SHINDENGEN

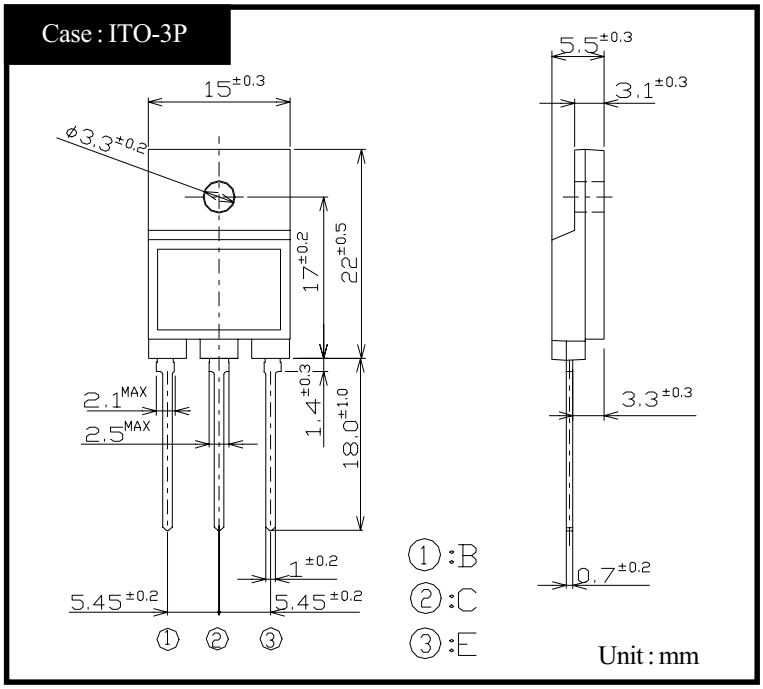
Switching Power Transistor

2SC4941

6A NPN

OUTLINE DIMENSIONS

Case : ITO-3P



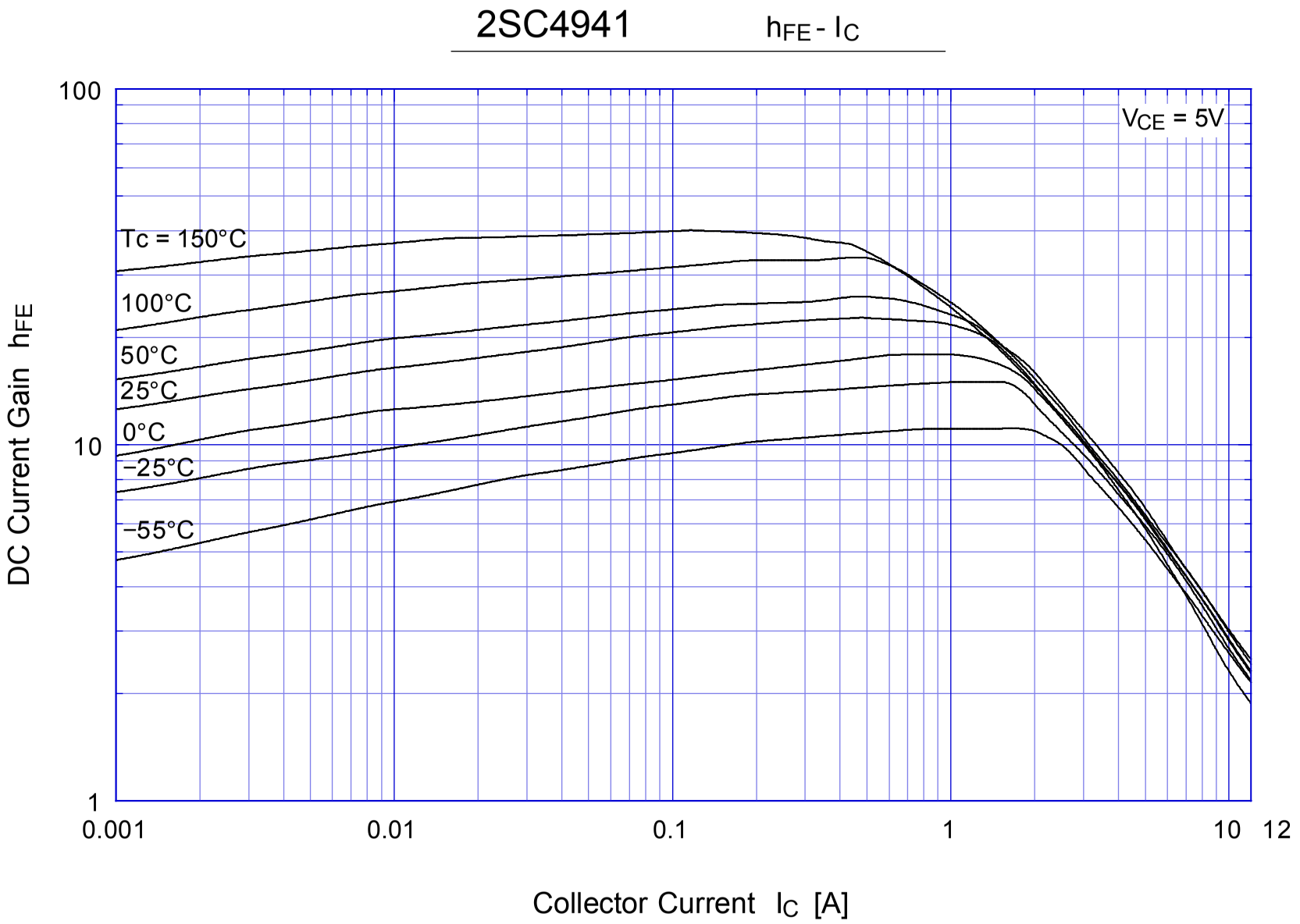
RATINGS

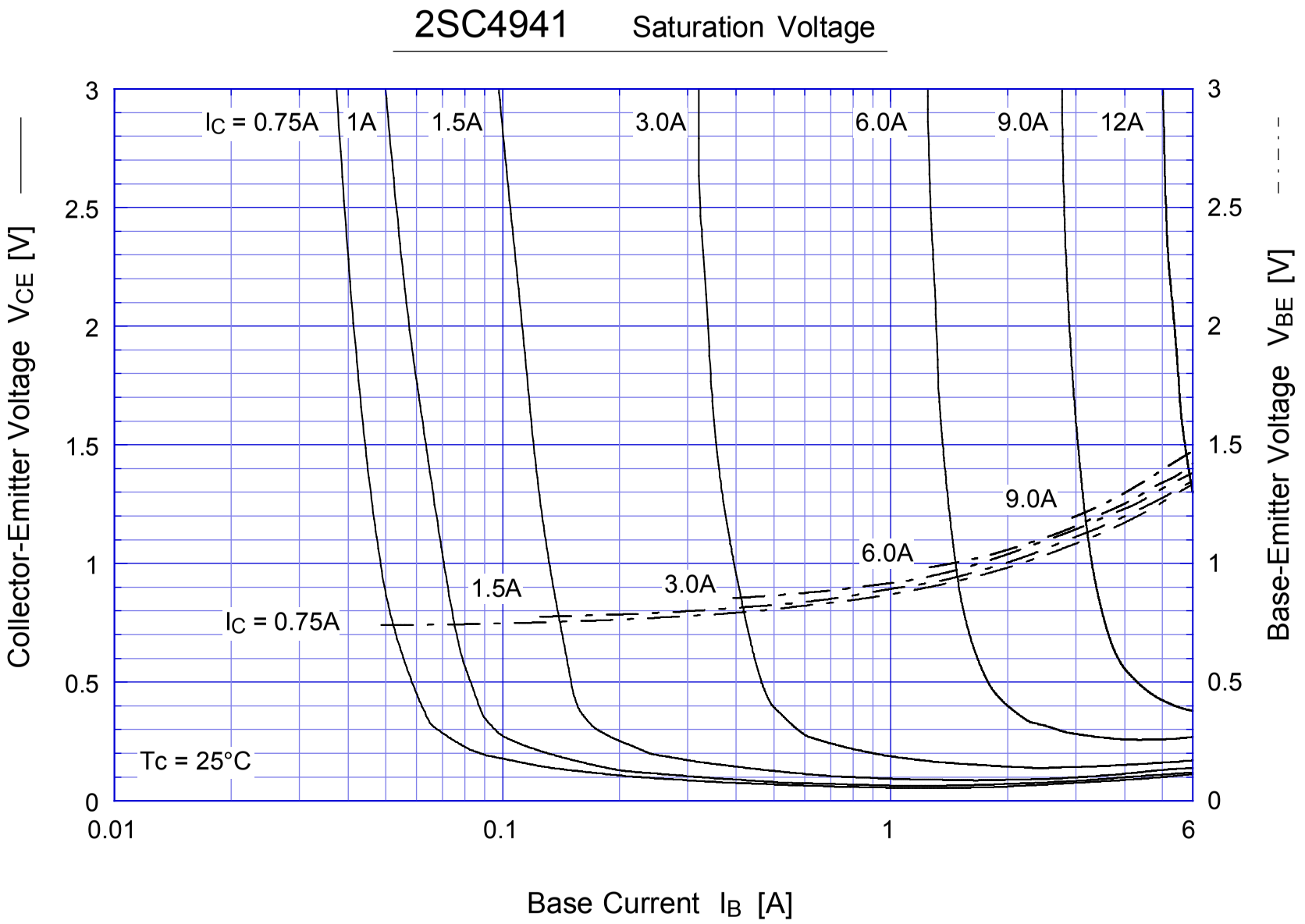
●Absolute Maximum Ratings

Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	Tstg		−55～150	℃
Junction Temperature	Tj		150	℃
Collector to Base Voltage	V_{CBO}		1500	V
Collector to Emitter Voltage	V_{CEO}		800	V
Emitter to Base Voltage	V_{EBO}		7	V
Collector Current DC	I_C		6	A
Collector Current Peak	I_{CP}		12	
Base Current DC	I_B		3	A
Base Current Peak	I_{BP}		6	
Total Transistor Dissipation	P_T		65	W
Dielectric Strength	Vdis	Terminals to case, AC 1 minute	2	kV
Mounting Torque	TOR	(Recommended torque)	0.8(0.5)	N·m

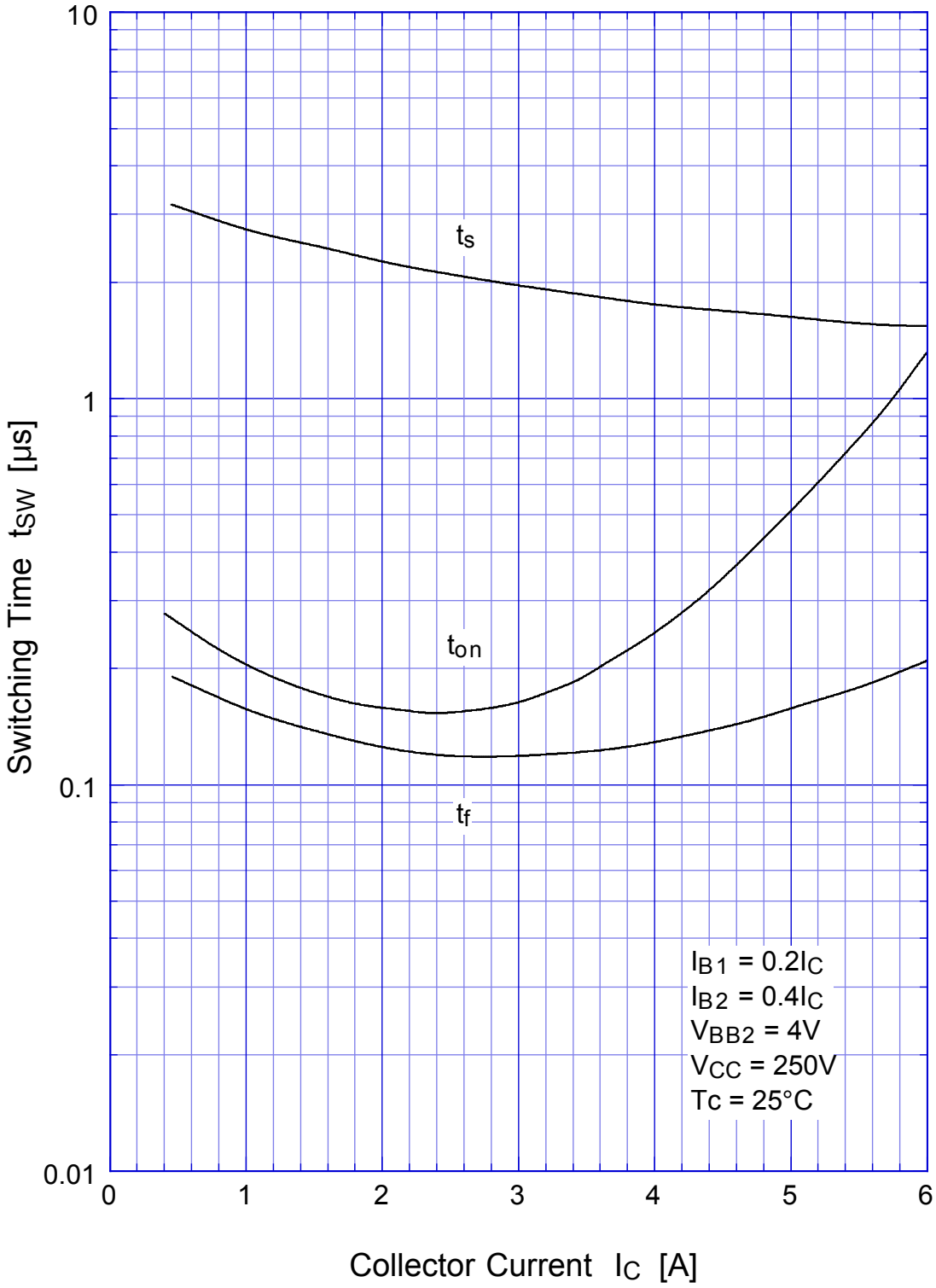
●Electrical Characteristics (Tc=25℃)

Item	Symbol	Conditions	Ratings	Unit
Collector to Emitter Sustaining Voltage	V_{CEO}(sus)	I_C = 0.2A	Min 800	V
Collector to Base Voltage	V_{CBO}	I_{CB} = 1mA	Min 1500	
Collector Cutoff Current	I_{CBO}	V_{CB} = 1200V	Max 0.1	mA
	I_{CEO}	rated V_{CEO}	Max 0.1	
Emitter Cutoff Current	I_{EBO}	rated V_{EBO}	Max 0.1	mA
DC Current Gain	h_{FE}	V_{CE} = 5V, I_C = 1A	Min 15	
	h_{FEL}	V_{CE} = 5V, I_C = 1mA	Min 7	
Collector to Emitter Saturation Voltage	V_{CE}(sat)	I_C = 3A	Max 0.5	V
Base to Emitter Saturation Voltage	V_{BE}(sat)	I_B = 0.6A	Max 1.5	V
Thermal Resistance	θ jc	Junction to case	Max 1.92	℃/W
Transition Frequency	f_T	V_{CE} = 10V, I_C = 0.6A	TYP 8	MHz
Turn on Time	ton	I_C = 3A	Max 0.5	μ s
Storage Time	ts	I_{B1} = 0.6A, I_{B2} = 1.2A	Max 3.5	
Fall Time	tf	R_L = 85Ω, V_{BB2} = 4V	Max 0.3	

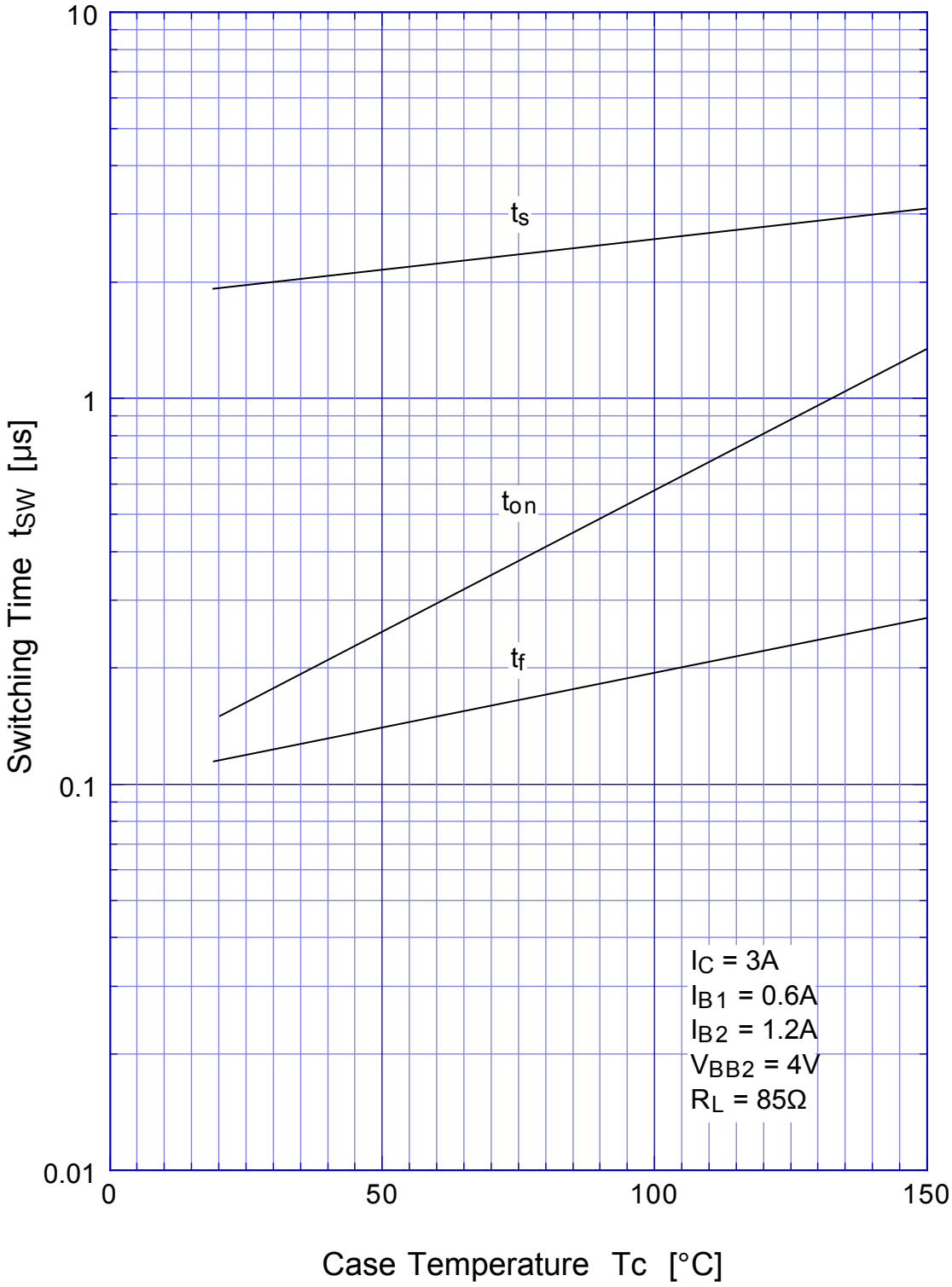

2SC4941
hFE - IC
VCE = 5V
Tc = 150°C
100°C
50°C
25°C
0°C
−25°C
−55°C
100
10
1
0.001
0.01
0.1
1
10
12
DC Current Gain hFE
Collector Current IC [A]

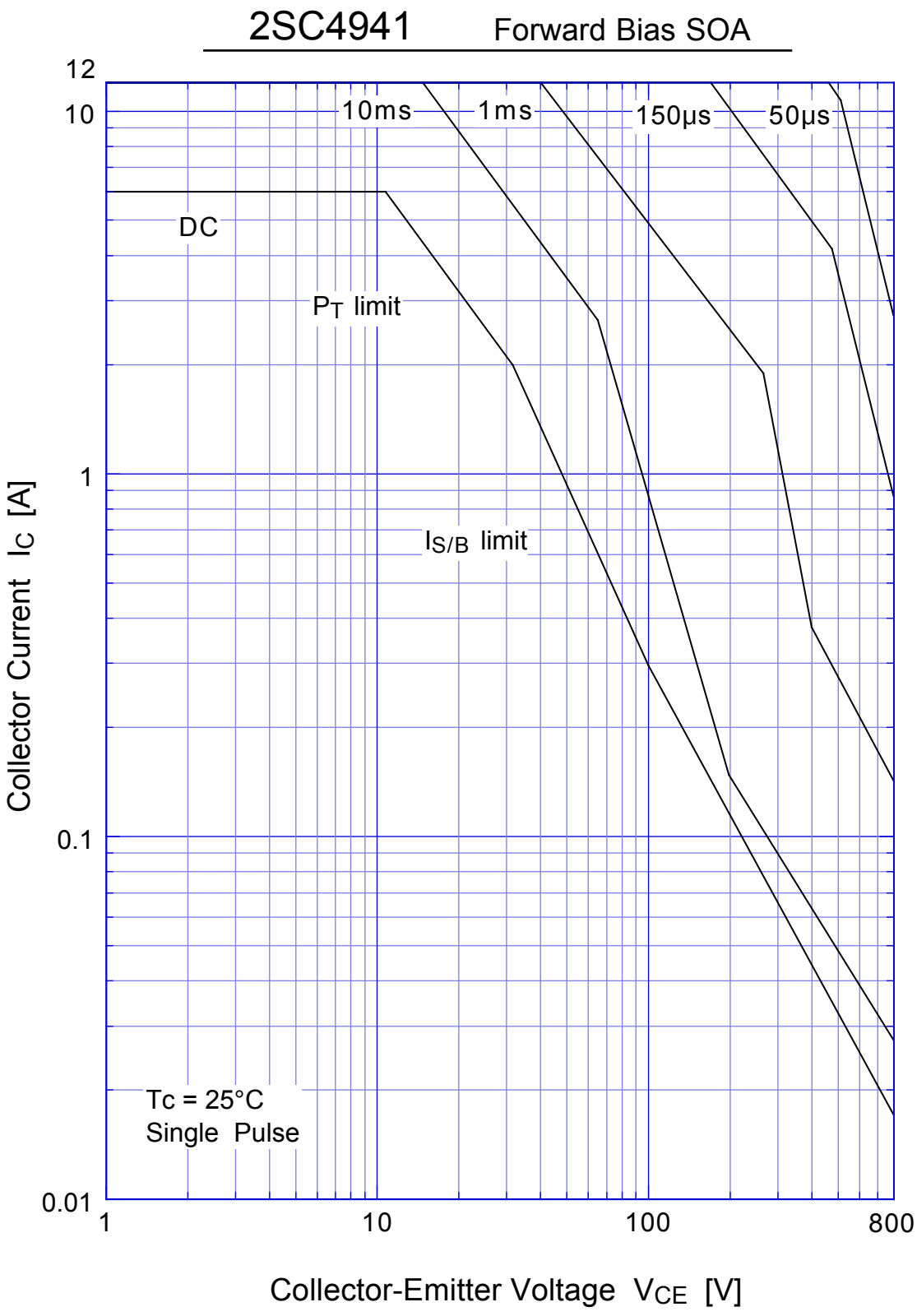

2SC4941 Saturation Voltage
Collector-Emitter Voltage V_{CE} [V]
Base-Emitter Voltage V_{BE} [V]
Base Current I_B [A]
I_C = 0.75A
1A
1.5A
3.0A
6.0A
9.0A
12A
I_C = 0.75A
1.5A
3.0A
6.0A
9.0A
Tc = 25°C
0
0.5
1
1.5
2
2.5
3
0.01
0.1
1
6

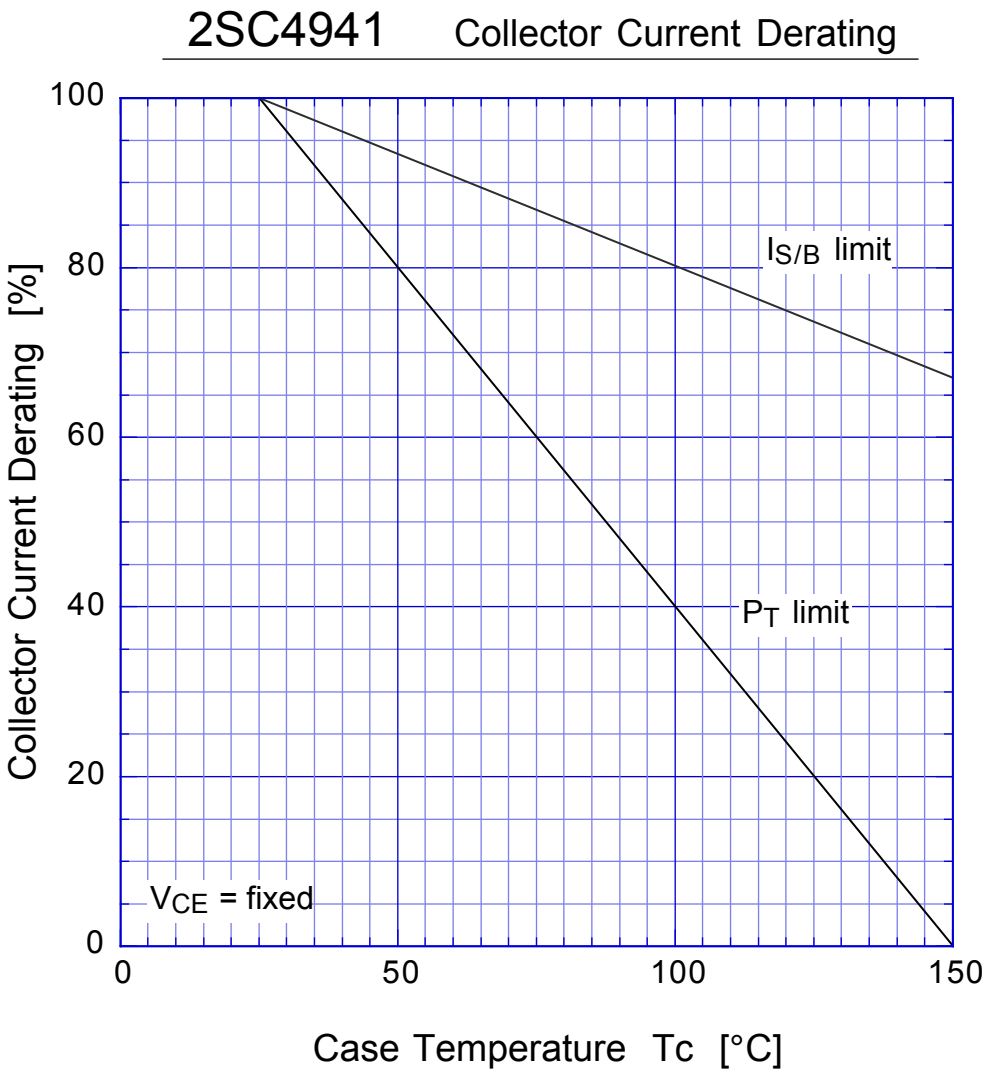
2SC4941 Switching Time - I_C

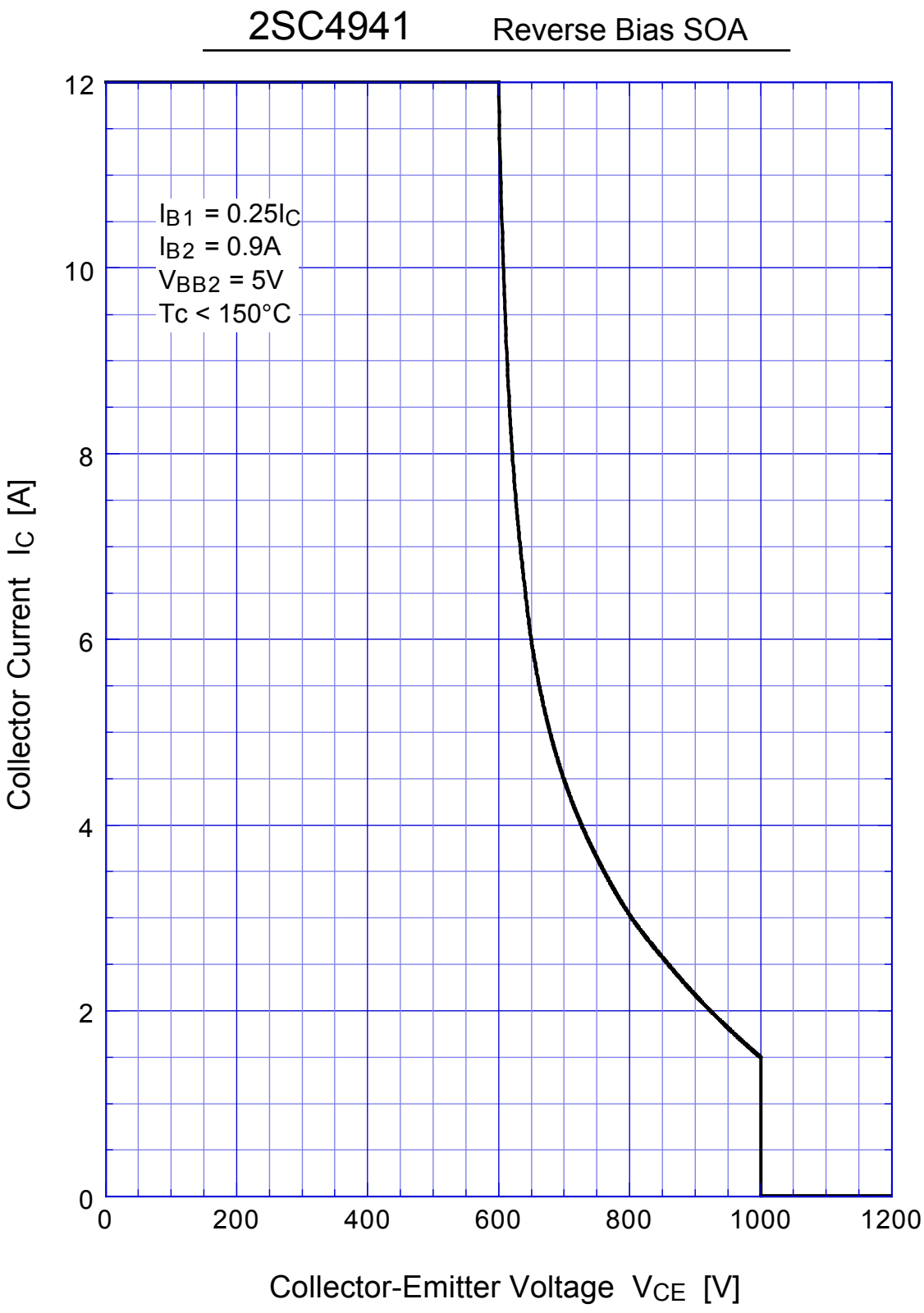


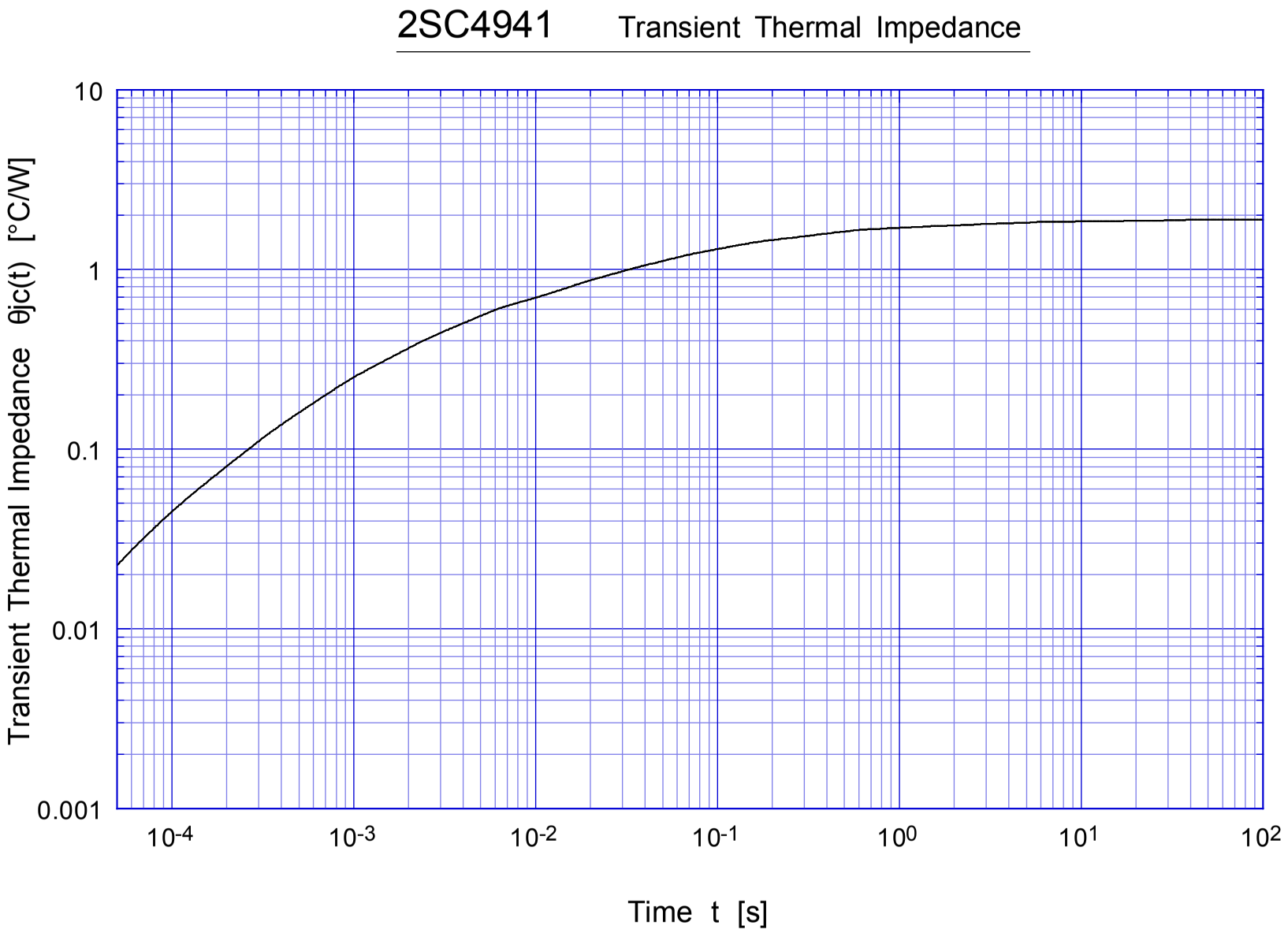
2SC4941 Switching Time - Tc




2SC4941
Forward Bias SOA
12
10
1
0.1
0.01
1
10
100
800
10ms
1ms
150µs
50µs
DC
PT limit
IS/B limit
Tc = 25°C
Single Pulse
Collector Current IC [A]
Collector-Emitter Voltage VCE [V]


2SC4941 Collector Current Derating
100
80
60
40
20
0
Collector Current Derating [%]
0
50
100
150
Case Temperature Tc [°C]
IS/B limit
PT limit
VCE = fixed


2SC4941
Reverse Bias SOA
I_{B1} = 0.25I_C
I_{B2} = 0.9A
V_{BB2} = 5V
Tc < 150°C
Collector Current I_C [A]
0
2
4
6
8
10
12
0
200
400
600
800
1000
1200
Collector-Emitter Voltage V_{CE} [V]


2SC4941 Transient Thermal Impedance
Transient Thermal Impedance θjc(t) [°C/W]
10
1
0.1
0.01
0.001
10-4
10-3
10-2
10-1
100
101
102
Time t [s]