2SD2323

Silicon NPN Triple Diffused

HITACHI

Application

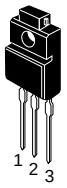
High voltage switching, igniter

Features

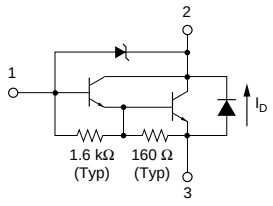
- Built-in High voltage zener diode (300 V)
- High speed switching

Outline

TO-220FM



1. Base
2. Collector
3. Emitter



Absolute Maximum Ratings (Ta = 25°C)

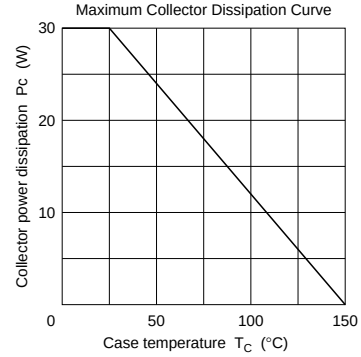
Item	Symbol	Rating	Unit
Collector to base voltage	V_{CBO}	300	V
Collector to emitter voltage	V_{CEO}	300	V
Emitter to base voltage	V_{EBO}	7	V
Collector current	I_C	6	A
Diode current	I_D*[1]	6	A
Collector peak current	$I_{C(peak)}$	10	A
Collector power dissipation	P_C*[1]	30	W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

Note: 1. Value at T_C = 25°C.

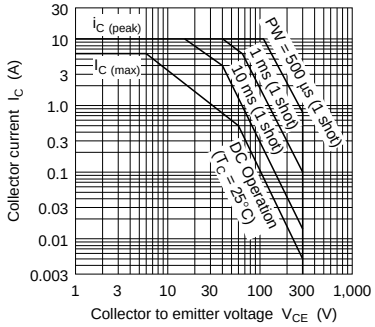
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	300	—	420	V	I_C = 0.1 mA, I_E = 0
Collector to emitter sustain voltage	$V_{CEO(SUS)}$	300	—	—	V	I_C = 3 A, R_{BE} = ∞, L = 10 mH
Emitter to base breakdown voltage	$V_{(BR)EBO}$	7	—	—	V	I_E = 50 mA, I_C = 0
Collector cutoff current	I_{CEO}	—	—	100	µA	V_{CE} = 300 V, R_{BE} = ∞
DC current transfer ratio	h_{FE}	500	—	—		V_{CE} = 2 V, I_C = 4 A
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.5	V	I_C = 4 A, I_B = 40 mA
Base to emitter saturation voltage	$V_{BE(sat)}$	—	—	2.0	V	I_C = 4 A, I_B = 40 mA
Emitter to collector forward voltage	V_{ECF}	—	—	3.5	V	I_F = 6 A
Turn on time	t_{on}	—	1.2	—	µs	I_C = 4 A, V_{CC} = 20 V I_{B1} = $-I_{B2}$ = 40 mA
Storage time	t_{stg}	—	8.0	—		
Fall time	t_f	—	8.0	—		

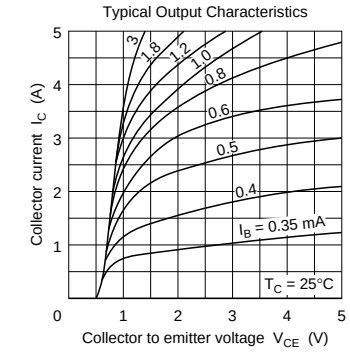
Maximum Collector Dissipation Curve



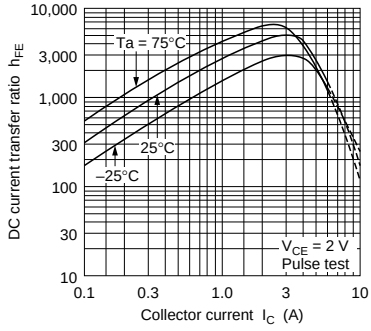
Area of Safe Operation

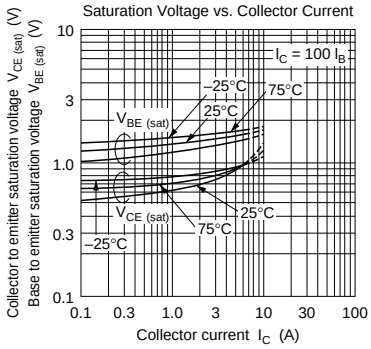


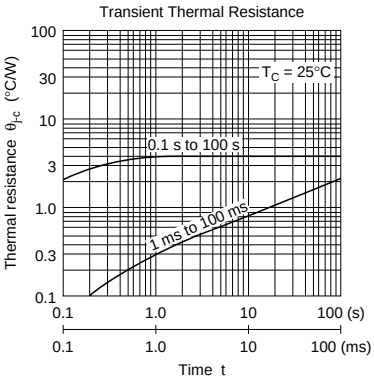
Typical Output Characteristics

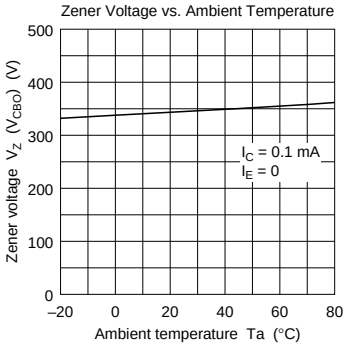


DC Current Transfer Ratio vs. Collector Current




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
I_C = 100 I_B
–25°C
75°C
25°C
$V_{BE (sat)}$
$V_{CE (sat)}$
25°C
75°C
–25°C
0.1 0.3 1.0 3 10 30 100
Collector current I_C (A)


Transient Thermal Resistance
Thermal resistance θ_{j-c} (°C/W)
100
30
10
3
1.0
0.3
0.1
T_C = 25°C
0.1 s to 100 s
1 ms to 100 ms
0.1 1.0 10 100 (s)
0.1 1.0 10 100 (ms)
Time t


Zener Voltage vs. Ambient Temperature
Zener voltage V_Z (V_{CBO}) (V)
500
400
300
200
100
0
I_C = 0.1 mA
I_E = 0
–20 0 20 40 60 80
Ambient temperature Ta (°C)

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