SHINDENGEN

Darlington Transistor

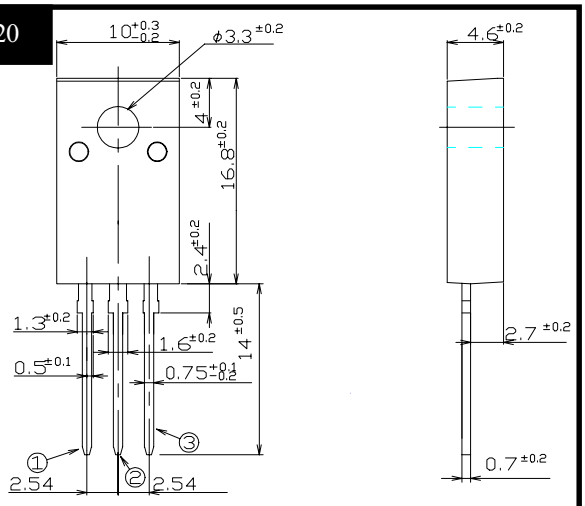
2SD1791
(TP7L10)

7A NPN

OUTLINE DIMENSIONS

Case : ITO-220

Unit : mm



① :B
② :C
③ :E

RATINGS

●Absolute Maximum Ratings

Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	Tstg		−55～+150	℃
Junction Temperature	Tj		+150	℃
Collector to Base Voltage	V_{CBO}		100	V
Collector to Emitter Voltage	V_{CEO}		100	V
Emitter to Base Voltage	V_{EBO}		7	V
Collector Current DC	I_C		7	A
Collector Current Peak	I_{CP}		10	A
Base Current DC	I_B		0.5	A
Base Current Peak	I_{BP}		1.0	A
Total Transistor Dissipation	P_T	Tc = 25℃	30	W
Dielectric Strength	Vdis	Terminals to case AC 1 minute	2	kV
Mounting Torque	TOR	(Recommended torque : 0.3N･m)	0.5	N･m

●Electrical Characteristics (Tc=25℃)

Item	Symbol	Conditions	Ratings	Unit
Collector Cutoff Current	I_{CBO}	V_{CB} = 100V	Max 0.1	mA
	I_{CEO}	V_{CE} = 100V	Max 0.1	
Emitter Cutoff Current	I_{EBO}	V_{EB} = 7V	Max 5	mA
DC Current Gain	h_{FE}	V_{CE} = 3V, I_C = 3A	Min 1,500	
			Max 30,000	
Collector to Emitter Saturation Voltage	V_{CE}(sat)	I_C = 3A	Max 1.5	V
Base to Emitter Saturation Voltage	V_{BE}(sat)	I_B = 5mA	Max 2.0	V
Thermal Resistance	θ jc	Junction to case	Max 4.17	℃/W
Transition Frequency	f_T	V_{CE} = 10V, I_C = 0.7A	TYP 20	MHz
Turn on Time	ton	I_C = 3A I_{B1} = I_{B2} = 5mA R_L = 10Ω V_{BB2} = 4V	Max 2	μs
Storage Time	ts		Max 12	
Fall Time	tf		Max 5	

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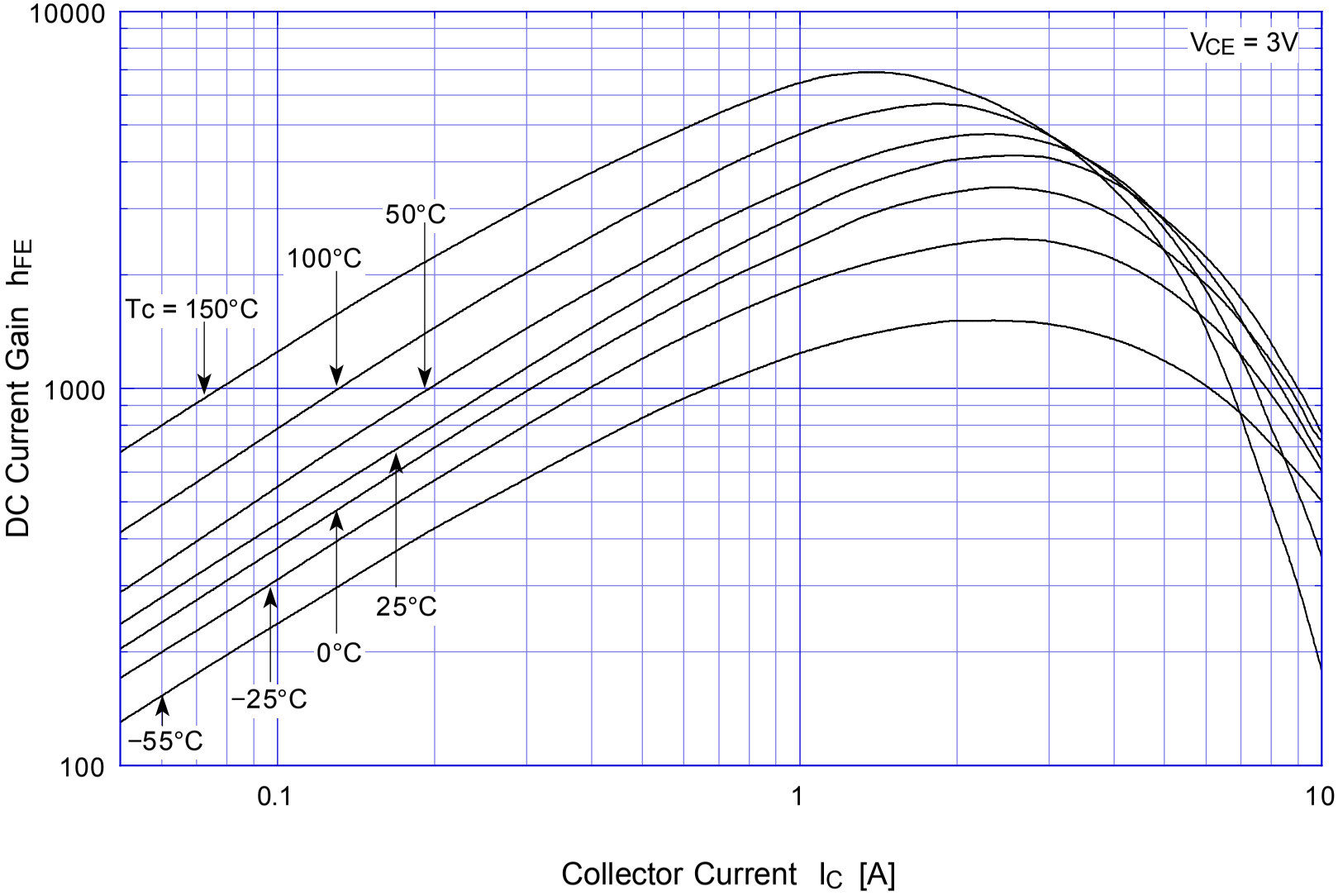
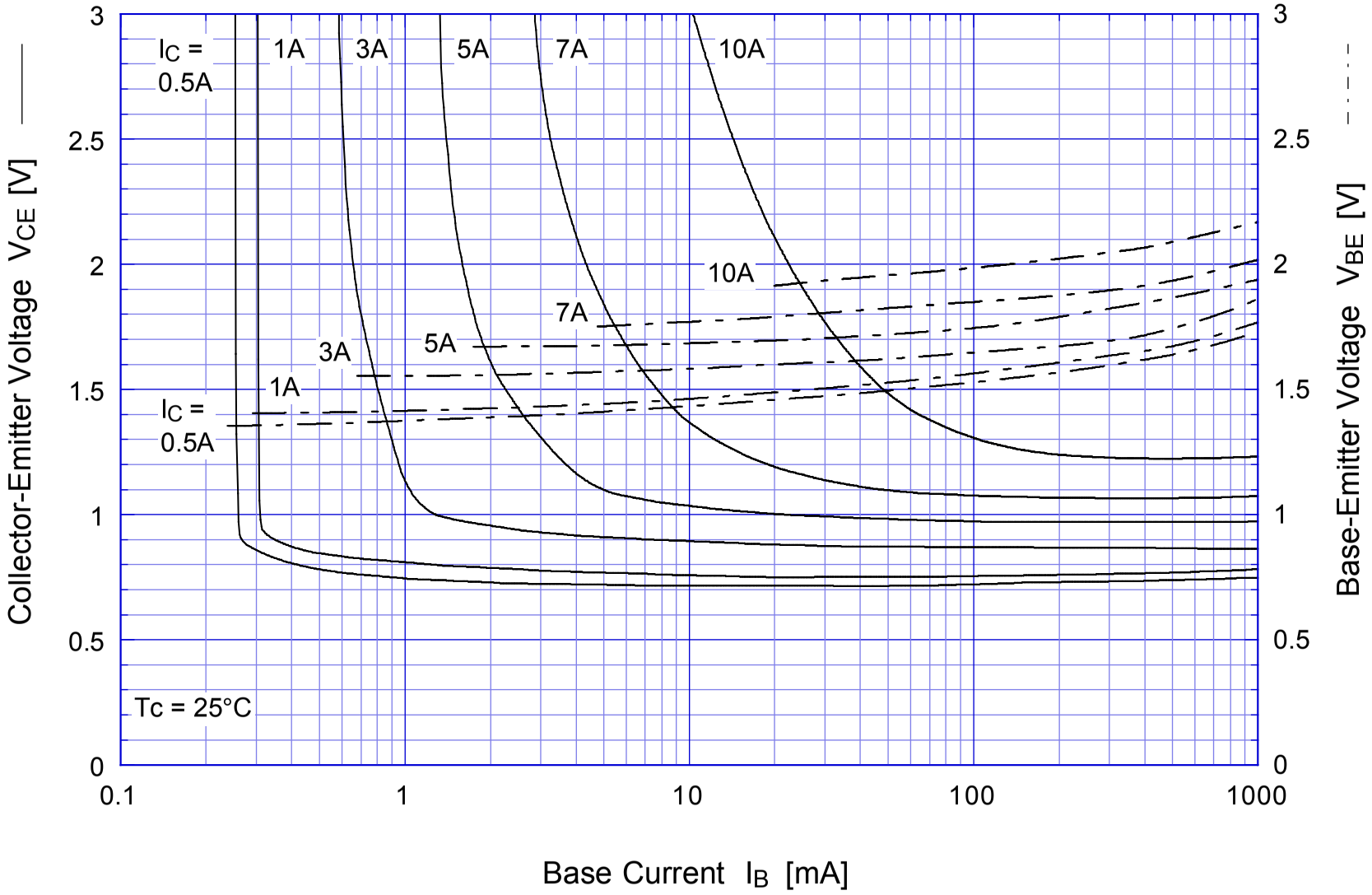
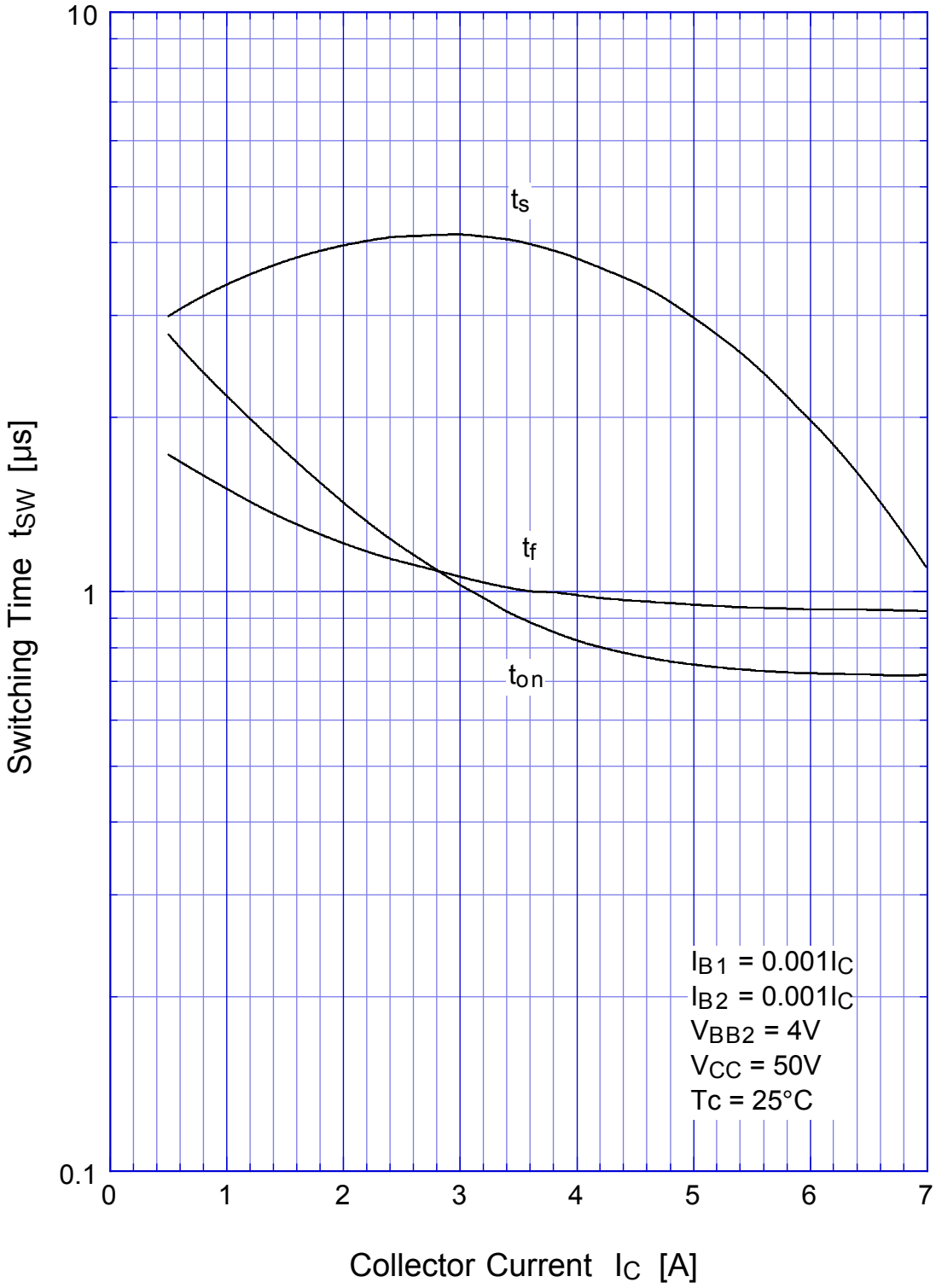
2SD1791 h_{FE} - I_C



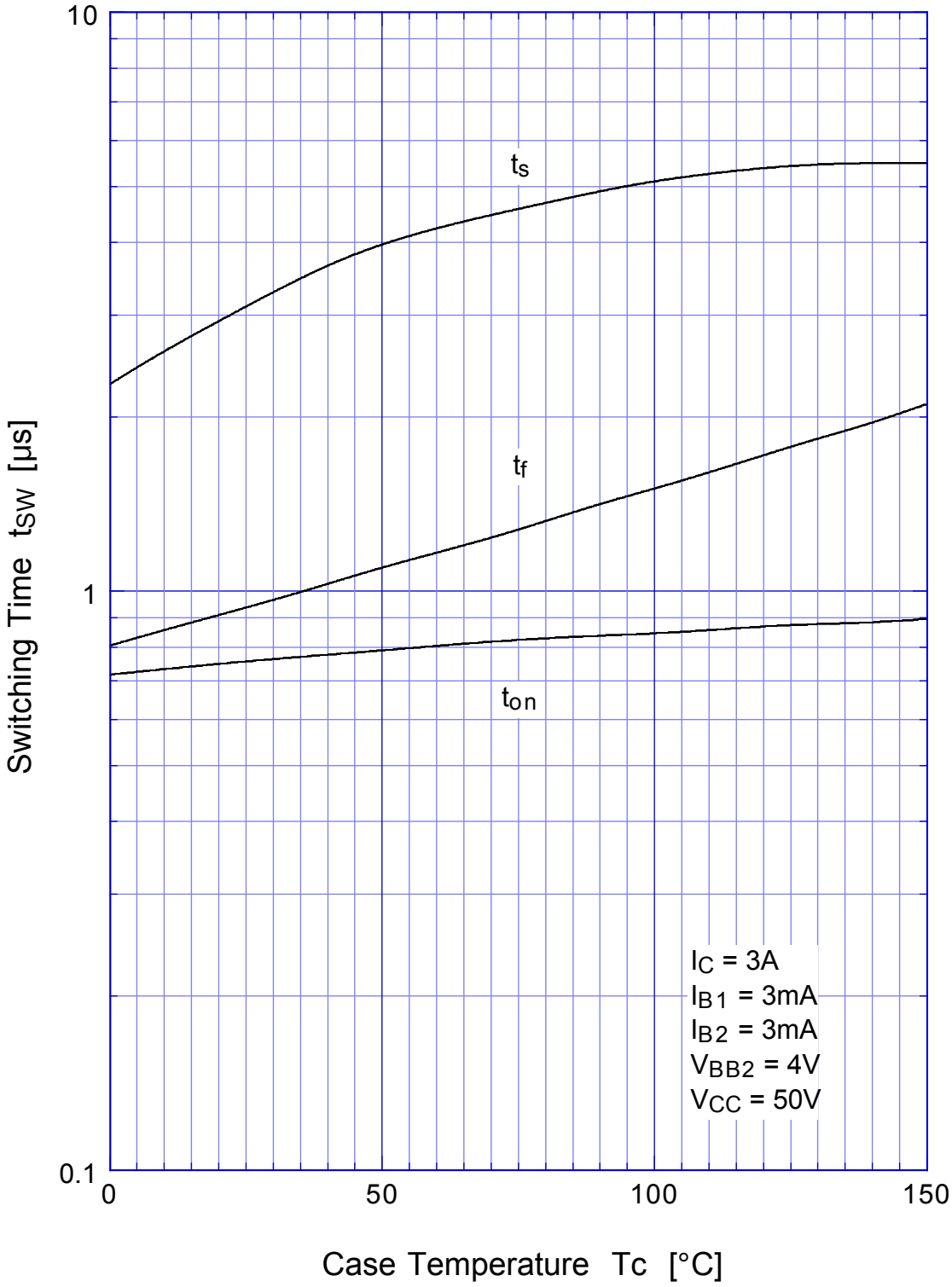
2SD1791 Saturation Voltage

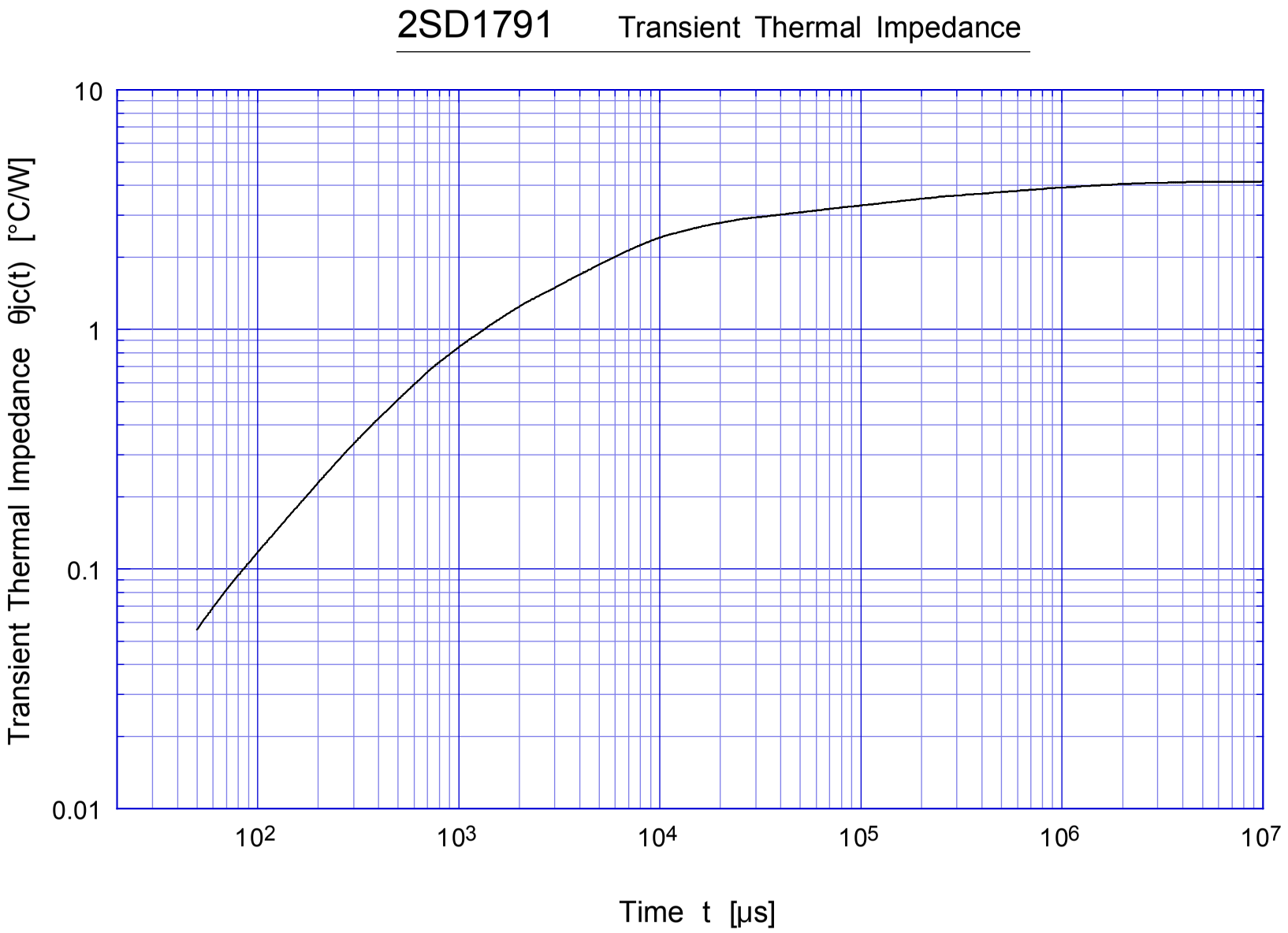


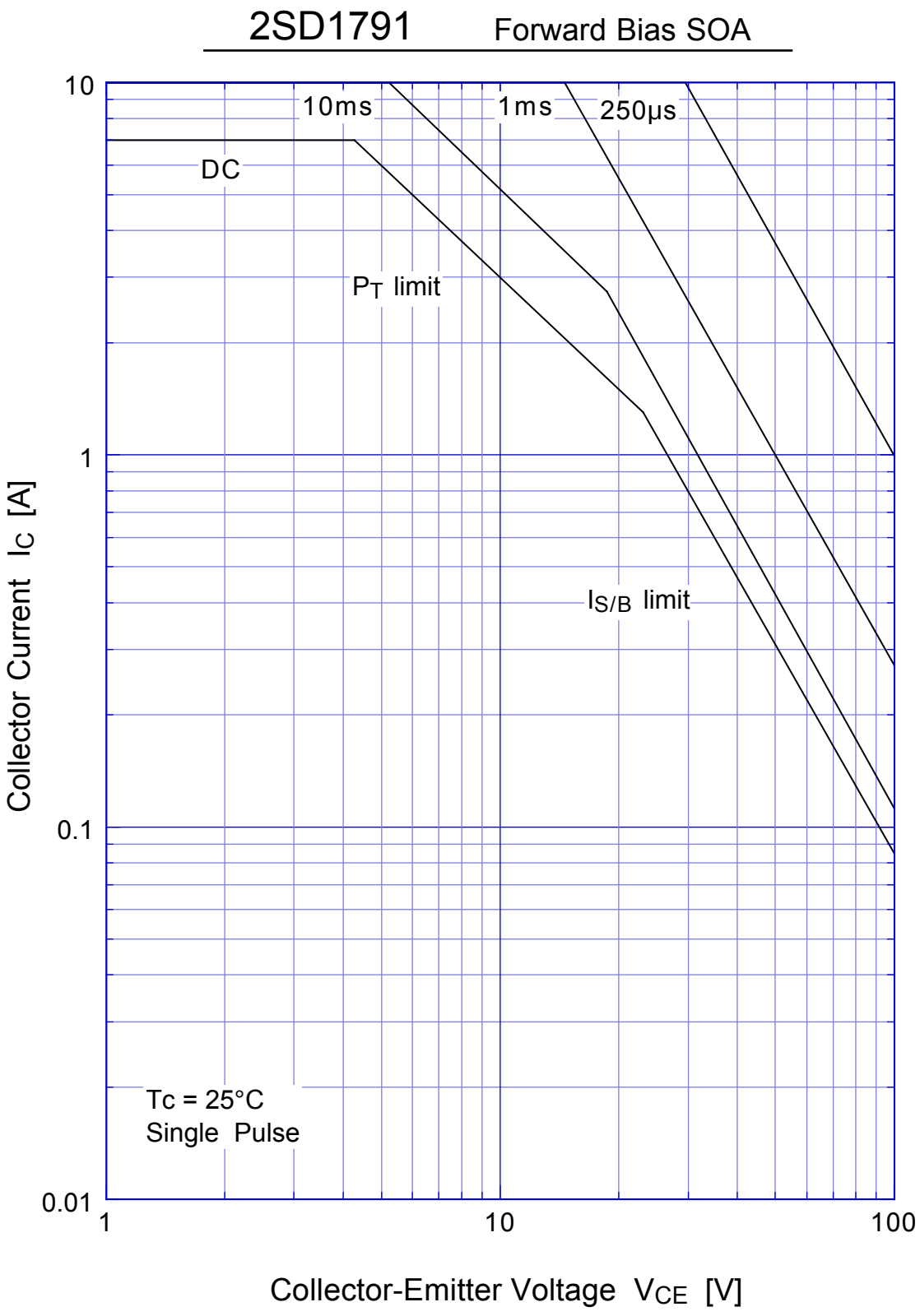
2SD1791 Switching Time - I_C

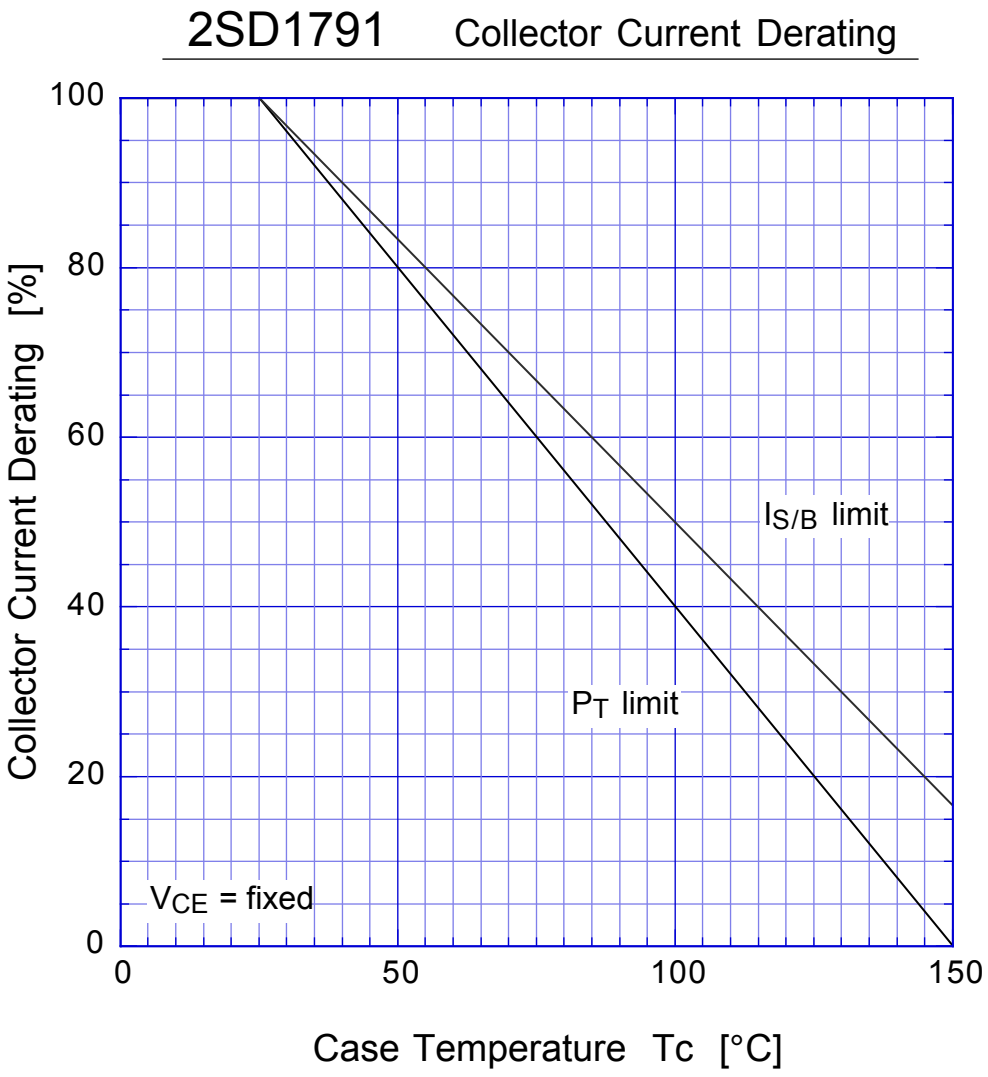


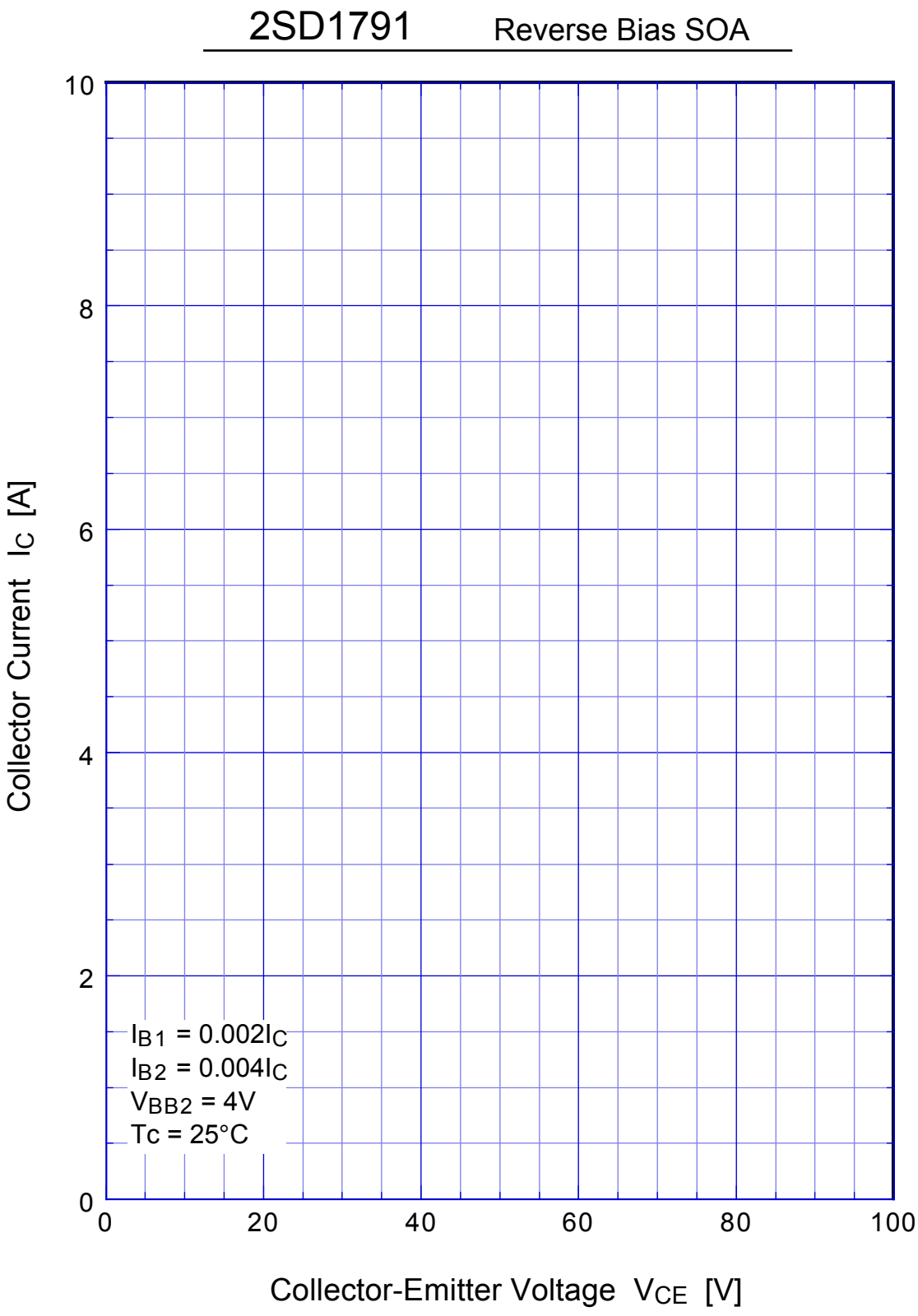
2SD1791 Switching Time - Tc




2SD1791 Transient Thermal Impedance
Transient Thermal Impedance θjc(t) [°C/W]
10
1
0.1
0.01
10²
10³
10⁴
10⁵
10⁶
10⁷
Time t [μs]


2SD1791
Forward Bias SOA
10
1
0.1
0.01
1
10
100
10ms
1ms
250µs
DC
PT limit
IS/B limit
Tc = 25°C
Single Pulse
Collector Current IC [A]
Collector-Emitter Voltage VCE [V]


2SD1791 Collector Current Derating
Collector Current Derating [%]
100
80
60
40
20
0
0
50
100
150
Case Temperature Tc [°C]
IS/B limit
PT limit
VCE = fixed


2SD1791
Reverse Bias SOA
10
8
6
4
2
0
0
20
40
60
80
100
Collector Current I_C [A]
Collector-Emitter Voltage V_{CE} [V]
I_{B1} = 0.002I_C
I_{B2} = 0.004I_C
V_{BB2} = 4V
Tc = 25°C