2SA1728



# **High-Speed Switching Applications**

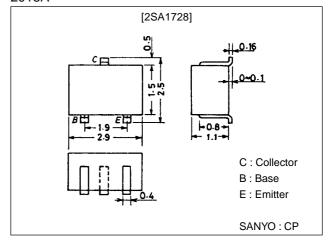
#### **Features**

- · Adoption of FBET process.
- · Low collector-to-emitter saturation voltage.
- · Fast switching speed.
- · Small-sized package.

## **Package Dimensions**

unit:mm

2018A



### **Specifications**

### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CBO</sub>		<del>-</del> 50	V
Collector-to-Emitter Voltage	VCEO		-40	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		-5	V
Collector Current	IC		-500	mA
Collector Current (Pulse)	I <sub>CP</sub>		-1	Α
Collector Dissipation	PC		200	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

#### Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Offic
Collector Cutoff Current	ICBO	V <sub>CB</sub> =-40V, I <sub>E</sub> =0			-0.5	μΑ
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =-3V, I <sub>C</sub> =0			-0.5	μA
DC Current Gain	h <sub>FE</sub> 1	$V_{CE}$ =-2V, $I_{C}$ =-50mA	70*		280*	
	h <sub>FE</sub> 2	V <sub>CE</sub> =-2V, I <sub>C</sub> =-500mA	25			
Gain-Bandwidth Product	fT	V <sub>CE</sub> =-2V, I <sub>C</sub> =-50mA		350		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =-10V, f=1MHz		6		pF
Collector-to-Emitter Saturatin Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =-200mA, I <sub>B</sub> =-10mA		-0.2	-0.5	V
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =-200mA, I <sub>B</sub> =-10mA		-0.8	-1.2	V

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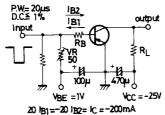
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Offic
Collector-to-Base Breakdown Voltage	V(BR)CBO	I <sub>C</sub> =-10μA, I <sub>E</sub> =0	<i>–</i> 50			V
Collector-to-Emitter Saturation Voltage	V <sub>(BR)</sub> CEO	I <sub>C</sub> =-1mA, R <sub>BE</sub> =∞	-40			V
Emitter-to-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =-10μA, I <sub>C</sub> =0	-5			V
Turn-ON Time	ton	See specified Test Circuit		60	120	ns
Storage Time	t <sub>stg</sub>	See specified Test Circuit		120	220	ns
Turn-OFF Time	t <sub>off</sub>	See specified Test Circuit		170	320	ns

<sup>\* :</sup> The 2SA1728 is classified by 50mA  $h_{FE}$  as follows :

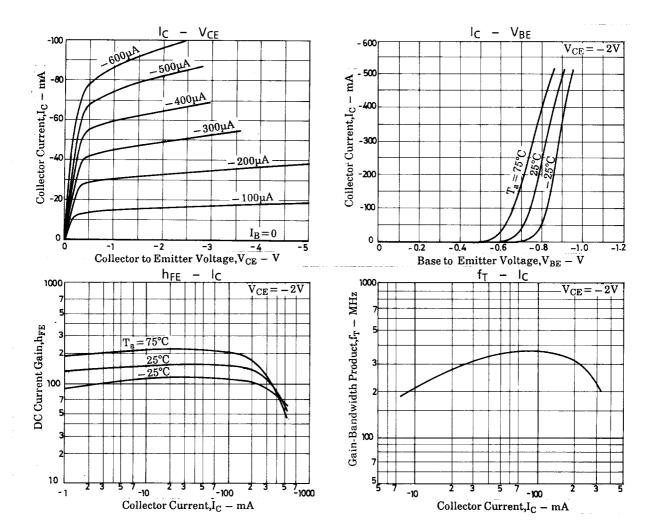
70 3 140	100 4 200	140 5 280
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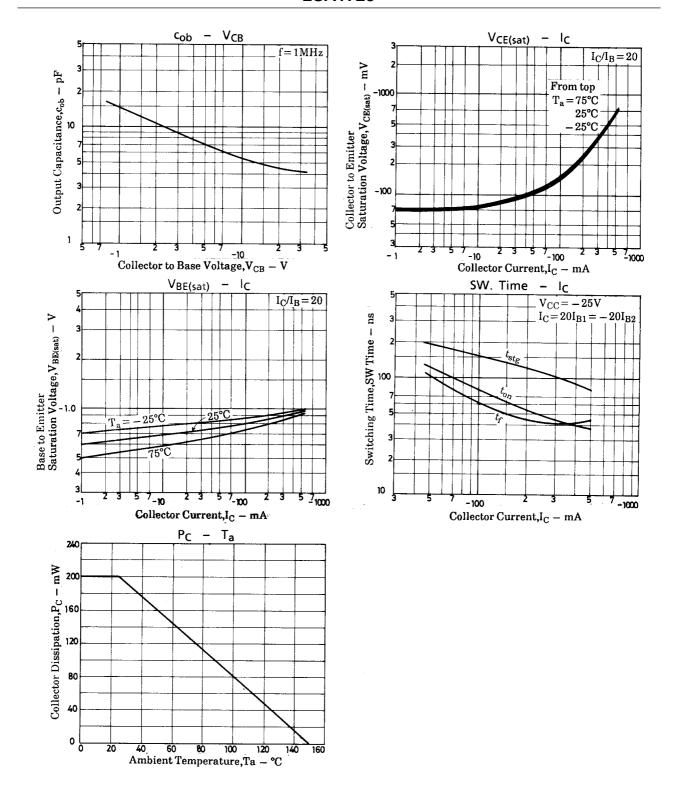
Marking : DS h<sub>FE</sub> rank : 3, 4, 5

### **Switching Time Test Circuit**



Unit (resistacne :  $\Omega$ , capacitance : F)





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