

High speed switching transistor (60V, 5A)

2SC5103

●Features

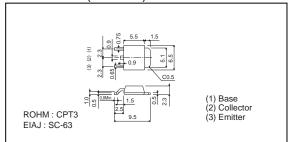
- 1) Low $V_{CE(sat)}$ (Typ. 0.15V at Ic / IB = 3 / 0.15A)
- 2) High speed switching (tf : Typ. 0.1 μ s at Ic = 3A)
- 3) Wide SOA. (safe operating area)
- 4) Complements the 2SA1952.

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Collector-base voltage	Vсво	100	V	
Collector-emitter voltage	Vceo	60	V	
Emitter-base voltage	VEBO	5	V	
Collector current	Ic	5	A(DC)	
		10	A(Pulse) *	
Collector power	Pc	1	W	
dissipation	PC	10	W(Tc=25°C)	
Junction temperature	Tj	150	°C	
Storage temperature	Tstg	-55 to +150	°C	

^{*}Single pulse Pw=100ms

●Dimensions (Unit:mm)



●Packaging specifications and hfe

Type	2SC5103
Package	CPT3
hfE	Q
Code	TL
Basic ordering unit (pieces)	2500

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions	
Collector-base breakdown voltage	ВУсво	100	-	-	V	Ic = 50μA	
Collector-emitter breakdown voltage	BVceo	60	-	-	V	Ic=1mA	
Emitter-base breakdown voltage	ВУево	5	-	-	V	Iε = 50μA	
Collector cutoff current	Ісво	-	-	10	μΑ	VcB = 100V	
Emitter cutoff current	ІЕВО	_	-	10	μΑ	V _{EB} = 5V	
Collector-emitter saturation voltage	VCE(sat)	-	0.15	0.3	V	Ic/IB = 3A/0.15A	*
		_	_	0.5	V	Ic/I _B = 4A/0.2A	*
Base-emitter saturation voltage	VBE(sat)	-	-	1.2	V	Ic/I _B = 3A/0.15A	*
		_	_	1.5	V	Ic/IB = 4A/0.2A	*
DC current transfer ratio	hfe	120	-	270	-	Vce/Ic = 2V/1A	
		40	-	-	_	Vce/Ic = 2V/3A	
Transition frequency	f⊤	-	120	-	MHz	Vcb = 10V , IE = -0.5A , f = 30MHz	
Output capacitance	Cob	_	80	-	pF	VcE = 10V , IE = 0A , f = 1MHz	*
Turn-on time	ton	_	_	0.3	μs	$Ic = 3A$, $R_L = 10\Omega$	
Storage time	tstg	-	-	1.5	μs	IB1 = -IB2 = 0.15A	
Fall time	tf	-	0.1	0.3	μs	Vcc ≃ 30V	

^{*} Measured using pulse current.

2SC5103 Data Sheet

•Electrical characteristics curves

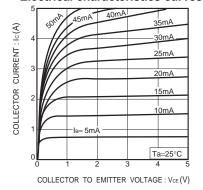


Fig.1 Ground emitter output characteristics

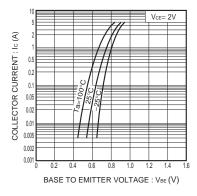


Fig.2 Ground emitter propagation characteristics

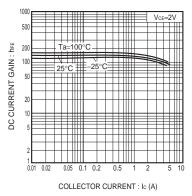


Fig.3 DC current gain vs. collector current

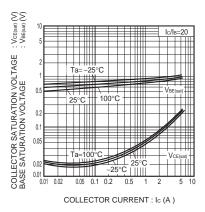


Fig.4 Collector-emitter saturation voltage —collector current Base-emitter saturation voltage

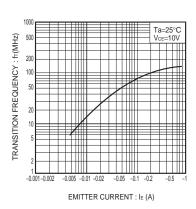


Fig.5 Gain bandwidth product vs.emitter current

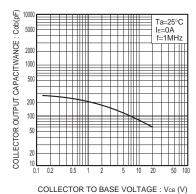


Fig.6 Collector output capacitance vs. collector-base voltage

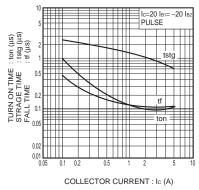


Fig.7 Switching characteristics

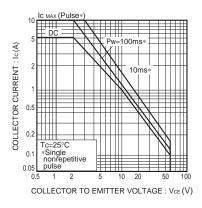


Fig.8 Safe operating area

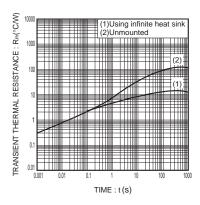
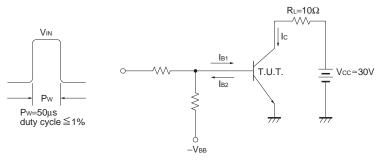


Fig.9 Transient thermal resistance

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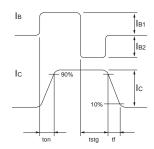


Fig.10 Switching characteristic circuit

Notes

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