Ordering number: EN2060A

SANYO

No.2060A

2SB1142/2SD1682

PNP/NPN Epitaxial Planar Silicon Transistors

50V/2.5A High-Speed Switching Applications

Applications

· Power supplies, relay drivers, lamp drivers.

Features

- Adoption of FBET, MBIT processes.
- Low saturation voltage.
- Large current capacity and Wide ASO.

( ) : 2SB1142

Absolute Maximum Ratings at Ta = 25°C

				unit
Collector-to-Base Voltage	V_{CBO}		(−)60	V
Collector-to-Emitter Voltage	V_{CEO}		(−)50	V
Emitter-to-Base Voltage	V_{EBO}		(−)6	V
Collector Current	I_C		(−)2.5	A
Collector Current (Pulse)	I_{CP}		(−)5.0	A
Collector Dissipation	P_C		1.5	W
		Tc = 25°C	10	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta = 25°C

			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	V_{CB} = (−)50V, I_E = 0			(−)100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB} = (−)4V, I_C = 0			(−)100	nA
DC Current Gain	$h_{FE}(1)$	V_{CE} = (−)2V, I_C = (−)100mA	(100)※		(400)	
			100※		560	
	$h_{FE}(2)$	V_{CE} = (−)2V, I_C = (−)2A	35			
Gain-Bandwidth Product	f_T	V_{CE} = (−)10V, I_C = (−)50mA		140		MHz
C-E Saturation Voltage	$V_{CE(sat)}$	I_C = (−)1A, I_B = (−)50mA		(−250)	(−500)	mV
				110	300	mV
B-E Saturation Voltage	$V_{BE(sat)}$	I_C = (−)1A, I_B = (−)50mA		(−)0.85	(−)1.2	V
Output Capacitance	C_{ob}	V_{CE} = (−)10V, f = 1MHz		(25)16		pF

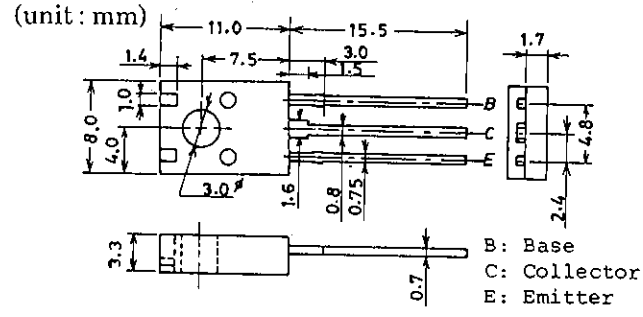
Continued on next page.

※ : The 2SB1142/2SD1682 are classified by 100mA h_{FE} as follows

2SB1142	100 R 200	140 S 280	200 T 400
2SD1682	100 R 200	140 S 280	200 T 400	280 U 560

Package Dimensions 2042A

(unit : mm)



B: Base
C: Collector
E: Emitter

SANYO: TO126ML

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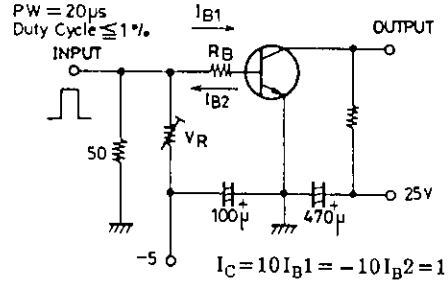
Continued from preceding page.

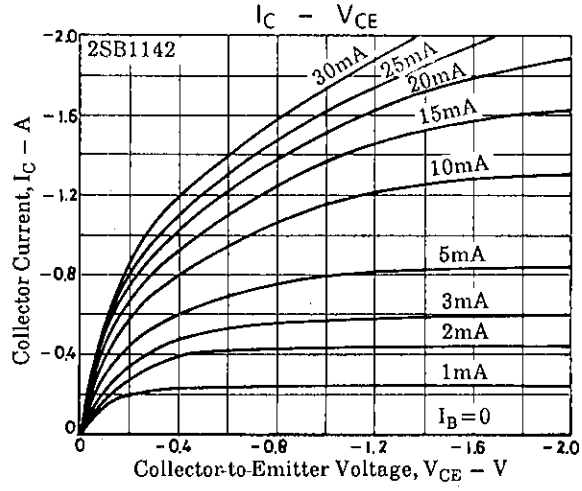
			min	typ	max	unit
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(−)60			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(−)50			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(−)6			V
Turn-on Time	t_{on}	See specified Test Circuit.		(35)35		ns
Storage Time	t_{stg}	〃		(350)550		ns
Fall Time	t_f	〃		(30)30		ns

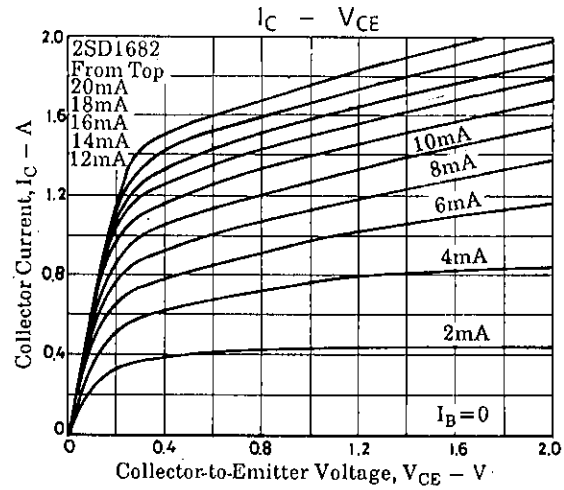
Switching Time Test Circuit

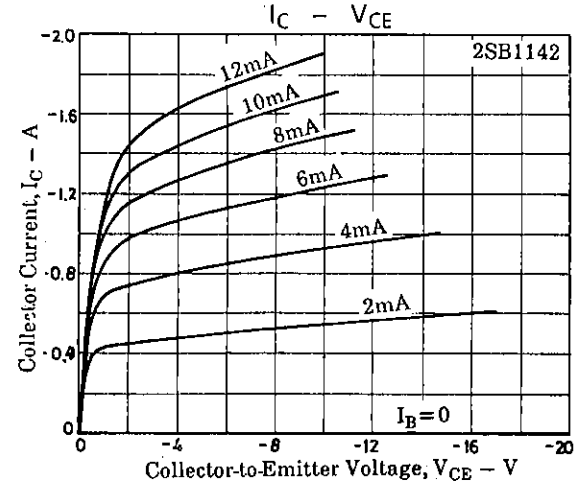


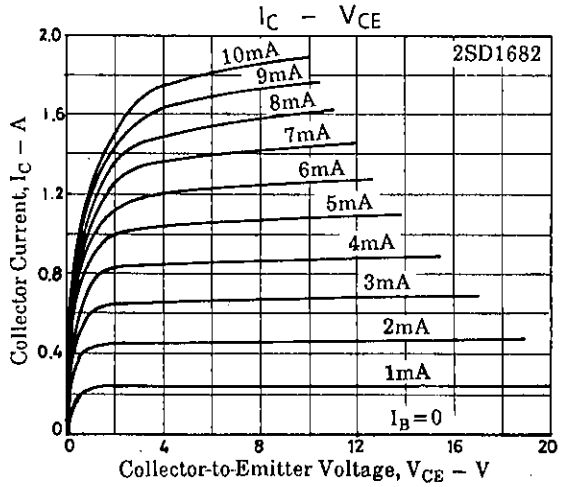
$I_C=10I_B1=-10I_B2=1A$
(For PNP, the polarity is reversed).

Unit (Resistance : Ω, Capacitance : F)

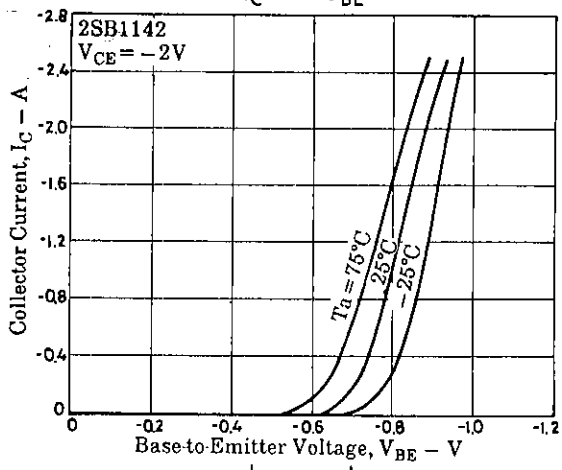




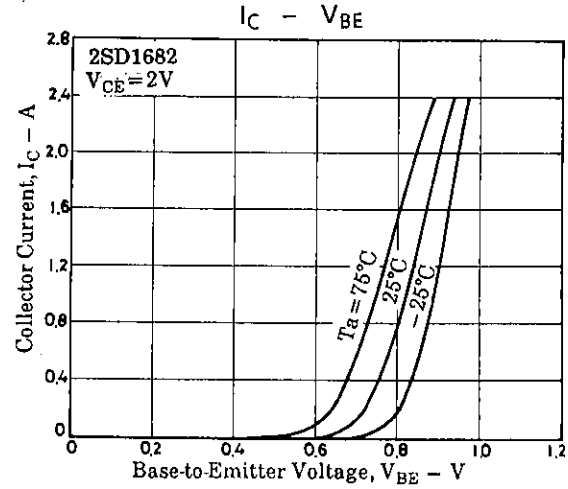




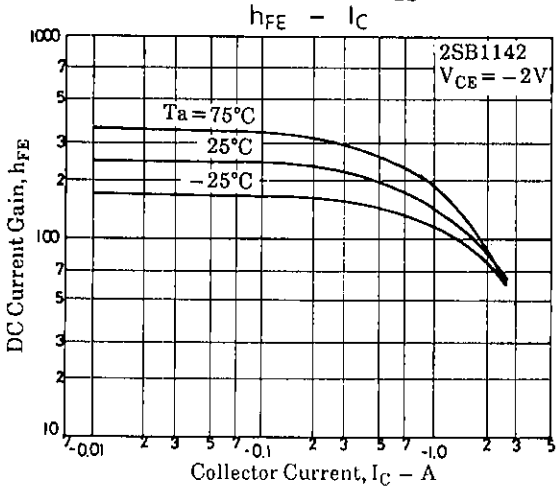
I_C – V_{BE}



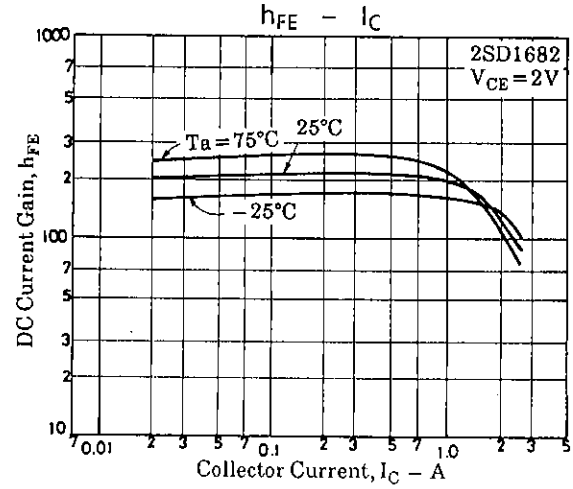
I_C – V_{BE}



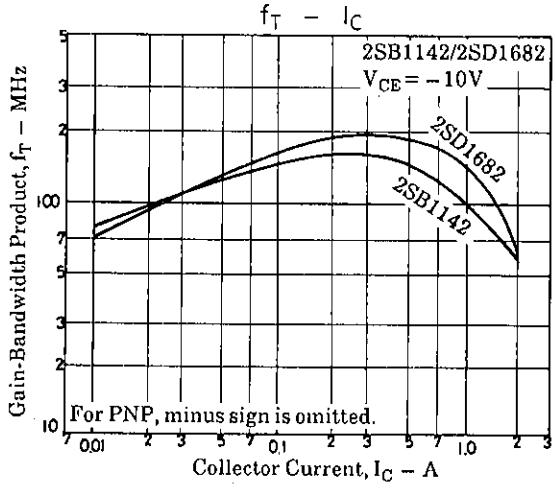
h_{FE} – I_C



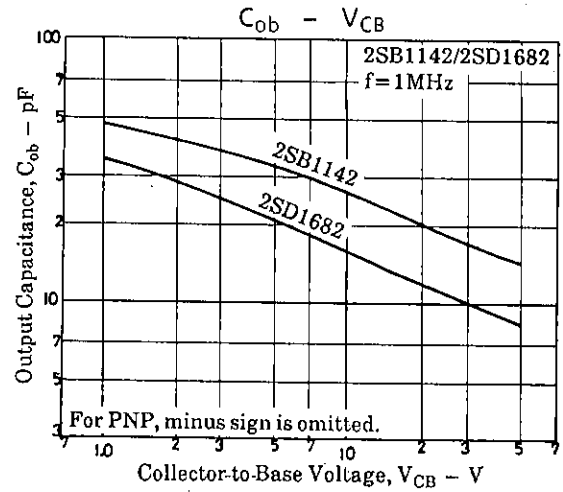
h_{FE} – I_C



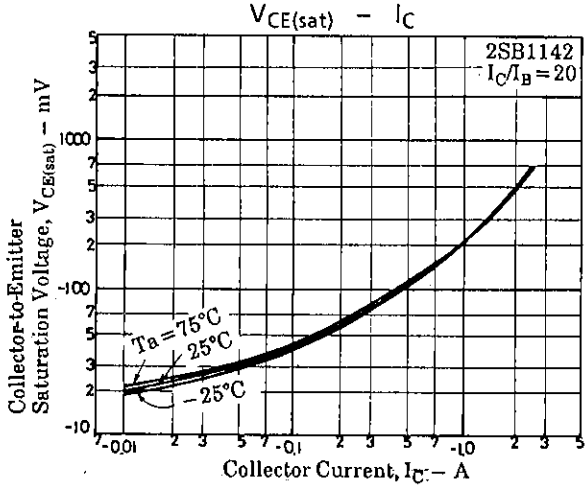
f_T – I_C



C_{ob} – V_{CB}



$V_{CE(sat)}$ – I_C



$V_{CE(sat)}$ – I_C