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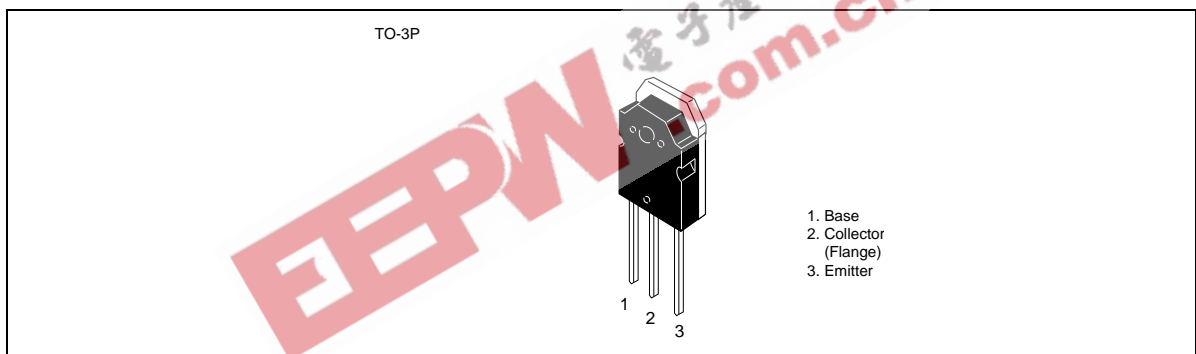
Silicon NPN Tirple Diffused

HITACHI

Application

High voltage, high speed and high power switching

Outline



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	900	V
Collector to emitter voltage	V_{CEO}	800	V
Emitter to base voltage	V_{EBO}	7	V
Collector current	I_C	5	A
Collector peak current	$I_{C(peak)}$	10	A
Base current	I_B	2.5	A
Collector power dissipation	P_C^{*1}	80	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

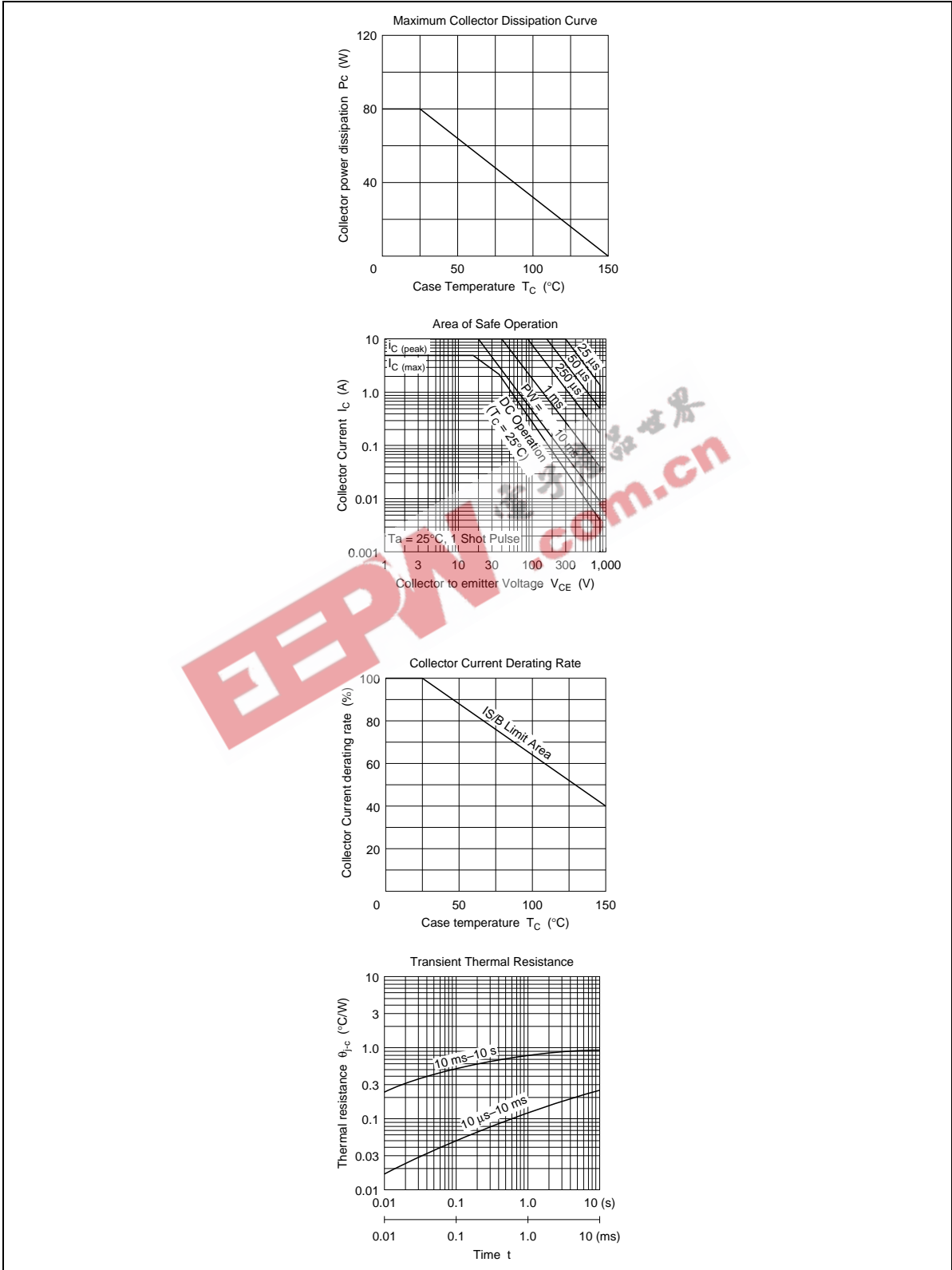
Note: 1. Value at $T_c = 25^\circ\text{C}$.

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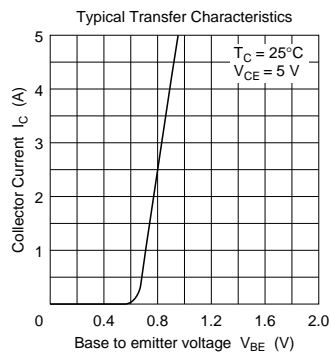
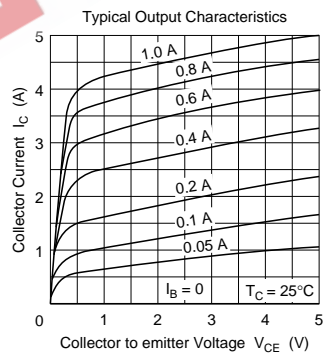
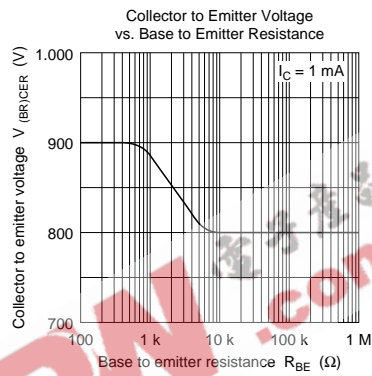
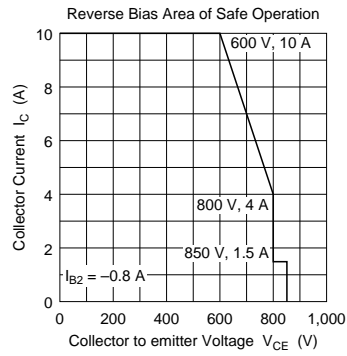
Electrical Characteristics (T_a = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter sustain voltage	$V_{CEO(sus)}$	800	—	—	V	$I_C = 0.2\text{ A}$, $R_{BE} = \infty$, $L = 100\text{ mH}$
	$V_{CEX(sus)}$	800	—	—	V	$I_C = 4\text{ A}$, $I_{B1} = 1.5\text{ A}$, $I_{B2} = -0.8\text{ A}$, $V_{BE} = -5.0\text{ V}$, $L = 180\text{ }\mu\text{H}$, Clamped
Emitter to base breakdown voltage	$V_{(BR)EBO}$	7	—	—	V	$I_E = 10\text{ mA}$, $I_C = 0$
Collector cutoff current	I_{CBO}	—	—	100	μA	$V_{CB} = 750\text{ V}$, $I_E = 0$
	I_{CEO}	—	—	100	μA	$V_{CE} = 650\text{ V}$, $R_{BE} = \infty$
DC current transfer ratio	h_{FE1}	15	—	—		$V_{CE} = 5\text{ V}$, $I_C = 0.5\text{ A}^{*1}$
	h_{FE2}	7	—	—		$V_{CE} = 5\text{ V}$, $I_C = 3\text{ A}^{*1}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.0	V	$I_C = 1.5\text{ A}$, $I_B = 0.3\text{ A}^{*1}$
Base to emitter saturation voltage	$V_{BE(sat)}$	—	—	1.5	V	
Turn on time	t_{on}	—	—	1.0	μs	$I_C = 3\text{ A}$, $I_{B1} = 0.6\text{ A}$, $I_{B2} = -1.5\text{ A}$, $V_{CC} \cong 250\text{ V}$
Storage time	t_{stg}	—	—	3.0	μs	
Fall time	t_f	—	—	1.0	μs	

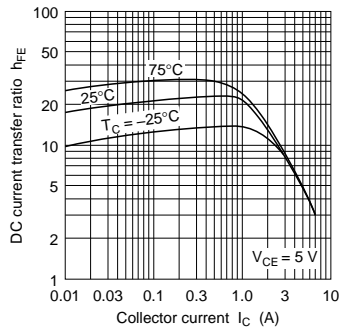
Note: 1. Pulse test



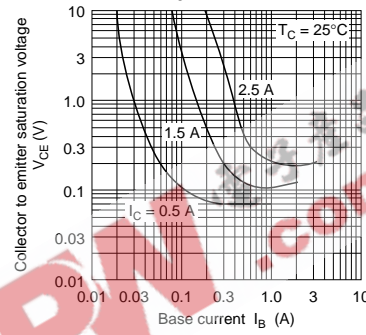
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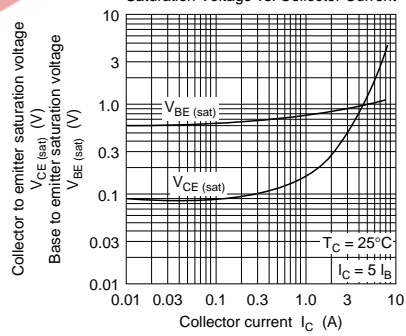
DC Current Transfer Ratio vs. Collector Current



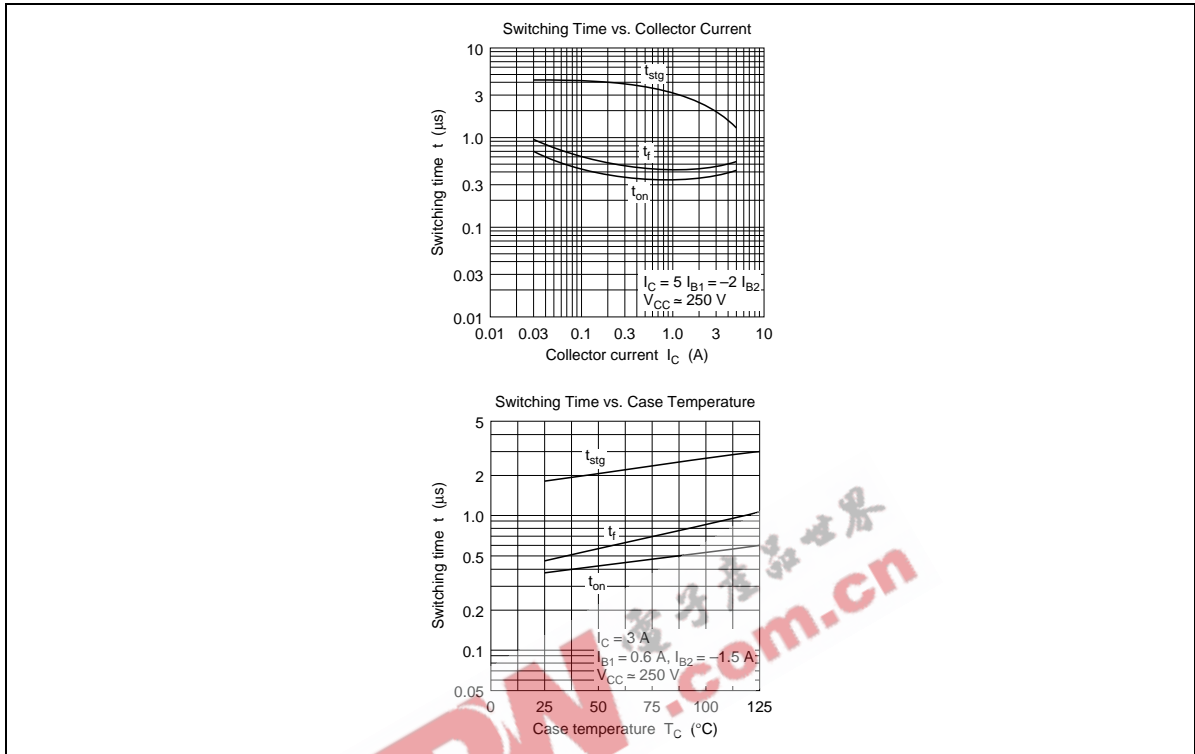
Collector to Emitter Saturation Voltage vs. Base Current



Saturation Voltage vs. Collector Current



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