SHINDENGEN

Power Switching Regulators

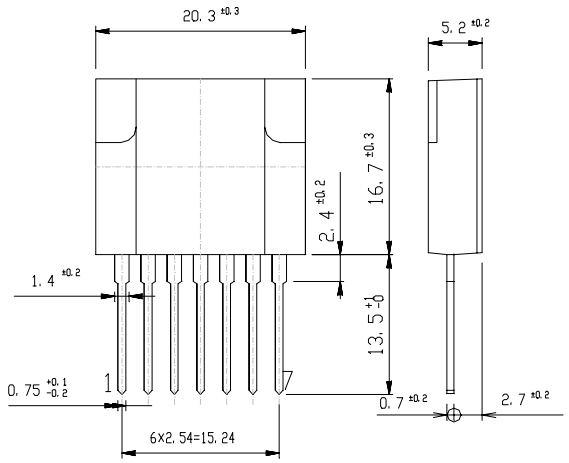
MA2000 Series

MA2810

OUTLINE DIMENSIONS

Case : MA7

Unit : mm



RATINGS

●Absolute Maximum Ratings

Item	Symbol	Conditions	Ratings		Unit
			P Class	N Class	
Storage Temperature	Tstg		−30～125	−30～125	℃
Operating Temperature	Top	Case Temperature	−20～125	−20～125	℃
Junction Temperature	Tj		150	150	℃
Peak Input Voltage	Vin	②+,④−,Fig.1 is Measurement Circuit of Peak Input Voltage Vin and Collector Cutoff Current I_{CEX}.	850	850	V
Input Current	Iin	Pulse Pulse Width 150 μ s MAX, Duty1/2, Sawtooth Wave, Peak Value, ②+,④−	4	4	A
Maximum Operating Frequency	f(max)		200	200	kH_Z
Maximum Power Dissipation	P_D	Ta=25℃	3	3	W
	P_D	Heatsink Tc=100℃	14	14	W
Dielectric Strength	Vdis	Terminals To Case AC 1 min	2	2	kV
Insulation Resistance		Terminals To Case 500VDC	100	100	MΩ
Fold Back Control Voltage	V_{CONT}(max)	Fold Control Resistance=0Ω Duty 1/2, ④,⑦	±8	±8	V
Fold Back Control Current	I_{CONT}(max)	④−,⑥+	100	100	mA

●Electrical Characteristics (Tc=25℃)

Item		Symbol	Conditions	Ratings		Unit
				P Class	N Class	
Q1	Collector Cutoff Current	I_{CEX}	V_{CE}=850V,Fig.1 is Measurement Circuit of Peak Input Voltage Vin and Collector Cutoff Current I_{CEX}. , ②+,④−	MAX 0.1	MAX 0.1	mA
	DC Current Gain	h_{FE}	V_{CE} = 5V, I_C = 1.0A, ②+,④−,⑤I_B	13～26	8～16	
	Collector to Emitter Saturation Voltage	V_{CE}(sat)	I_C=1.0A, I_B=0.2A, ②+,④−,⑤I_B	MAX 1.0	MAX 1.0	V
	Thermal Resistance	θ jc	Junction to Case	MAX 3.57	MAX 3.57	℃/W
D1	Reverse Current	I_R	V_R=800V,①+,②−	MAX 10	MAX 10	μ A
	Forward Voltage	V_F	I_F=0.6A,①−,②+	MAX 1.7	MAX 1.7	V
Driving Saturation Voltage		V_D(sat)	I_C=1.0A, I_B=0.2A, ⑤ +,④ −	MIN 1.7 MAX 2.3	MIN 1.7 MAX 2.3	V

●Standard Operating Condition・Design Standard For Application Circuit

Item	Conditions	Ratings		Unit
		P Class	N Class	
Input Rated Voltage		AC90～274	AC90～274	V
Output Nominal Wattage		12	12	W
Output Nominal Voltage		12	12	V
Output Nominal Current		1	1	A

●Standard Operating Condition・Standard Operating Characteristics （Ta=25℃）

Item		Conditions	Ratings		Unit	
			P Class	N Class		
Minimum Input Full Load Output Voltage		Vin=90V, I_O=1A	12.0±0.6	12.0±0.6	V	Fig 2, ① Refer
Maximum Input Light Load Output Voltage		Vin=274V, I_O=0.65A	12.0±0.6	12.0±0.6	V	Fig 2, ② Refer
AC Input Voltage		I_O=1A	MAX 85	MAX 85	V	
Over Current Protection	Foldback Current	Vin=274V, V_O=10V	MAX 1.75	MAX 1.75	A	Fig 2, ③ Refer
	Short Circuit	Vin=274V, R_O=0.5Ω	Nodamage To Any Device, Automatic Recovery.		–	Fig 2, ④ Refer
Output Ripple Noise		Vin=90～274V, I_O=0.1～1A	MAX 150	MAX 150	mV P-P	

Figure in ○=Terminal Sign

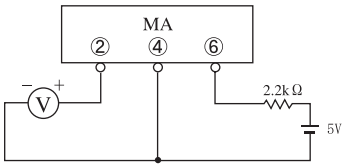


Fig1. Measurement Circuit

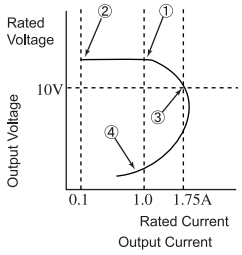
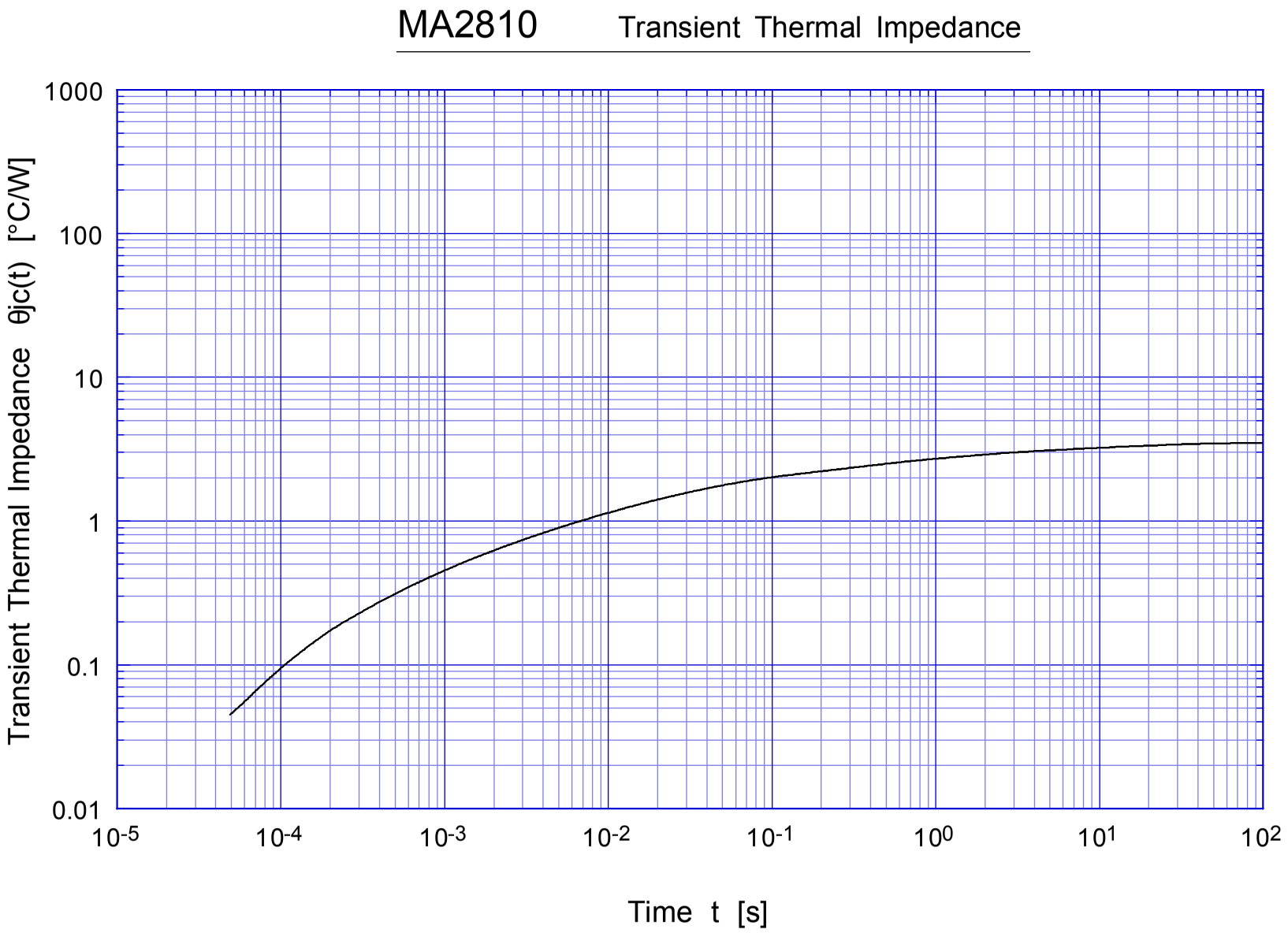
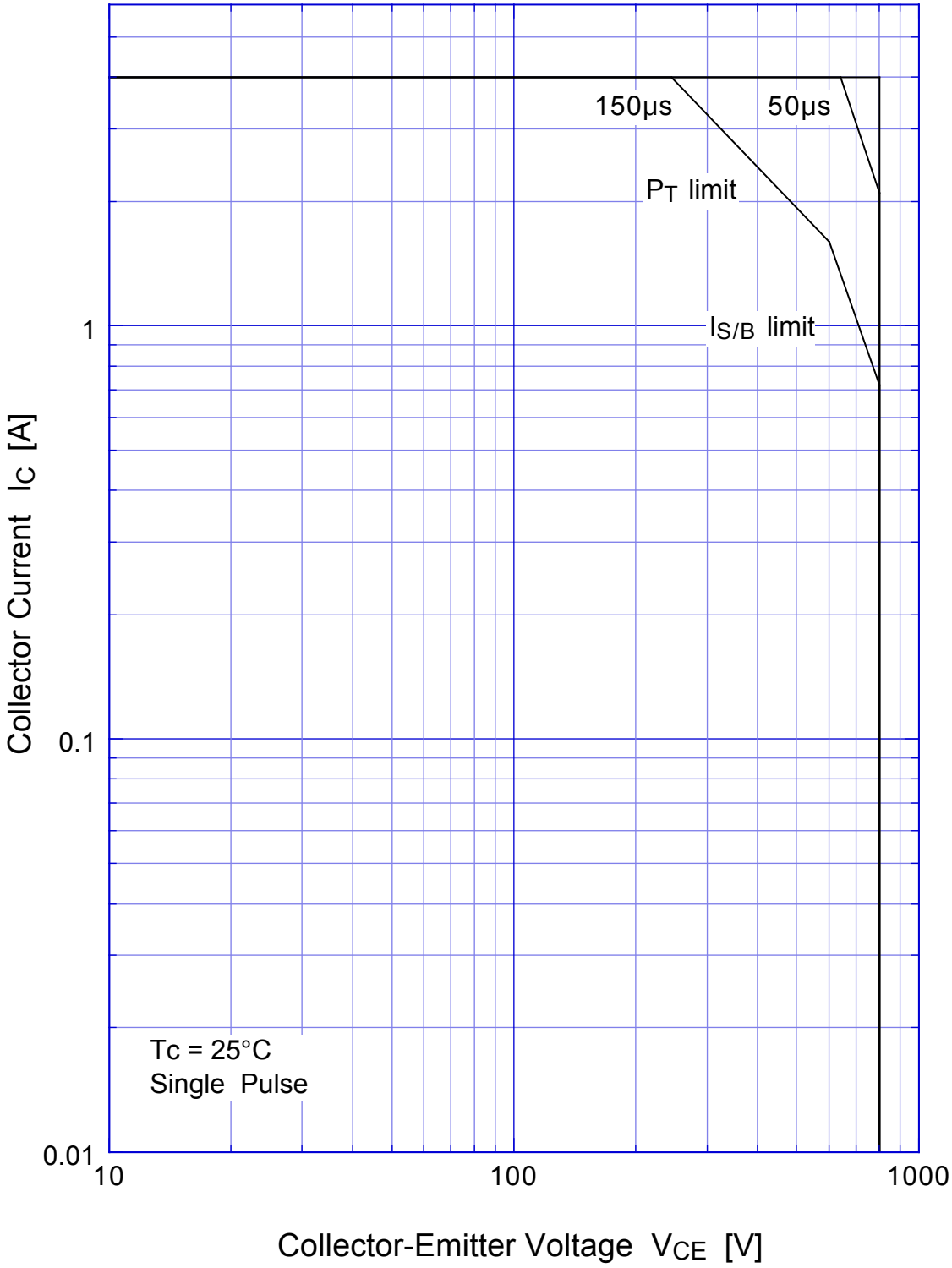
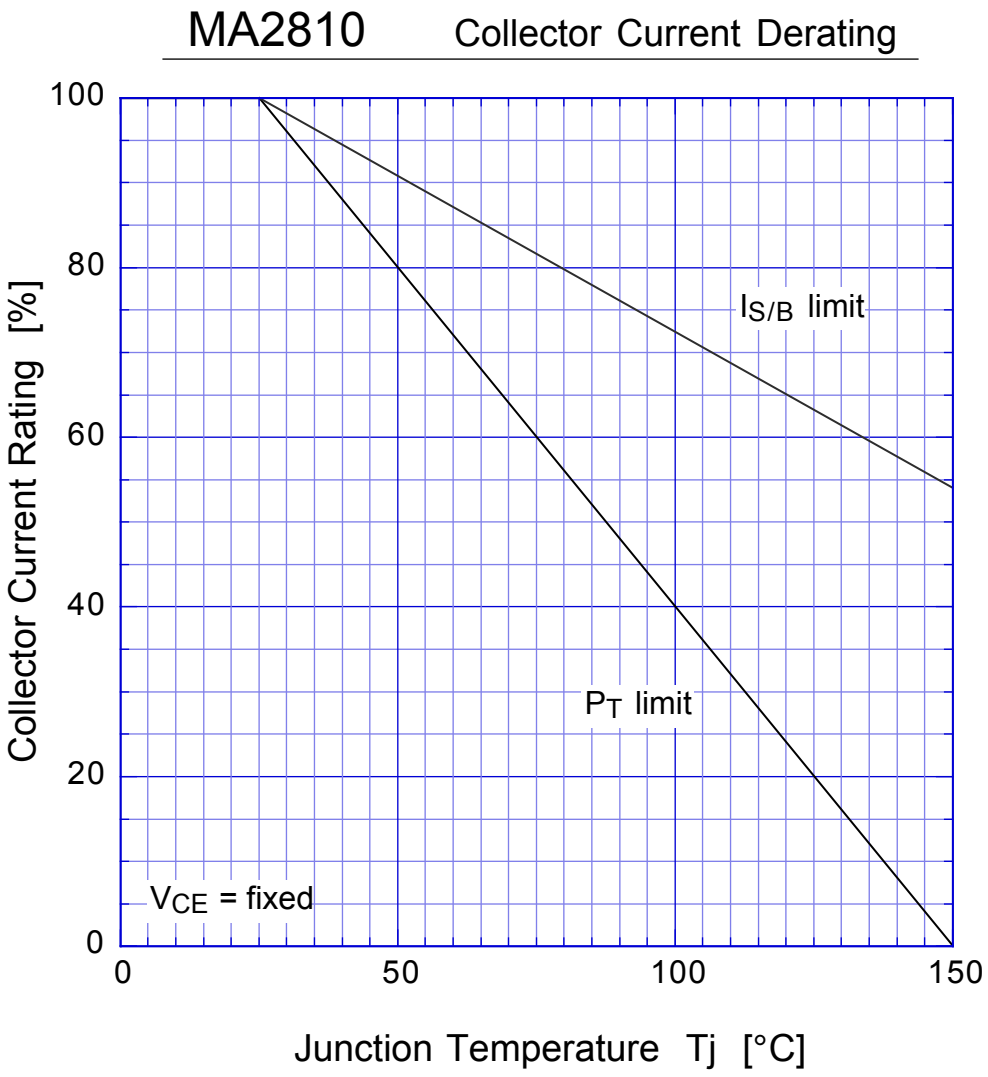


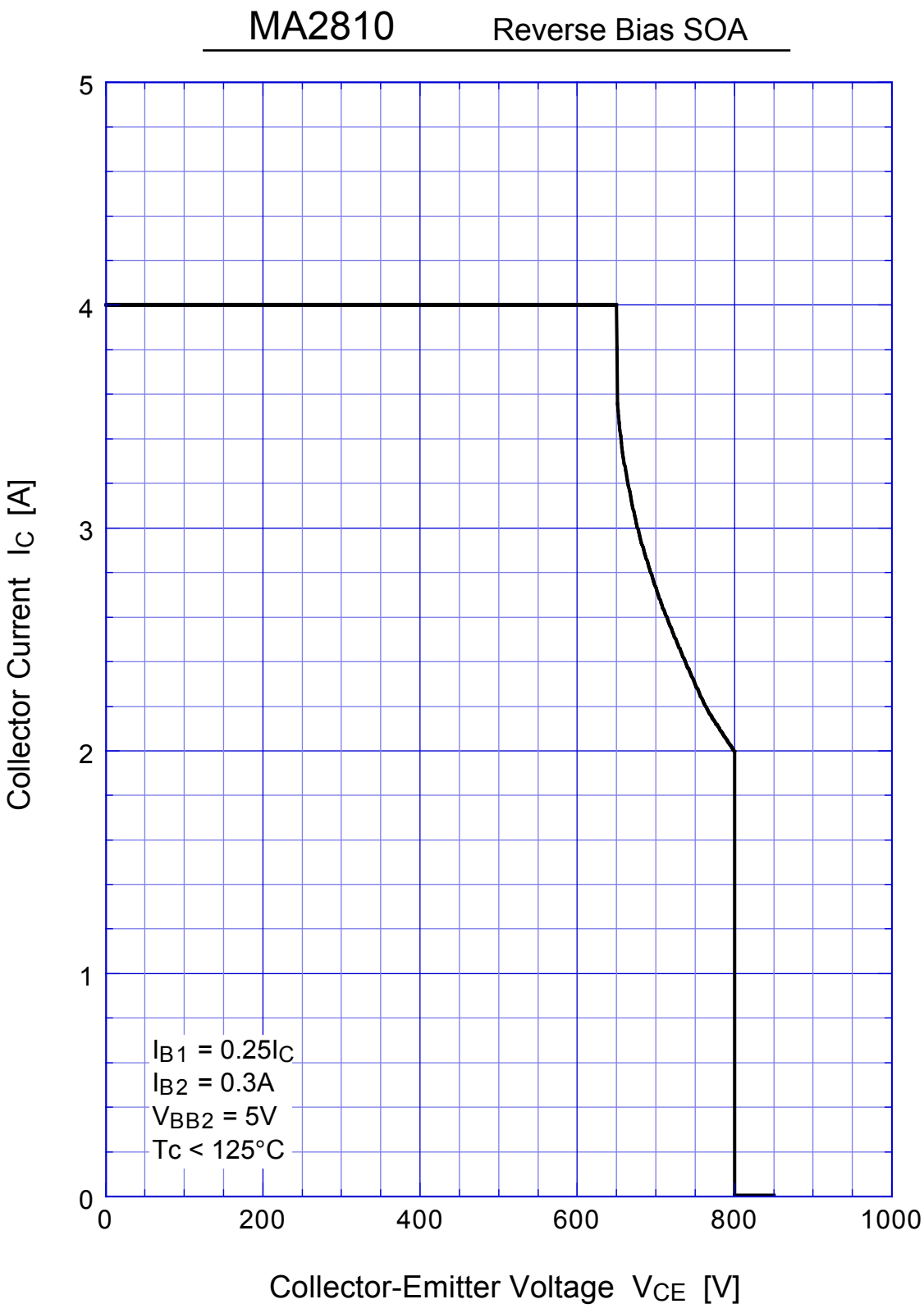
Fig2. Output Voltage/Current


MA2810
Transient Thermal Impedance
Transient Thermal Impedance θjc(t) [°C/W]
1000
100
10
1
0.1
0.01
10-5
10-4
10-3
10-2
10-1
100
101
102
Time t [s]

MA2810 Forward Bias SOA




MA2810 Collector Current Derating
100
80
60
40
20
0
Collector Current Rating [%]
0
50
100
150
Junction Temperature Tj [°C]
IS/B limit
PT limit
VCE = fixed


MA2810
Reverse Bias SOA
Collector Current I_C [A]
5
4
3
2
1
0
0
200
400
600
800
1000
Collector-Emitter Voltage V_{CE} [V]
I_{B1} = 0.25I_C
I_{B2} = 0.3A
V_{BB2} = 5V
Tc < 125°C

MA2810 h_{FE} - I_C