5	V	I_C = –6 A, I_B = –60 mA*[1]
Turn on time	t_{on}	—	1.0	—	µs	I_C = –3 A, I_{B1} = $-I_{B2}$ = –6 mA
Turn off time	t_{off}	—	3.0	—	µs	

Note: 1. Pulse test


Maximum Collector Dissipation Curve
Collector power dissipation Pc (W)
60
40
20
0
50
100
150
Case Temperature T_o (°C)
Area of Safe Operation
Collector Current I_C (A)
$I_{C(max)}$ (Continuous)
$I_{C(peak)}$
1 µs
T_a = 25°C
1 Shot pulse
−30
−10
−3
−1.0
−0.2
−0.1
−0.03
−1
−3
−10
−30
−100
−300
−1,000
Collector to emitter Voltage V_{CE} (V)


Typical Output Characteristics
Collector Current I_C (A)
Collector to emitter Voltage V_{CE} (V)
T_a = 25°C
−0.9
−0.8
−0.7
−0.6
−0.5
−0.4
−0.3
−0.2
I_B = −0.1 mA
DC Current Transfer Ratio vs. Collector Current
DC current transfer ratio h_{FE}
Collector current I_C (A)
T_a = 75°C
25°
−25°
V_{CE} = −3 V
Saturation Voltage vs. Collector Current
Collector to emitter saturation voltage $V_{CE(sat)}$ (V)
Base to emitter saturation voltage $V_{BE(sat)}$ (V)
Collector current I_C (mA)
$V_{BE(sat)}$
I_C/I_B = 200
500
$V_{CE(sat)}$
T_a = 25°C
Switching Time vs. Collector Current
Switching time t (µs)
Collector current I_C (mA)
t_{stg}
t_f
t_{on}
V_{CC} = 30 V
I_{CC} = 500 I_{B1} = −500 I_{B2}
Ta = 25°C


Transient Thermal Resistance
Thermal resistance θ_{j-c} (°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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HITACHI

Hitachi, Ltd.
Semiconductor & IC Div.
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100, Japan
Tel: Tokyo (03) 3270-2111
Fax: (03) 3270-5109

For further information write to:

Hitachi America, Ltd.
Semiconductor & IC Div.
2000 Sierra Point Parkway
Brisbane, CA. 94005-1835
U.S.A.
Tel: 415-589-8300
Fax: 415-583-4207

Hitachi Europe GmbH
Electronic Components Group
Continental Europe
Dornacher Straße 3
D-85622 Feldkirchen
München
Tel: 089-9 91 80-0
Fax: 089-9 29 30 00

Hitachi Europe Ltd.
Electronic Components Div.
Northern Europe Headquarters
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA
United Kingdom
Tel: 0628-585000
Fax: 0628-778322

Hitachi Asia Pte. Ltd.
16 Collyer Quay #20-00
Hitachi Tower
Singapore 0104
Tel: 535-2100
Fax: 535-1533

Hitachi Asia (Hong Kong) Ltd.
Unit 706, North Tower,
World Finance Centre,
Harbour City, Canton Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 27359218
Fax: 27306071