High-voltage Switching Transistor (Telephone power supply) (−400V, −0.5A)

2SA1812 / 2SA1727 / 2SA1776

●Features

1) High breakdown voltage, BV_{CEO}=−400V.
2) Low saturation voltage, typically $V_{CE(sat)}$ =−0.3V at I_C / I_B=−100mA / −10mA.
3) High switching speed, typically tf=1 μs at I_C=−100mA.
4) Wide SOA (safe operating area).

●Packaging specifications and h_{FE}

Type	2SA1812	2SA1727	2SA1776
Package	MPT3	CPT3	ATV
h_{FE}	PQ	PQ	PQ
Marking	AJ*	—	—
Code	T100	TL	TV2
Basic ordering unit (pieces)	3000	3000	2500

* Denotes h_{FE}

●Absolute maximum ratings (Ta=25℃)

Parameter		Symbol	Limits	Unit	
Collector-base voltage		V_{CBO}	−400	V	
Collector-emitter voltage		V_{CEO}	−400	V	
Emitter-base voltage		V_{EBO}	−7	V	
Collector current		I_C	−0.5	A (DC)	
			−1.0	A (Pulse)	*1
Collector power dissipation	2SA1812	P_C	0.5	W	
			2	W	*2
	2SA1727		1	W	
			10	W (Tc=25℃)	
	2SA1776		1	W	*3
Junction temperature		Tj	150	℃	
Storage temperature		Tstg	−55~+150	℃	

*1 Single pulse *2 When mounted on a 40×40×0.7mm ceramic board.
*3 When t = 1.7mm and the foil collector area on the PC board is 1cm² or greater.

●Electrical characteristics (Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	−400	—	—	V	I_C=−50 μA
Collector-emitter breakdown voltage	BV_{CEO}	−400	—	—	V	I_C=−1mA
Emitter-base breakdown voltage	BV_{EBO}	−7	—	—	V	I_E=−50 μA
Collector cutoff current	I_{CBO}	—	—	−1	μA	V_{CB}=−400V
Emitter cutoff current	I_{EBO}	—	—	−1	μA	V_{EB}=−6V
DC current transfer ratio	h_{FE}	82	150	270	—	V_{CE}=−5V, I_C=−50mA
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	−1	V	I_C/I_B=−100mA/−10mA
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	−1.2	V	I_C/I_B=−100mA/−10mA
Transition frequency	fT	—	12	—	MHz	V_{CB}=−5V, I_E=50mA, f=5MHz
Output capacitance	Cob	—	18	—	pF	V_{CE}=−10V, I_E=0A, f=1MHz
Turn-on time	t_{on}	—	0.6	—	μs	I_C=−100mA, R_L=1.5kΩ I_{B1}=−I_{B2}=−10mA V_{CC}≒−150V
Storage time	t_{stg}	—	2.7	—	μs	
Fall time	tf	—	1	—	μs	

(96-609-A313)