

# High-voltage Amplifier Transistor (−210V, −30mA)

## 2SA821S

### ●Features

- 1) High breakdown voltage, ( $V_{CEr} = -210V$ )
- 2) Complements the 2SC1651S.

### ●Packaging specifications and hFE

Type	2SA821
Package	SPT
hFE	PQ
Code	TP
Basic ordering unit (pieces)	5000

### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBo}$	−210	V
Collector-emitter voltage	$V_{CEr}$	−210	V *
Emitter-base voltage	$V_{EBo}$	−5	V
Collector current	$I_c$	−30	mA
Collector power dissipation	$P_c$	250	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	−55~+150	°C

\*  $R_{BE} = 10k\Omega$ 

### ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBo}$	−210	—	—	V	$I_c = -50\mu A$
Collector-emitter breakdown voltage	$BV_{CEr}$	−210	—	—	V	$I_c = -100\mu A$ , $R_{BE} = 10k\Omega$
Emitter-base breakdown voltage	$BV_{EBo}$	−5	—	—	V	$I_E = -50\mu A$
Collector cutoff current	$I_{cBo}$	—	—	−1	$\mu A$	$V_{CB} = -150V$
Emitter cutoff current	$I_{eBo}$	—	—	−1	$\mu A$	$V_{EB} = -4.5V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	−1	V	$I_c/I_E = -2mA/-0.2mA$
DC current transfer ratio	hFE	56	—	270	—	$V_{CE} = -3V$ , $I_c = -5mA$
Transition frequency	$f_t$	—	50	—	MHz	$V_{CE} = -5V$ , $I_E = 2mA$ , $f = 30MHz$
Output capacitance	$C_{ob}$	—	8	—	pF	$V_{CB} = -10V$ , $I_E = 0A$ , $f = 1MHz$

(94L-183-A35)

# High-voltage Amplifier Transistor (210V, 30mA)

## 2SC1651S

### ●Features

- 1) High breakdown voltage, ( $V_{CEr} = 210V$ )
- 2) Complements the 2SA821S.

### ●Packaging specifications and hFE

Type	2SC1651S
Package	SPT
hFE	PQ
Code	TP
Basic ordering unit (pieces)	5000

### ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBo}$	210	V
Collector-emitter voltage	$V_{CEr}$	210	V *
Emitter-base voltage	$V_{EBo}$	5	V
Collector current	$I_c$	30	mA
Collector power dissipation	$P_c$	250	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	−55~+150	°C

\*  $R_{BE} = 10k\Omega$ 

### ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBo}$	210	—	—	V	$I_c = 50\mu A$
Collector-emitter breakdown voltage	$BV_{CEr}$	210	—	—	V	$I_c = 100\mu A$ , $R_{BE} = 10k\Omega$
Emitter-base breakdown voltage	$BV_{EBo}$	5	—	—	V	$I_E = 50\mu A$
Collector cutoff current	$I_{cBo}$	—	—	1	$\mu A$	$V_{CB} = 150V$
Emitter cutoff current	$I_{eBo}$	—	—	1	$\mu A$	$V_{EB} = 4.5V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	1	V	$I_c/I_E = 2mA/0.2mA$ , $f = 30MHz$
DC current transfer ratio	hFE	82	—	270	—	$V_{CE} = 3V$ , $I_c = 5mA$
Transition frequency	$f_t$	—	60	—	MHz	$V_{CE} = 5V$ , $I_E = -2mA$
Output capacitance	$C_{ob}$	—	6	—	pF	$V_{CB} = 10V$ , $I_E = 0A$ , $f = 1MHz$

(94L-519-C35)