SHINDENGEN

Switching Power Transistor

LSV Series

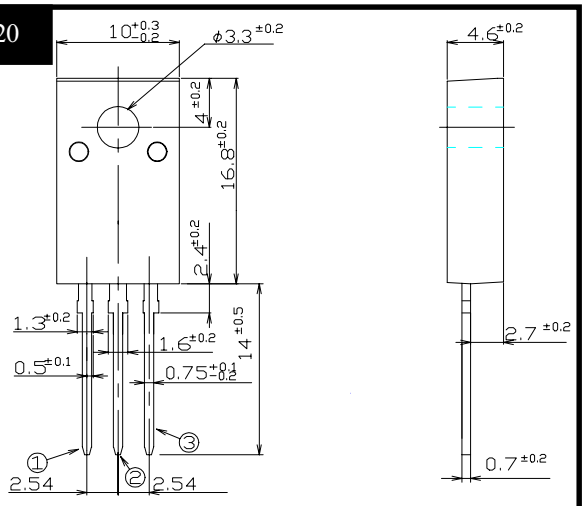
2SA1600
(TP12T4)

-12A PNP

OUTLINE DIMENSIONS

Case : ITO-220

Unit : mm



RATINGS

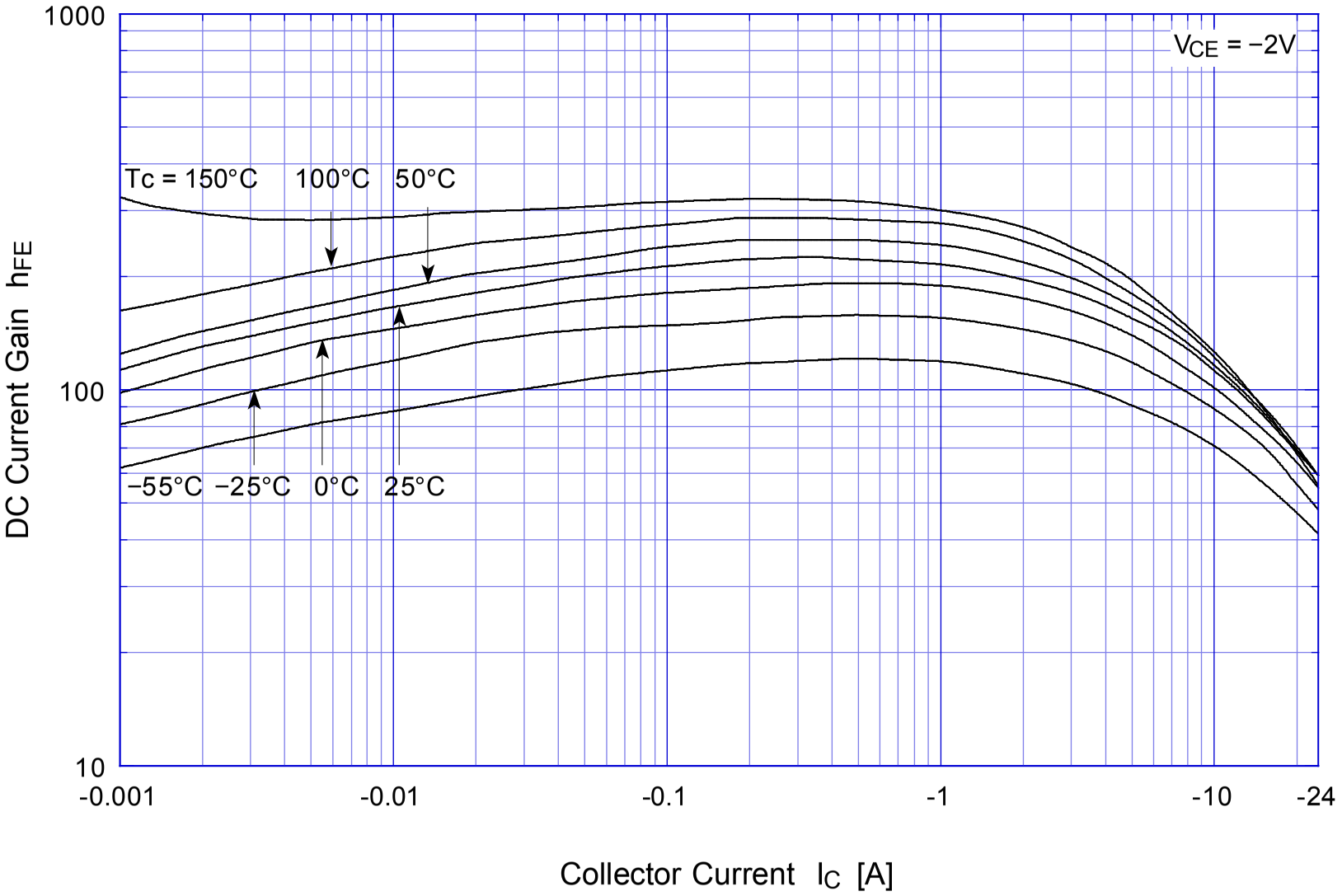
●Absolute Maximum Ratings

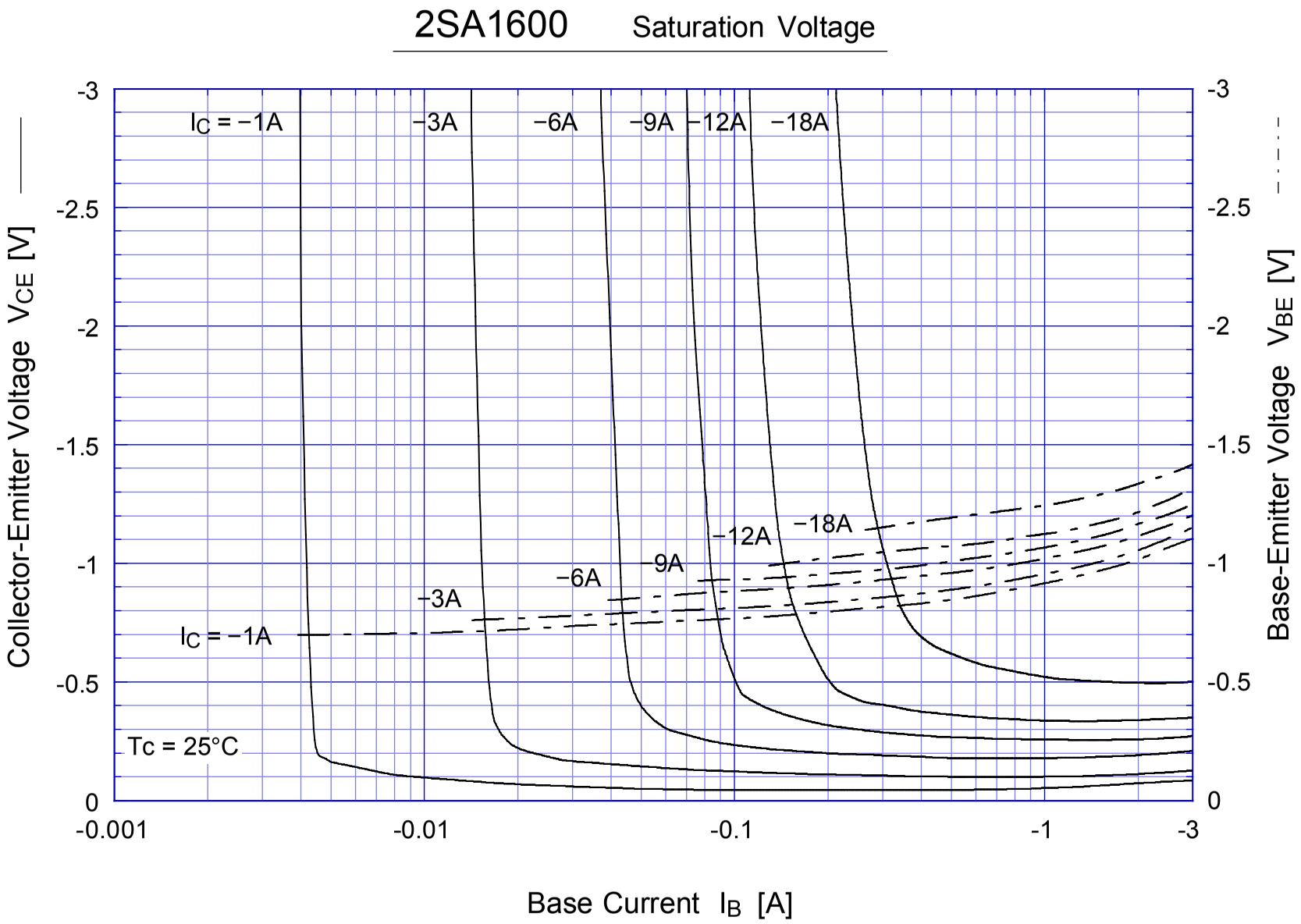
Item	Symbol	Conditions	Ratings	Unit
Storage Temperature	Tstg		−55～150	℃
Junction Temperature	Tj		150	℃
Collector to Base Voltage	V_{CBO}		−60	V
Collector to Emitter Voltage	V_{CEO}		−40	V
Emitter to Base Voltage	V_{EBO}		−7	V
Collector Current DC	I_C		−12	A
Collector Current Peak	I_{CP}		−24	A
Base Current DC	I_B		−2	A
Base Current Peak	I_{BP}		−3	A
Total Transistor Dissipation	P_T	Tc = 25℃	30	W
Dielectric Strength	Vdis	Terminal to case, AC 1 minute	2	kV
Mounting Torque	TOR	(Recommended torque : 0.3N･m)	0.5	N･m

●Electrical Characteristics (Tc=25℃)

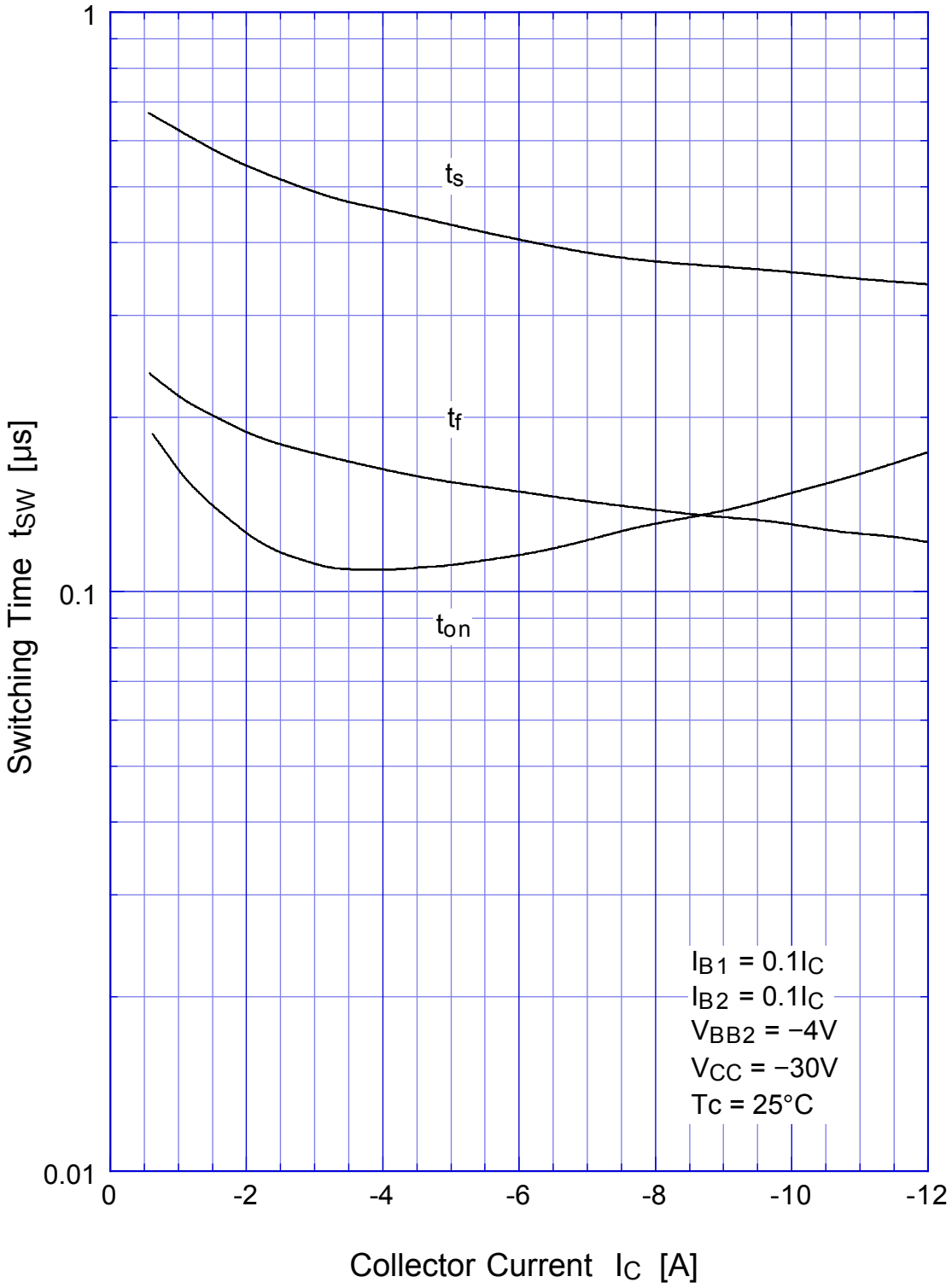
Item	Symbol	Conditions	Ratings	Unit
Collector to Emitter Sustaining Voltage	V_{CEO}(sus)	I_C = −0.1A	Min −40	V
Collector Cutoff Current	I_{CBO}	At rated Voltage	Max −0.1	mA
	I_{CEO}		Max −0.1	
Emitter Cutoff Current	I_{EBO}	At rated Voltage	Max −0.1	mA
DC Current Gain	h_{FE}	V_{CE} = −2V, I_C = −6A	Min 70	
Collector to Emitter Saturation Voltage	V_{CE}(sat)	I_C = −6A	Max −0.3	V
Base to Emitter Saturation Voltage	V_{BE}(sat)	I_B = −0.3A	Max −1.2	V
Thermal Resistance	θ jc	Junction to case	Max 4.16	℃/W
Transition Frequency	f_T	V_{CE} = −10V, I_C = −1.2A	TYP 50	MHz
Turn on Time	ton	I_C = −6A I_{B1} = −0.6A, I_{B2} = −0.6A R_L = 5Ω , V_{BB2} = −4V	Max 0.3	μs
Storage Time	ts		Max 1.5	
Fall Time	tf		Max 0.5	

2SA1600 h_{FE} - I_C

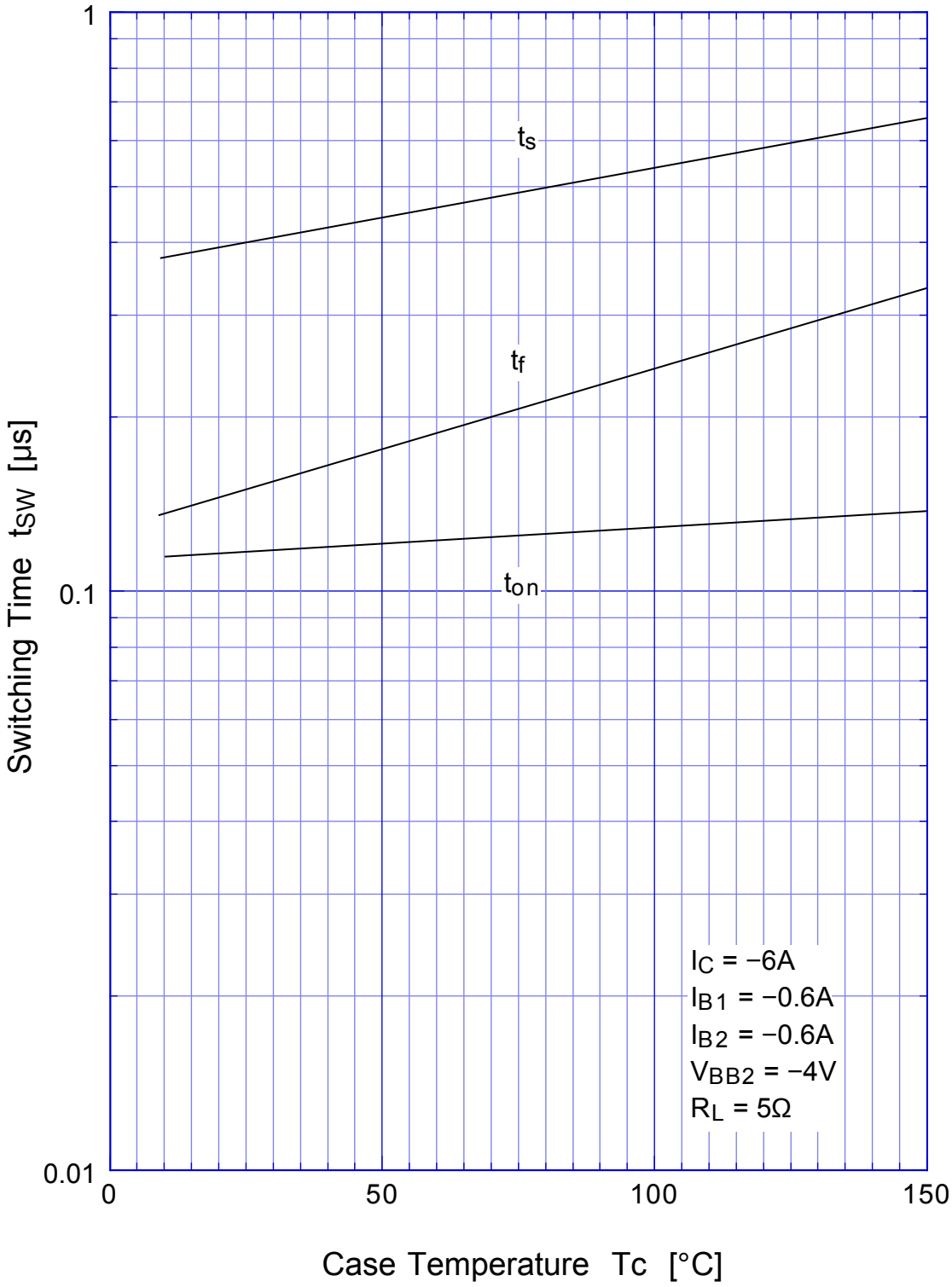


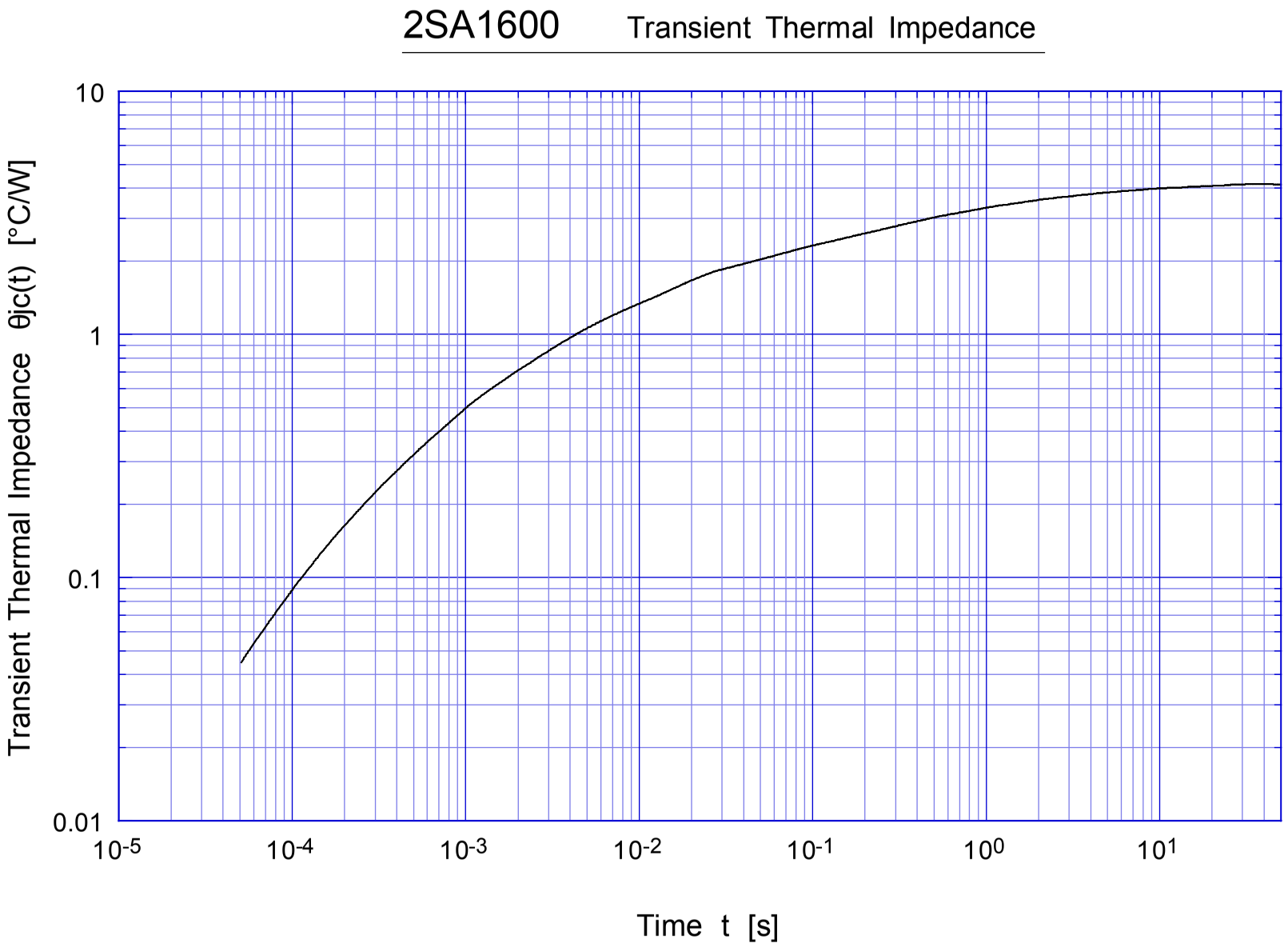

2SA1600 Saturation Voltage
Collector-Emitter Voltage V_{CE} [V]
Base-Emitter Voltage V_{BE} [V]
Base Current I_B [A]
I_C = −1A
−3A
−6A
−9A
−12A
−18A
Tc = 25°C
-3
-2.5
-2
-1.5
-1
-0.5
0
-0.001
-0.01
-0.1
-1
-3

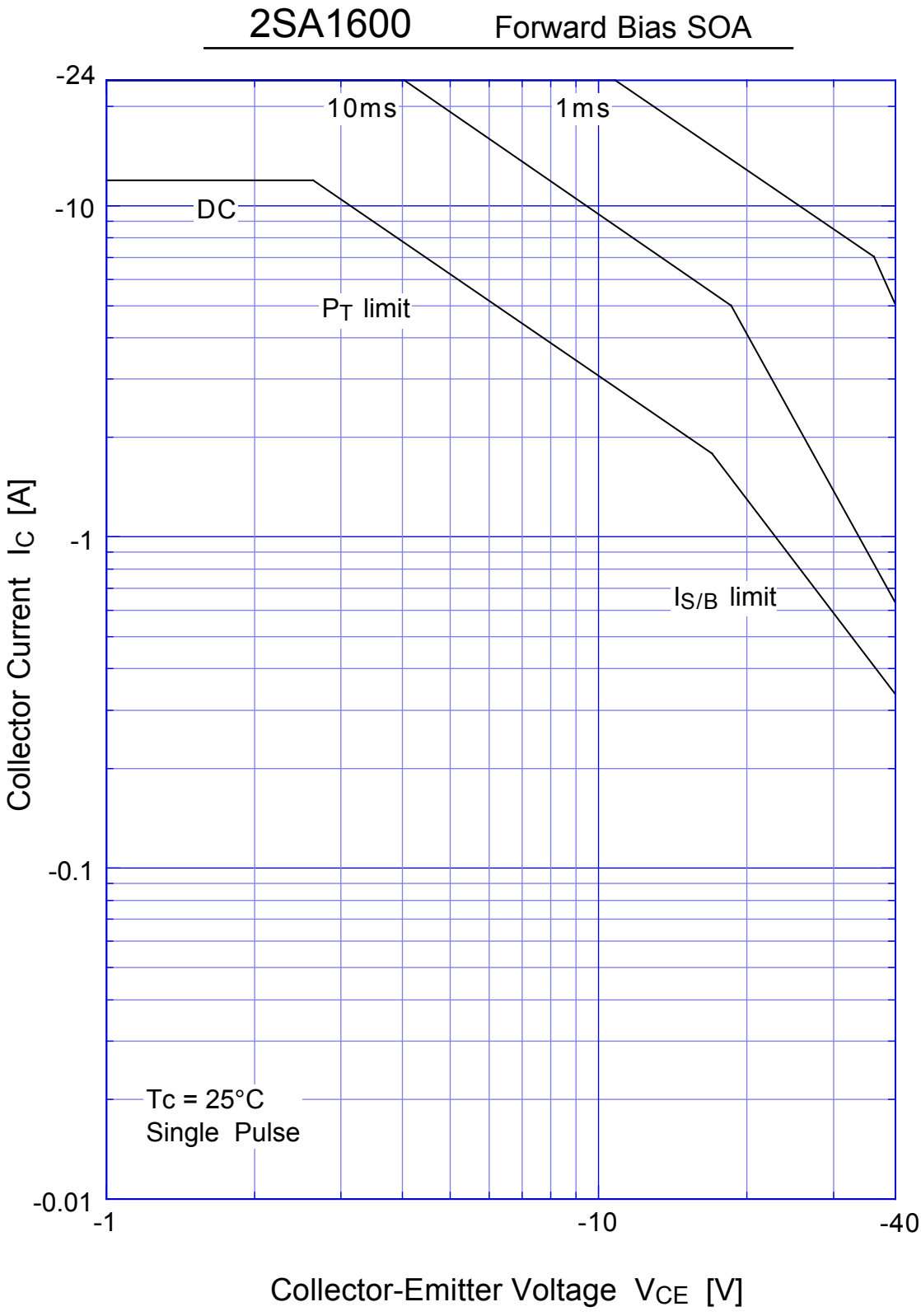
2SA1600 Switching Time - I_C

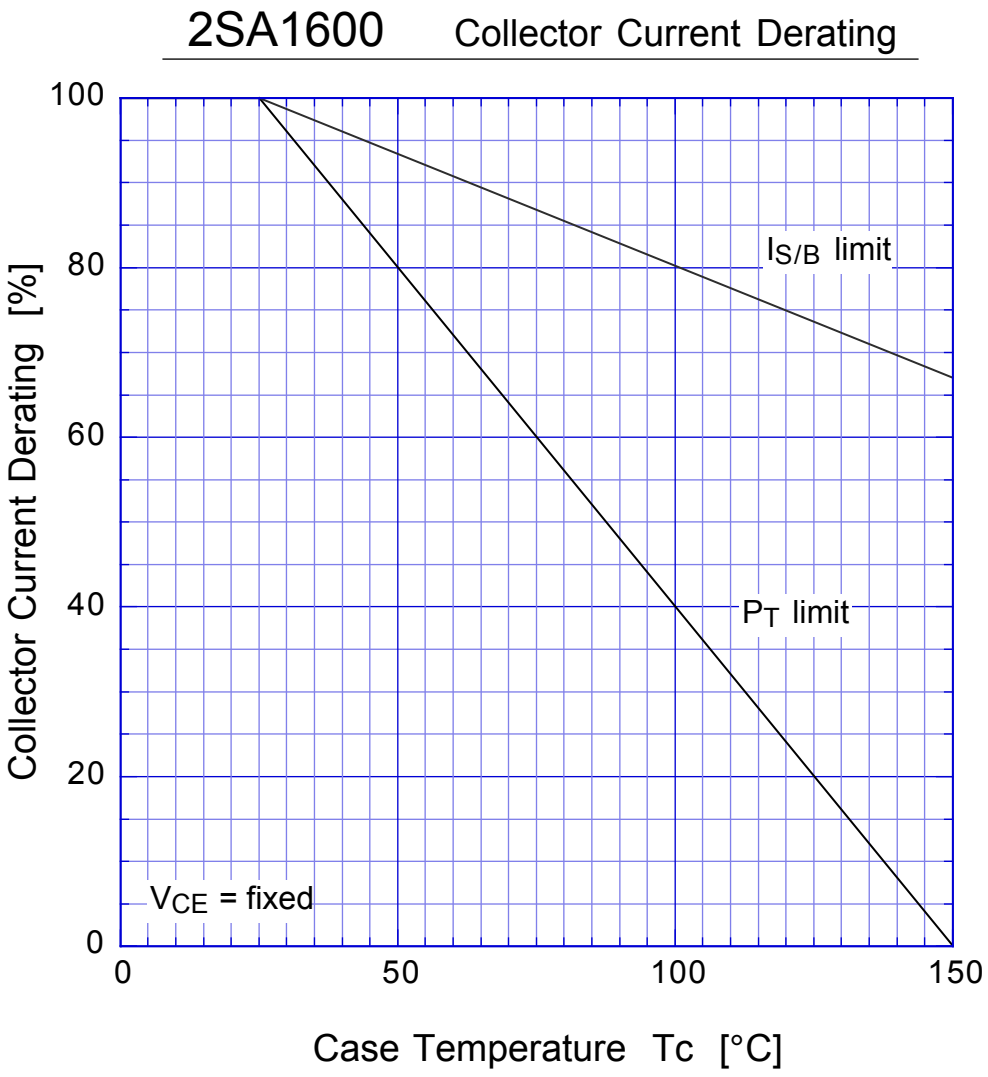


2SA1600 Switching Time - Tc




2SA1600
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]


2SA1600
Forward Bias SOA
-24
-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]


2SA1600 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