2SD768(K)

Silicon NPN Epitaxial

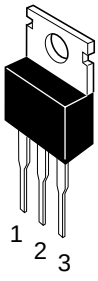
HITACHI

Application

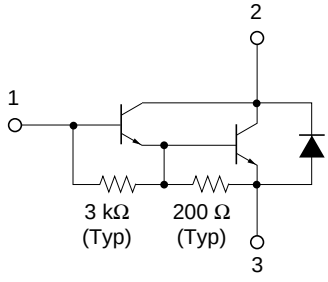
Medium speed and power switching complementary pair with 2SB727(K)

Outline

TO-220AB



1. Base
2. Collector (Flange)
3. Emitter



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	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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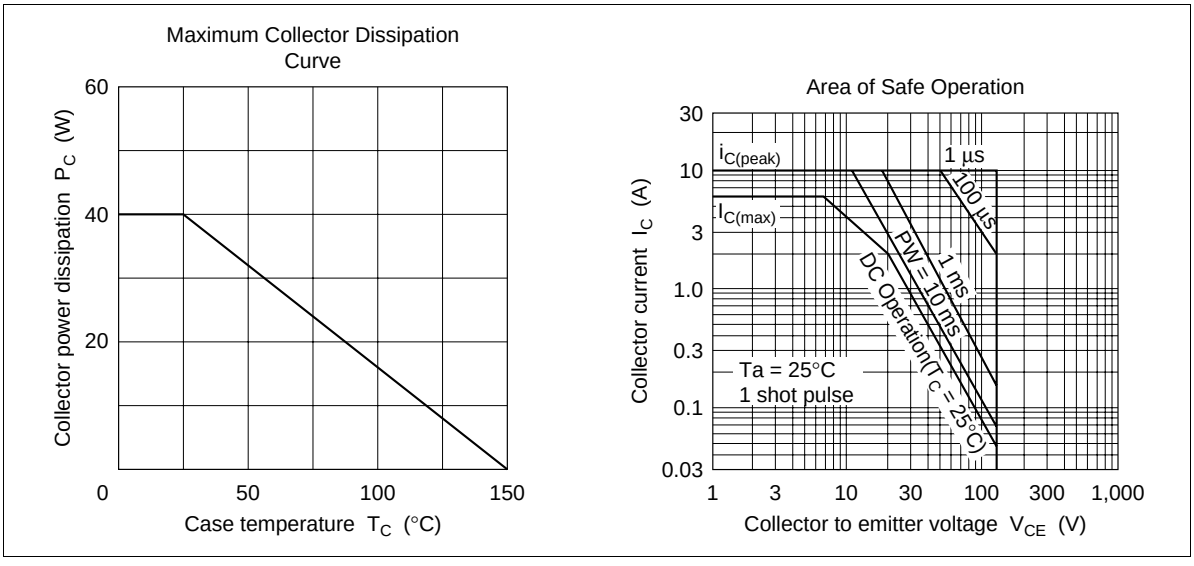
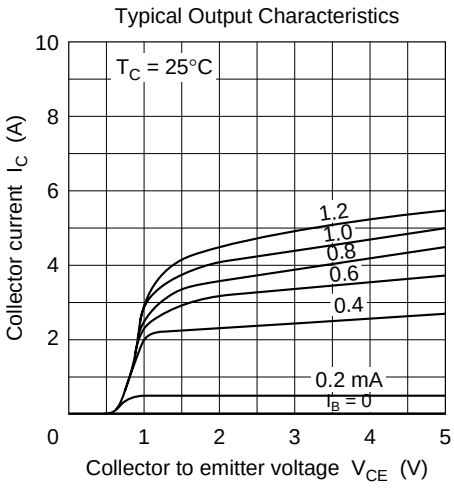
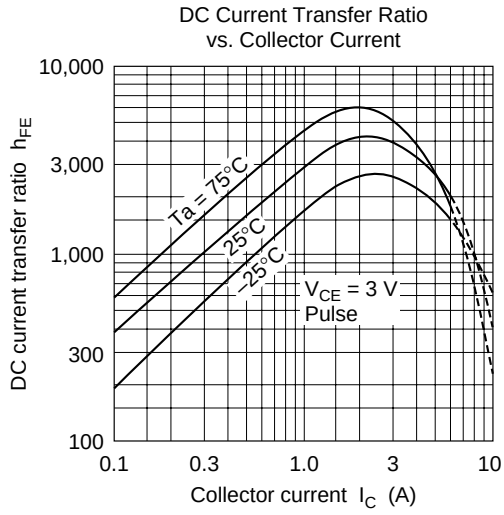
Electrical Characteristics (Ta = 25°C)

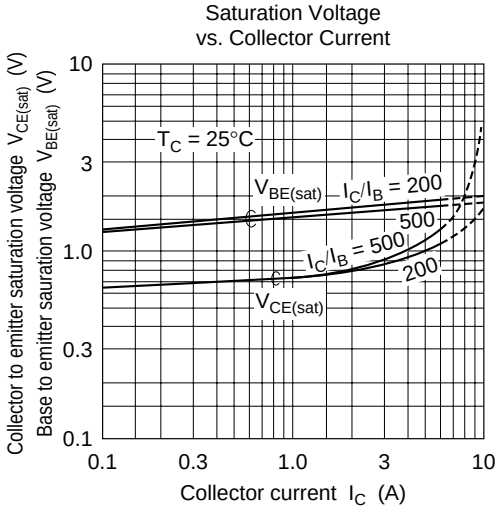
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	120	—	—	V	I_C = 25 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	7	—	—	V	I_E = 50 mA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	100	µA	V_{CB} = 120 V, I_E = 0
	I_{CEO}	—	—	10	µA	V_{CE} = 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	V	I_C = 6A, I_B = 60 mA*[1]
Base to emitter saturation voltage	$V_{BE(sat)1}$	—	—	2	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	I_C = 3 A, I_{B1} = –I_{B2} = 6 mA

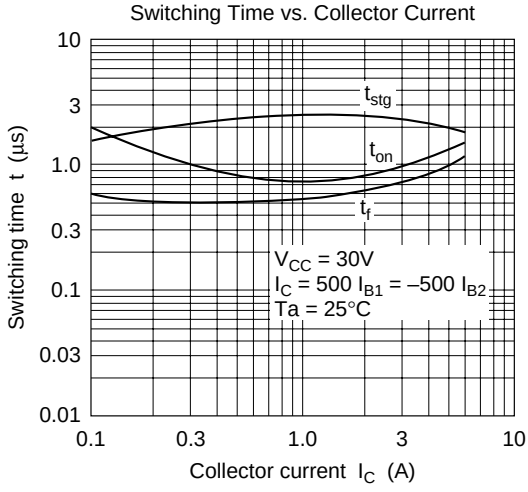
Note: 1. Pulse test.

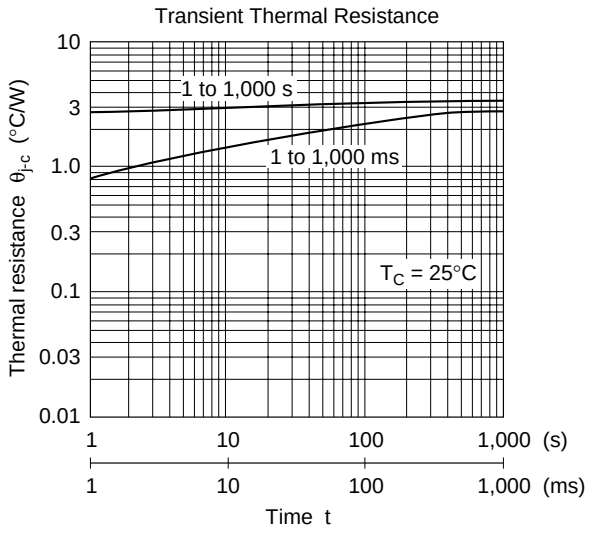



Typical Output Characteristics
T_C = 25°C
1.2
1.0
0.8
0.6
0.4
0.2 mA
I_B = 0
Collector current I_C (A)
Collector to emitter voltage V_{CE} (V)
0
1
2
3
4
5
2
4
6
8
10

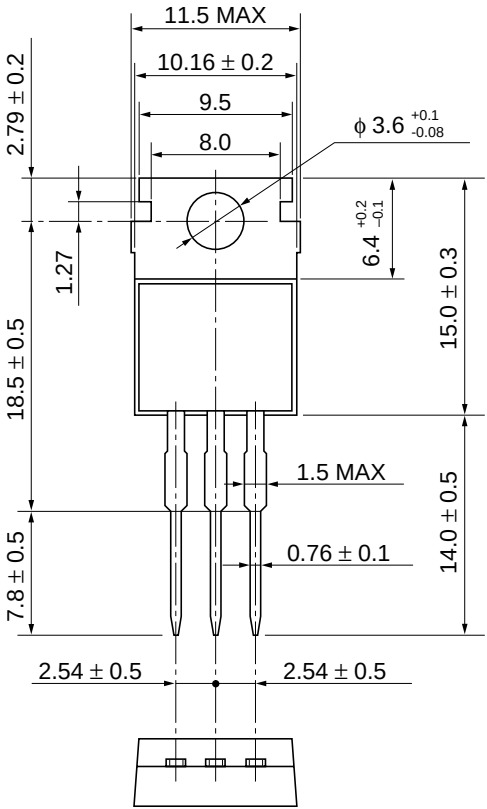

DC Current Transfer Ratio
vs. Collector Current
Ta = 75°C
25°C
–25°C
V_{CE} = 3 V
Pulse
DC current transfer ratio h_{FE}
Collector current I_C (A)
100
300
1,000
3,000
10,000
0.1
0.3
1.0
3
10

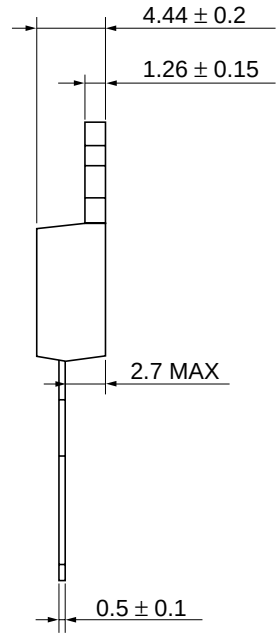

Saturation Voltage
vs. Collector Current
T_C = 25°C
$V_{BE(sat)}$
I_C/I_B = 200
500
I_C/I_B = 500
200
$V_{CE(sat)}$
Collector to emitter saturation voltage $V_{CE(sat)}$ (V)
Base to emitter sauration voltage $V_{BE(sat)}$ (V)
Collector current I_C (A)
0.1
0.3
1.0
3
10

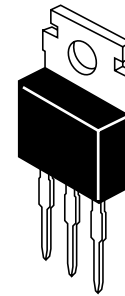

Switching Time vs. Collector Current
t_{stg}
t_{on}
t_f
V_{CC} = 30V
I_C = 500 I_{B1} = –500 I_{B2}
Ta = 25°C
Switching time t (µs)
Collector current I_C (A)
0.01
0.03
0.1
0.3
1.0
3
10


Transient Thermal Resistance
Thermal resistance θj-c (°C/W)
10
3
1.0
0.3
0.1
0.03
0.01
1 to 1,000 s
1 to 1,000 ms
TC = 25°C
1
10
100
1,000 (s)
1
10
100
1,000 (ms)
Time t

Unit: mm







Hitachi Code	TO-220AB
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.8 g

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