

**SANYO**

No.2021A

**2SB1166/2SD1723**

PNP/NPN Epitaxial Planar Silicon Transistors

**50V/8A Switching Applications****Applications**

- Relay drivers, high-speed inverters, converters

**Features**

- Low collector-to-emitter saturation voltage
- High  $f_T$
- Excellent linearity of  $h_{FE}$
- Fast switching time

( ): 2SB1166

**Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$** 

Absolute Maximum Ratings at Ta=25°C			unit
Collector-to-Base Voltage	V <sub>CB0</sub>	(-)60	V
Collector-to-Emitter Voltage	V <sub>CE0</sub>	(-)50	V
Emitter-to-Base Voltage	V <sub>EB0</sub>	(-)6	V
Collector Current	I <sub>C</sub>	(-)8	A
Collector Current (Pulse)	I <sub>CP</sub>	(-)12	A
Collector Dissipation	P <sub>C</sub>	1.2	W
		20	W
		150	°C
Junction Temperature	T <sub>j</sub>		
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C

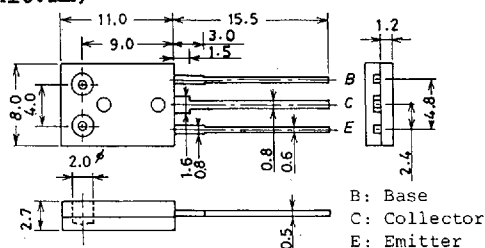
**Electrical Characteristics at  $T_a=25^\circ\text{C}$** 

			min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=(-)40\text{V}, I_E=0$			(-)1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4\text{V}, I_C=0$			(-)1	$\mu\text{A}$
DC Current Gain	$h_{FE}(1)$	$V_{CE}=(-)2\text{V}, I_C=(-)0.5\text{A}$	70*		400*	
	$h_{FE}(2)$	$V_{CE}=(-)2\text{V}, I_C=(-)6\text{A}$	35			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)5\text{V}, I_C=(-)1\text{A}$		180		MHz
				(130)		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10\text{V}, f=1\text{MHz}$		65		pF
				(95)		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)4\text{A}, I_B=(-)0.2\text{A}$		200	400	mV
				(-250)	(-500)	mV

Continued on next page.

\*: The 2SB1166/2SD1723 are classified by 0.5A  $h_{FE}$  as follows:

70	Q	140	100	R	200	140	S	280	200	T	400
----	---	-----	-----	---	-----	-----	---	-----	-----	---	-----

**Package Dimensions 2043A**  
(unit:mm)

SANYO: TO126LP

**SANYO Electric Co., Ltd. Semiconductor Business Headquarters**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

Continued from preceding page.

			min	typ	max	unit
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)4A, I_B = (-)0.2A$		$(-)0.95$	$(-)1.3$	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu A, I_E = 0$		$(-)60$		V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$		$(-)50$		V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10\mu A, I_C = 0$		$(-)6$		V
Turn-on Time	$t_{on}$	See specified Test Circuit.		50		ns
				(50)		ns
Storage Time	$t_{stg}$	"		500		ns
				(450)		ns
Fall Time	$t_f$	"		20		ns
				(20)		ns

## Switching Time Test Circuit

