

High-speed Switching Transistor

2SA1952 / 2SA1906 / 2SA1757

●Features

- 1) High speed switching (If : Typ. 0.15 μs at Ic=−3A)
- 2) Low Vce(sat). (Typ. −0.2V at Ic/Ib=−3/−0.15A)
- 3) Wide SOA (safe operating area)
- 4) Complements the 2SC5103/2SC4596.

●Packaging specifications and hFE

Type	2SA1952	2SA1906	2SA1757
Package	CPT3	PSD3	TO-220FP
hFE	Q	DEF	F
Code	TL	TL	—
Basic ordering unit (pieces)	3000	1000	500

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	Vcbo	−100	V
Collector-emitter voltage	Vceo	−60	V
Emitter-base voltage	Vebo	−5	V
Collector current	Ic	−5	A
		−10	A (Pulse)
Collector power dissipation	Pc	2	W
		10	W (Tc=25°C)
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55~150	°C

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BVcbo	−100	—	—	V	Ic=−50 μA
Collector-emitter voltage	BVceo(sus)	−60	—	—	V	Ic/Ib=−3A/−0.3A, L=1mH
Collector-emitter breakdown voltage	BVceo	−60	—	—	V	Ic=−1mA
Emitter-base breakdown voltage	BVebo	−5	—	—	V	Ie=−50 μA
Collector cutoff current	Icbo	—	—	−10	μA	Vcb=100V
Emitter cutoff current	Iebo	—	—	−10	μA	Veb=−5V
Collector-emitter saturation voltage	Vce(sat)	—	—	−0.3	V	Ic/Ib=−3A/−0.15A
		—	—	−0.5	V	Ic/Ib=−4A/−0.2A
Base-emitter saturation voltage	Vbe(sat)	—	—	−1.2	V	Ic/Ib=−3A/−0.15A
		—	—	−1.5	V	Ic/Ib=−4A/−0.2A
DC current transfer ratio	hFE	2SA1952	120	—	270	Vce=−2V, Ic=−1A
		2SA1906	60	—	320	
		2SA1757	160	—	320	
Transition frequency	fr	—	80	—	MHz	Vce=−10V, Ie=0.5A, f=30MHz
Output capacitance	Cob	—	130	—	pF	Vcb=−10V, Ie=0A, f=1MHz
Turn-on time	ton	—	—	0.3	μs	Ic=−3A, RL=10Ω
Storage time	tstg	—	—	1.5	μs	Ib1=−Ib2=−0.15A
Fall time	tf	—	—	0.3	μs	Vcc=−30V

(96-603-A314)

High-speed Switching Transistor

2SC5103 / 2SC4596

●Features

- 1) Low Vce(sat). (Typ. 0.15V at Ic/Ib=3/0.15A)
- 2) High speed switching (If : Typ. 0.1 μs at Ic=3A)
- 3) Wide SOA (safe operating area)
- 4) Complements the 2SA1952/2SA1757.

●Packaging specifications and hFE

Type	2SC5103	2SC4596
Package	CPT3	TO-220FP
hFE	PQ	EF
Code	TL	—
Basic ordering unit (pieces)	2500	500

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	Vcbo	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 dissipation	Pc	1	W
		2	W
		10	W (Tc=25°C)
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−55~150	°C

* Single pulse Pw=100ms

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BVcbo	100	—	—	V	Ic=50 μA
Collector-emitter voltage	BVceo(sus)	60	—	—	V	Ic/Ib=3A/0.3A, L=1mH
Collector-emitter breakdown voltage	BVceo	60	—	—	V	Ic=1mA
Emitter-base breakdown voltage	BVebo	5	—	—	V	Ie=50 μA
Collector cutoff current	Icbo	—	—	10	μA	Vcb=100V
Emitter cutoff current	Iebo	—	—	10	μA	Veb=5V
Collector-emitter saturation voltage	Vce(sat)	—	0.15	0.3	V	Ic/Ib=3A/0.15A *
		—	—	0.5	V	Ic/Ib=4A/0.2A *
Base-emitter saturation voltage	Vbe(sat)	—	—	1.2	V	Ic/Ib=3A/0.15A *
		—	—	1.5	V	Ic/Ib=4A/0.2A *
DC current transfer ratio	hFE	2SC5103	82	—	270	Vce/Ic=2V/1A
		2SC4596	100	—	320	
Transition frequency	fr	—	120	—	MHz	Vce=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, RL=10Ω
Storage time	tstg	—	—	1.5	μs	Ib1=−Ib2=0.15A
Fall time	tf	—	—	0.3	μs	Vcc=30V

* Measured using pulse current.

(96-199-C314)

Notes

- The contents described in this catalogue are correct as of March 1997.
- No unauthorized transmission or reproduction of this book, either in whole or in part, is permitted.
- The contents of this book are subject to change without notice. Always verify before use that the contents are the latest specifications. If, by any chance, a defect should arise in the equipment as a result of use without verification of the specifications, ROHM CO., LTD., can bear no responsibility whatsoever.
- Application circuit diagrams and circuit constants contained in this data book are shown as examples of standard use and operation. When designing for mass production, please pay careful attention to peripheral conditions.
- Any and all data, including, but not limited to application circuit diagrams, information, and various data, described in this catalogue are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO., LTD., disclaims any warranty that any use of such device shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes absolutely no liability in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices; other than for the buyer's right to use such devices itself, resell or otherwise dispose of the same; no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by ROHM CO., LTD., is granted to any such buyer.

The products listed in this catalogue are designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys). Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers, or other safety devices) please be sure to consult with our sales representatives in advance.

- Notes when exporting
 - It is essential to obtain export permission when exporting any of the above products when it falls under the category of strategic material (or labor) as determined by foreign exchange or foreign trade control laws.
 - Please be sure to consult with our sales representatives to ascertain whether any product is classified as a strategic material.