SHINDENGEN

Switching Power Transistor

LSV Series

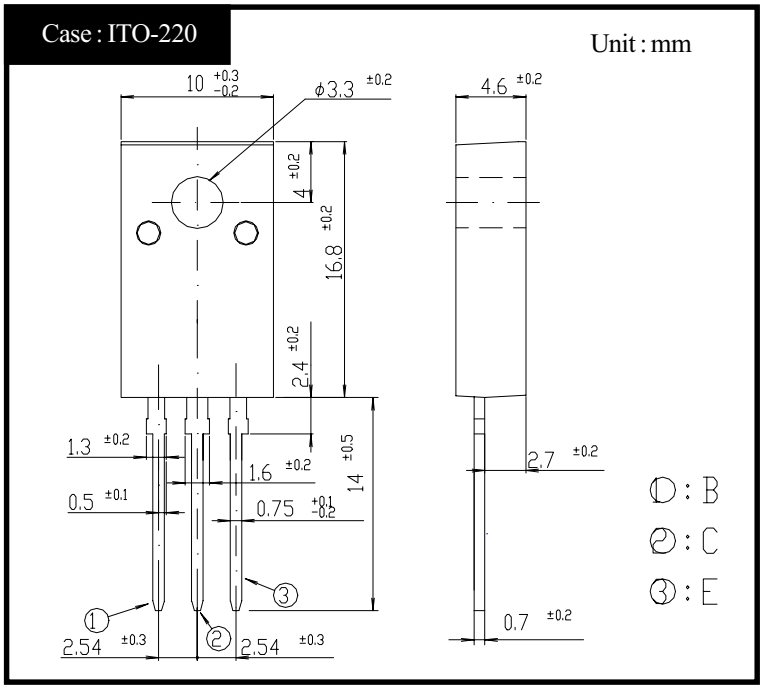
2SC4148
(TP7S4)

7A NPN

OUTLINE DIMENSIONS

Case : ITO-220

Unit : mm



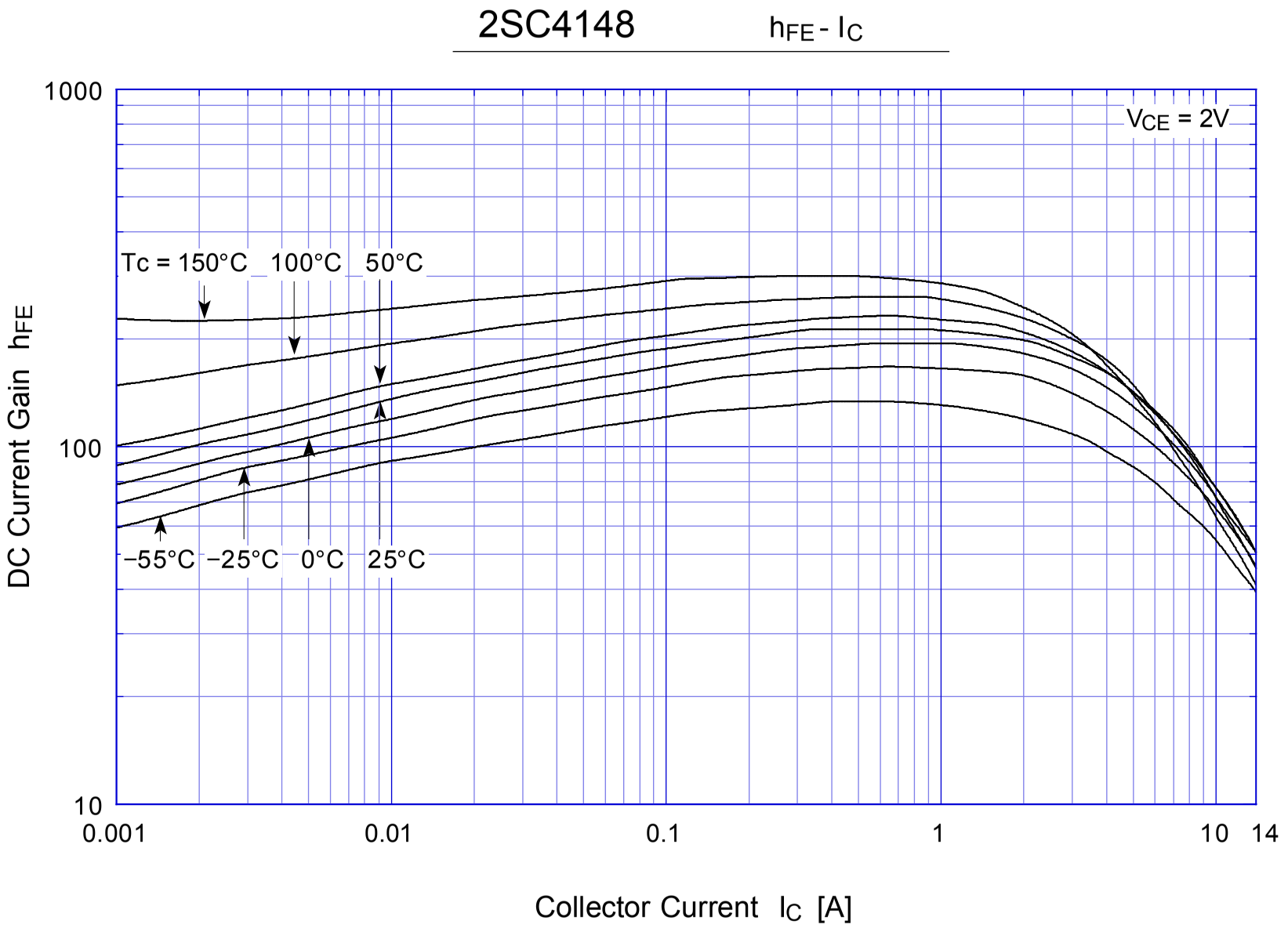
RATINGS

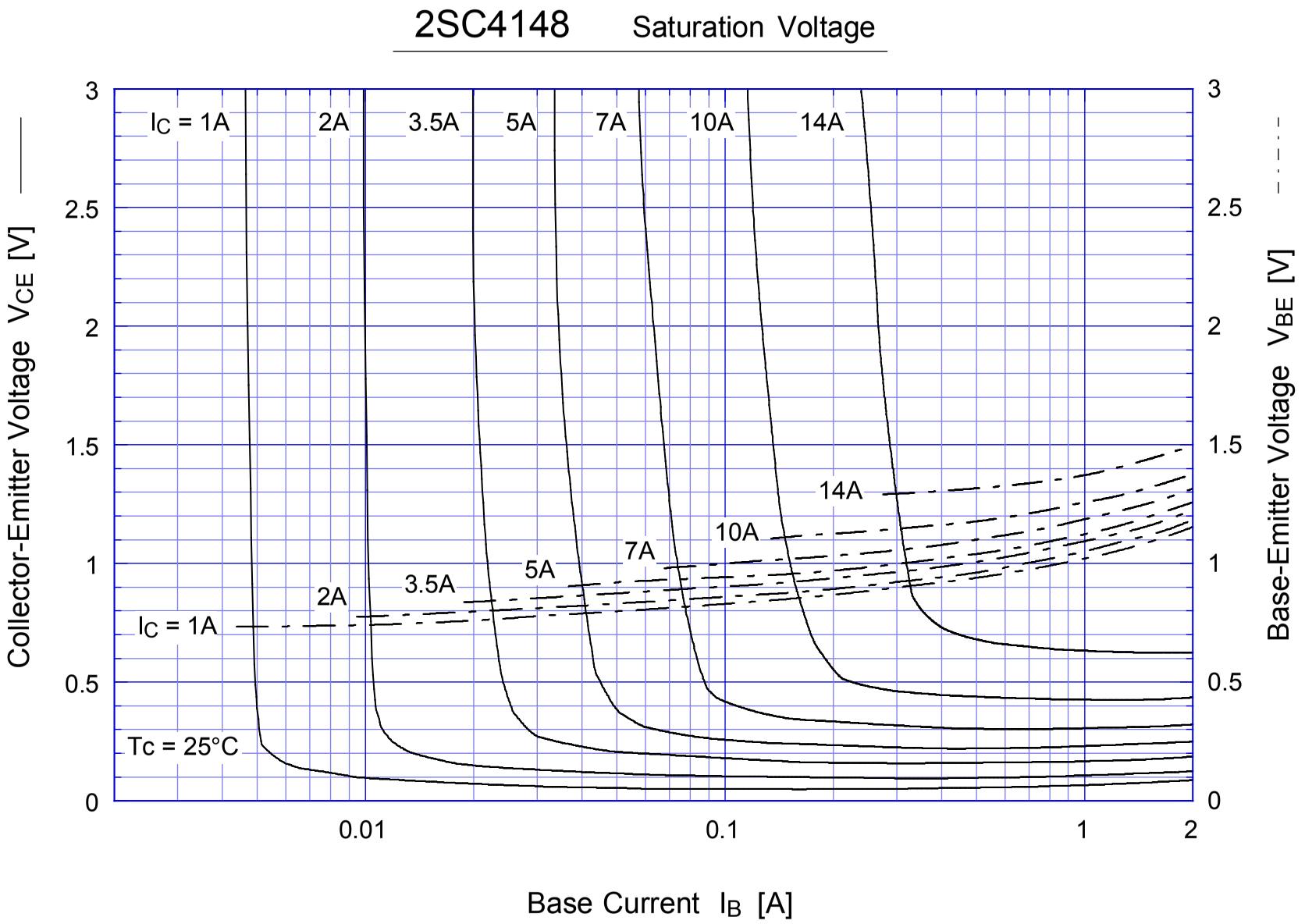
●Absolute Maximum Ratings

Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	Tstg		−55～150	℃
Junction Temperature	Tj		150	℃
Collector to Base Voltage	V_{CBO}		60	V
Collector to Emitter Voltage	V_{CEO}		40	V
Emitter to Base Voltage	V_{EBO}		7	V
Collector Current DC	I_C		7	A
Collector Current Peak	I_{CP}		14	A
Base Current DC	I_B		1.5	A
Base Current Peak	I_{BP}		2	A
Total Transistor Dissipation	P_T	Tc = 25℃	25	W
Dielectric Strength	Vdis	Terminal to case, AC 1 mitute	2	kV
Mounting Torque	TOR	(Recommended torque : 0.3N･m)	0.5	N･m

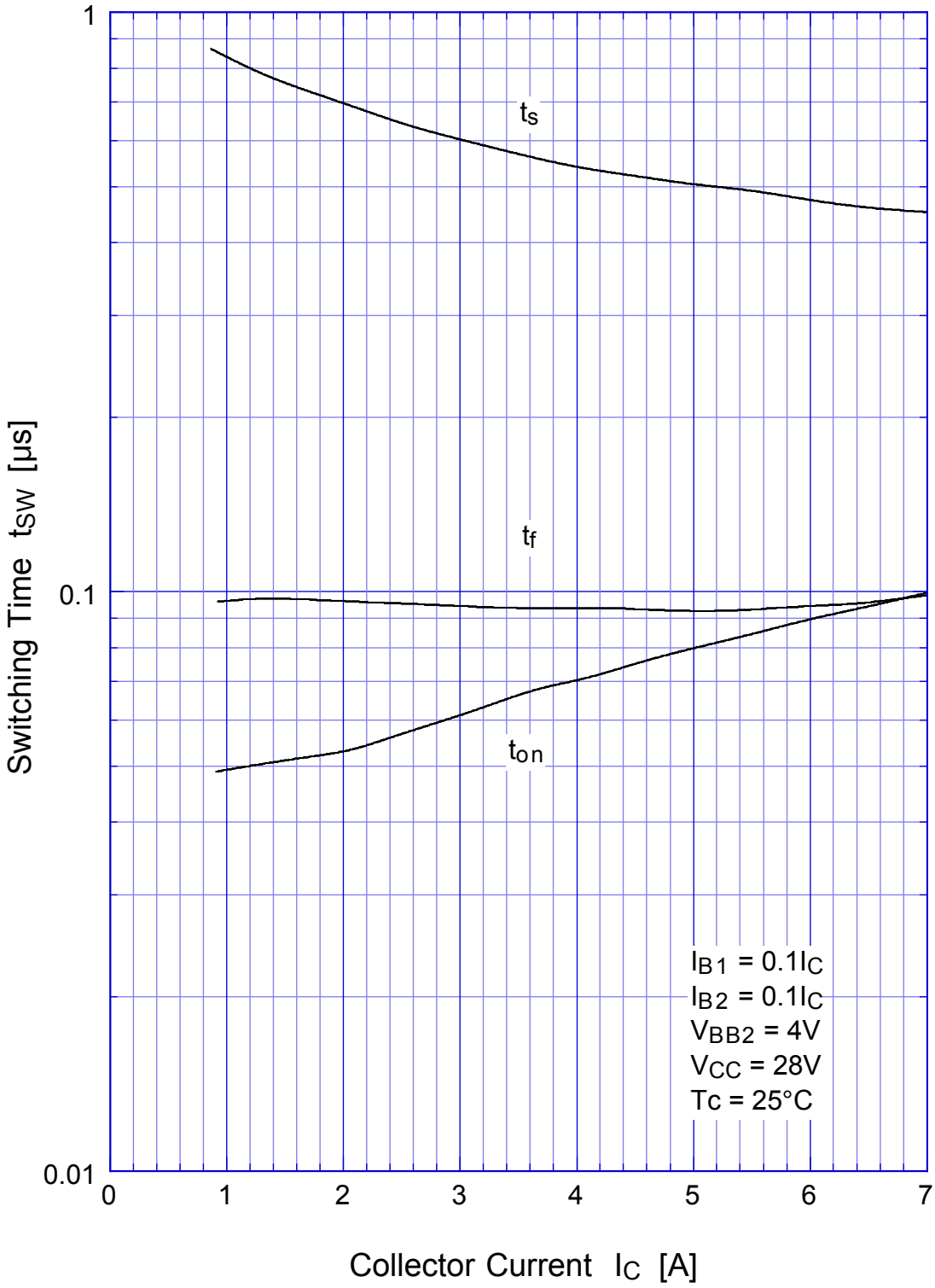
●Electrical Characteristics (Tc=25℃)

Item	Symbol	Conditions	Ratings	Unit
Collector to Emitter Sustaining Voltage	V_{CEO}(sus)	I_C = 0.1A	Min 40	V
Collector Cutoff Current	I_{CBO}	At rated Voltage	Max 0.1	mA
	I_{CEO}		Max 0.1	
Emitter Cutoff Current	I_{EBO}	At rated Voltage	Max 0.1	mA
DC Current Gain	h_{FE}	V_{CE} = 2V, I_C = 3.5A	Min 70	
Collector to Emitter Saturation Voltage	V_{CE}(sat)	I_C = 3.5A	Max 0.3	V
Base to Emitter Saturation Voltage	V_{BE}(sat)	I_B = 0.2A	Max 1.2	V
Thermal Resistance	θ jc	Junction to case	Max 5	℃/W
Transition Frequency	f_T	V_{CE} = 10V, I_C = 0.7A	TYP 50	MHz
Turn on Time	ton	I_C = 3.5A I_{B1} = 0.35A, I_{B2} = 0.35A R_L = 8Ω , V_{BB2} = 4V	Max 0.3	μs
Storage Time	ts		Max 1.5	
Fall Time	tf		Max 0.5	

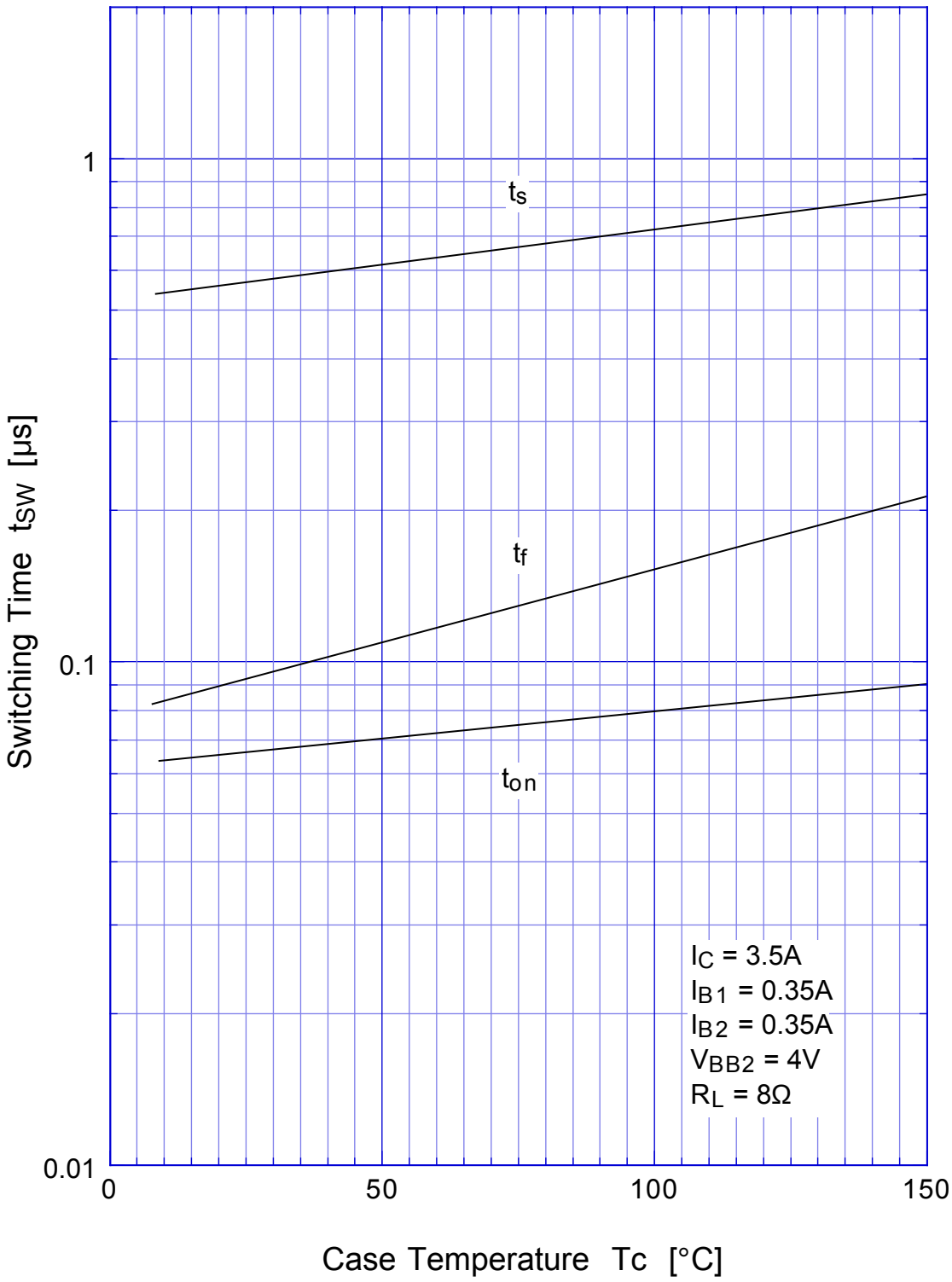

2SC4148
hFE - IC
1000
100
10
VCE = 2V
Tc = 150°C
100°C
50°C
−55°C
−25°C
0°C
25°C
DC Current Gain hFE
0.001
0.01
0.1
1
10
14
Collector Current IC [A]

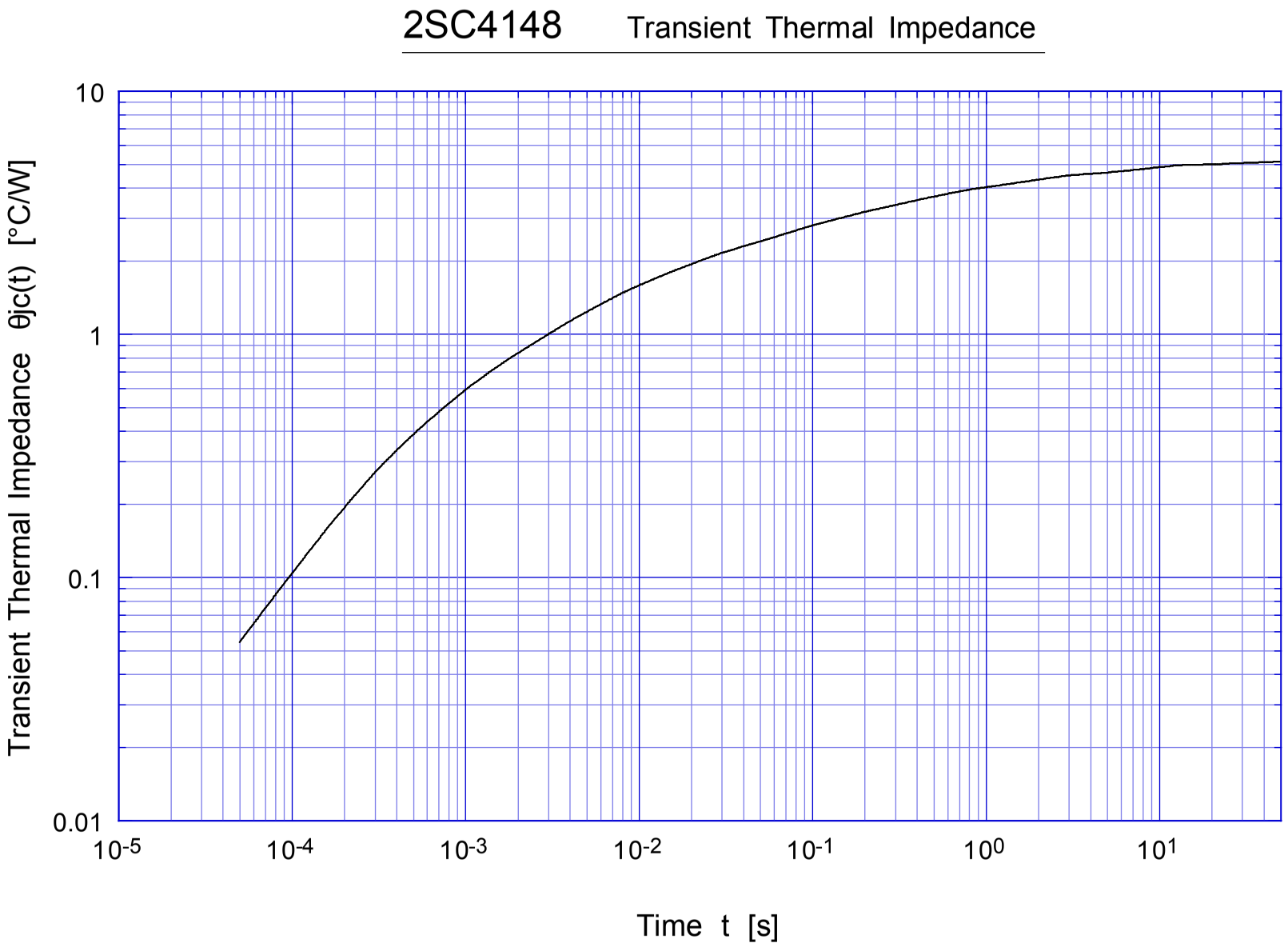

2SC4148 Saturation Voltage
Collector-Emitter Voltage V_{CE} [V]
Base-Emitter Voltage V_{BE} [V]
Base Current I_B [A]
I_C = 1A
2A
3.5A
5A
7A
10A
14A
Tc = 25°C
0
0.5
1
1.5
2
2.5
3
0.01
0.1
1
2

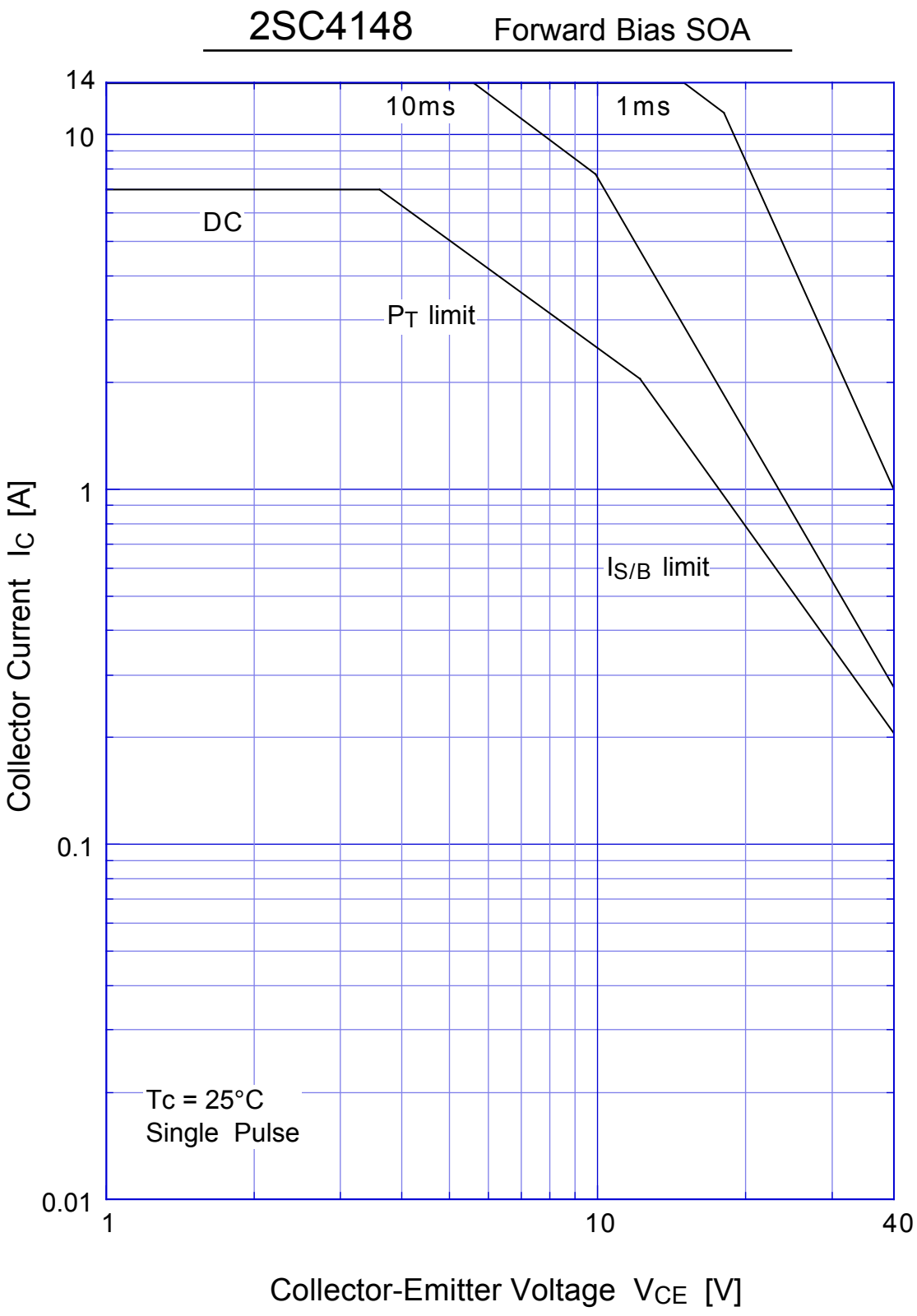
2SC4148 Switching Time - I_C

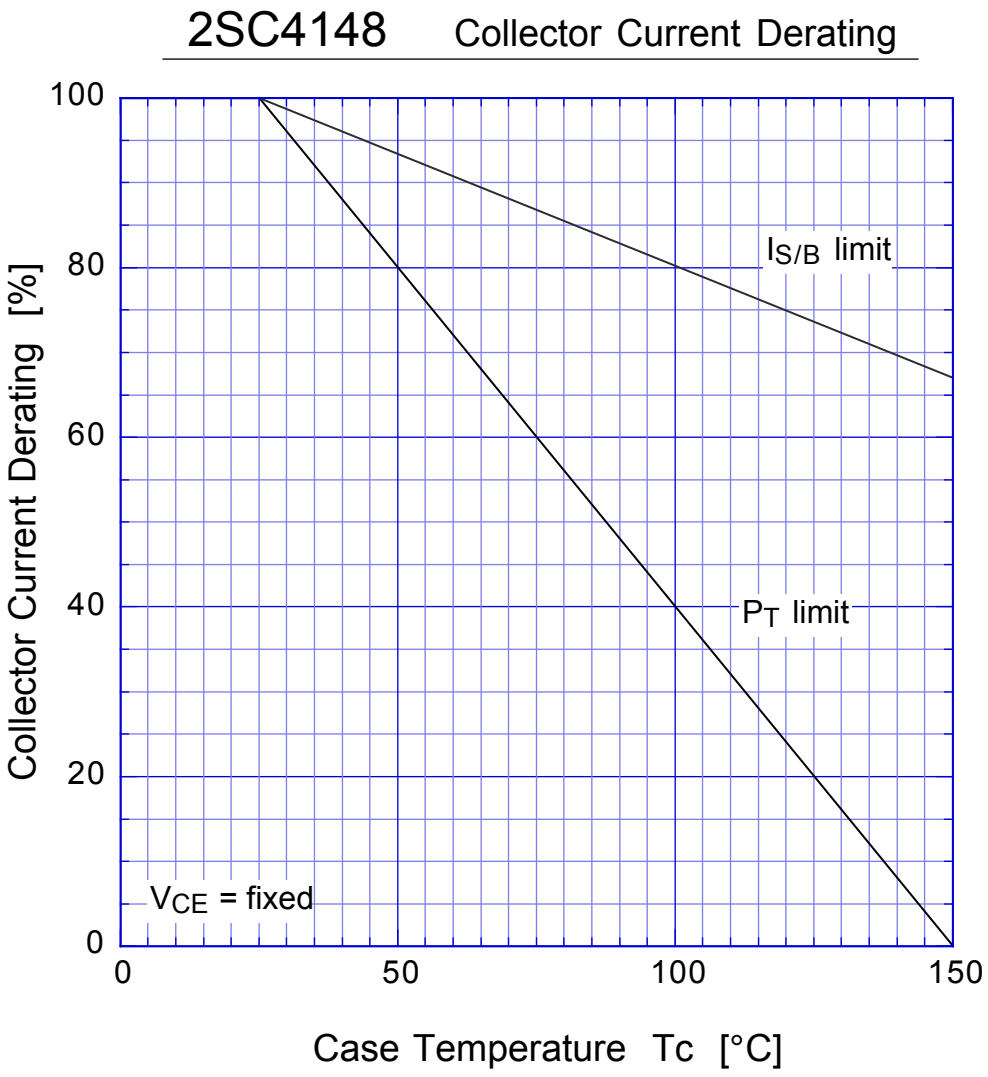


2SC4148 Switching Time - Tc




2SC4148 Transient Thermal Impedance
Transient Thermal Impedance θjc(t) [°C/W]
10
1
0.1
0.01
10-5
10-4
10-3
10-2
10-1
100
101
Time t [s]


2SC4148
Forward Bias SOA
14
10
1
0.1
0.01
10ms
1ms
DC
P_T limit
$I_{S/B}$ limit
Tc = 25°C
Single Pulse
1
10
40
Collector Current I_C [A]
Collector-Emitter Voltage V_{CE} [V]


2SC4148 Collector Current Derating
100
80
60
40
20
0
Collector Current Derating [%]
$I_{S/B}$ limit
P_T limit
V_{CE} = fixed
0
50
100
150
Case Temperature Tc [°C]