Ordering number:1797B

PNP/NPN Epitaxial Planar Silicon Transistors

2SB921L/2SD1237L

80V/7A Switching Applications

Applications

· Suitable for relay drivers, high-speed inverters, converters, and other genral large current switching applications.

Features

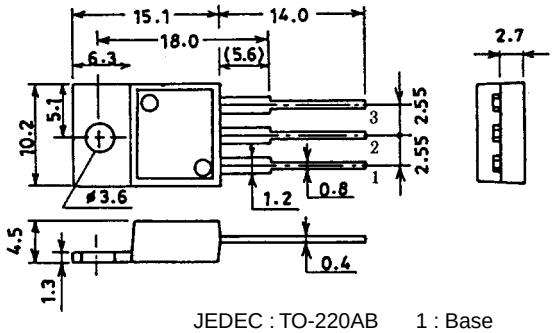
· Low collector-to-emitter saturation voltage : $V_{CE(sat)}$=–0.5V (PNP), 0.4V (NPN) max.
· Large current capacity.

Package Dimensions

unit:mm

2010C

[2SB921L/2SD1237L]



JEDEC : TO-220AB
EIAJ : SC-46

1 : Base
2 : Collector
3 : Emitter

( ) : 2SB921L

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)90	V
Collector-to-Emitter Voltage	V_{CEO}		(–)80	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)7	A
Collector Current (Pulse)	I_{CP}		(–)12	A
Collector Dissipation	P_C		1.75	W
		Tc=25˚C	40	W
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	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)80V, I_E=0			(–)0.1	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)0.1	mA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)2V, I_C=(–)1A	70*		280*	
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)4A	30			
Gain-Bandwidth Product	f_T	V_{CE}=(–)5V, I_C=(–)1A		20		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)4A, I_B=(–)0.4A			0.4	V
					(–0.5)	V

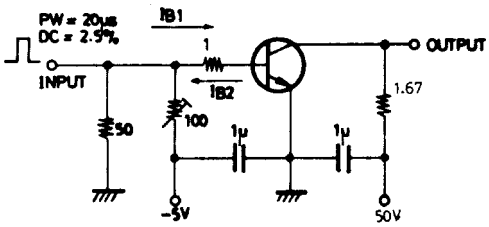
* : The 2SB921/2SD1237 are graded as follows by h_{FE} at 1A :

70	Q	140	100	R	200	140	S	280

SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)1mA, I_E=0	(–)90			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)80			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)1mA I_C=0	(–)6			V
Turn-ON Time	t_{on}	See specified Test Circuit		(0.2)		µs
				0.1		µs
Storage Time	t_{stg}	See specified Test Circuit		(0.7)		µs
				1.6		µs
Fall Time	t_f	See specified Test Circuit		(0.2)		µs
				0.4		µs

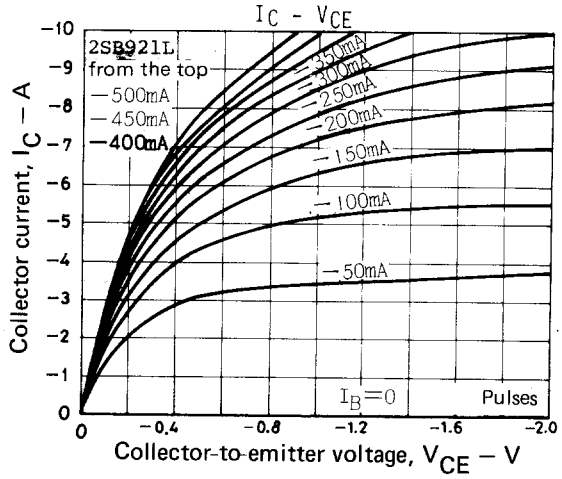
Switching Time Test Circuit

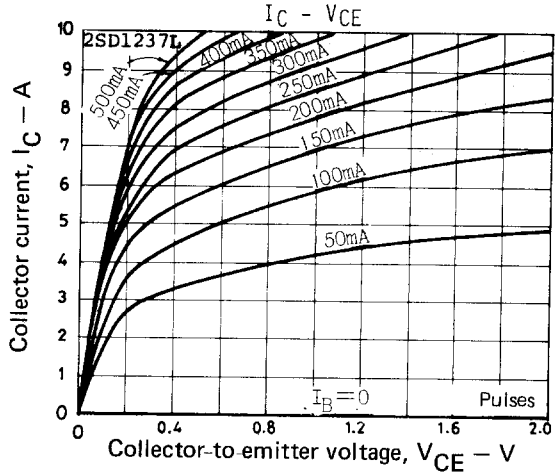


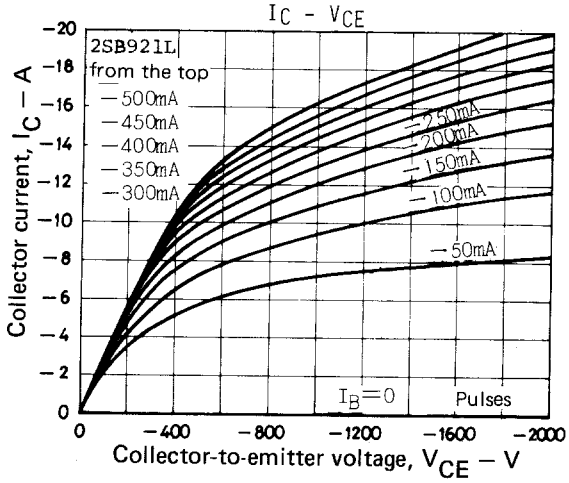
(For PNP, the polarity is reversed)

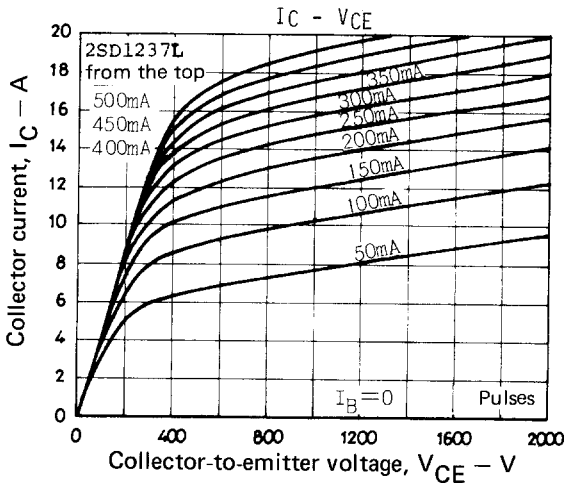
$10I_{B1} = -10I_{B2} = I_C = 2A$

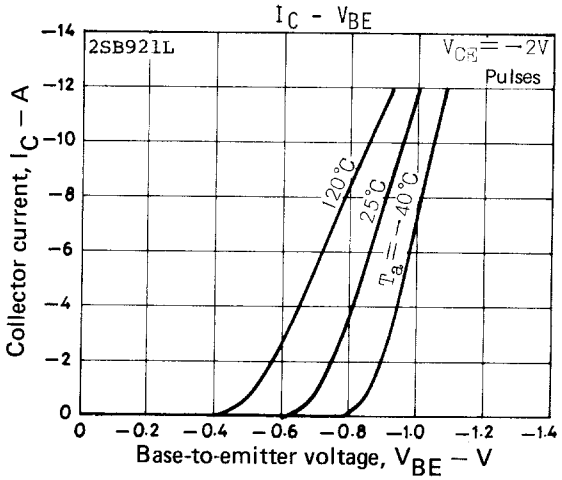
Unit (resistance : Ω, capacitance : F)

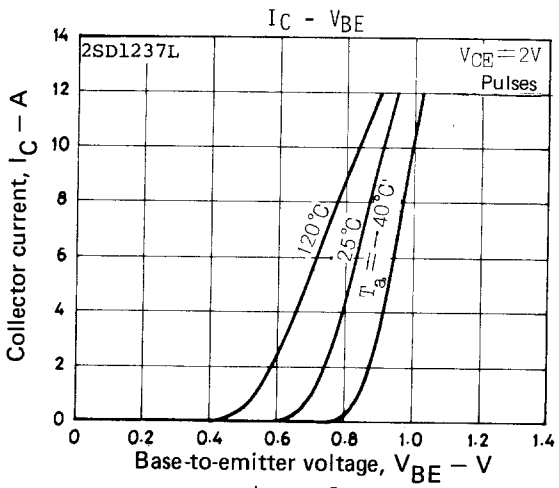


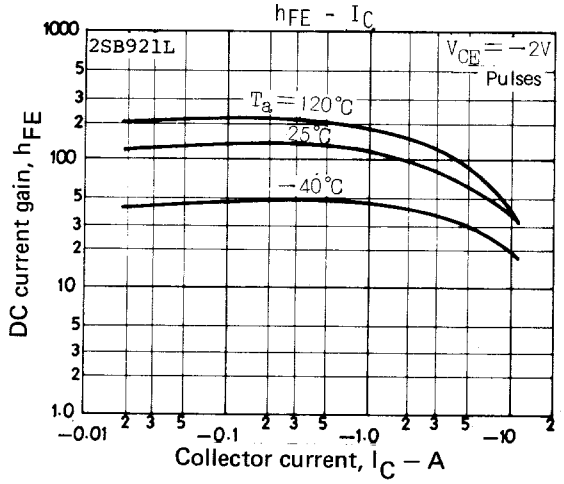


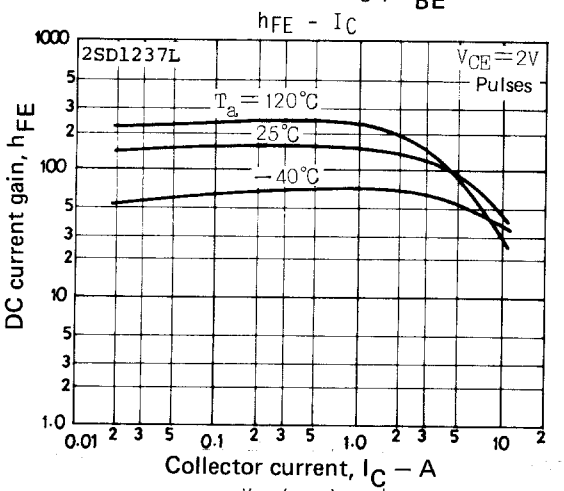


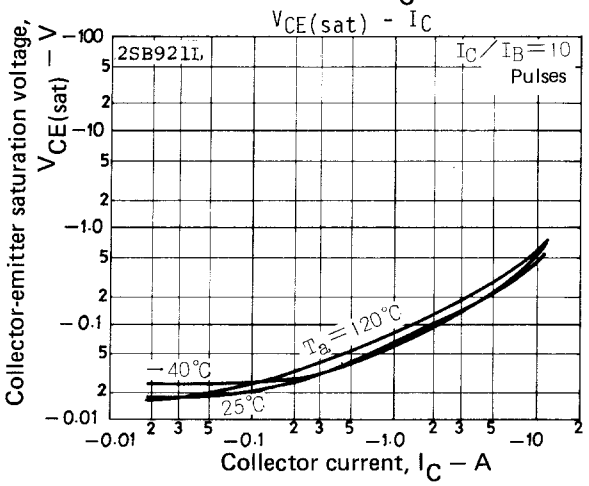


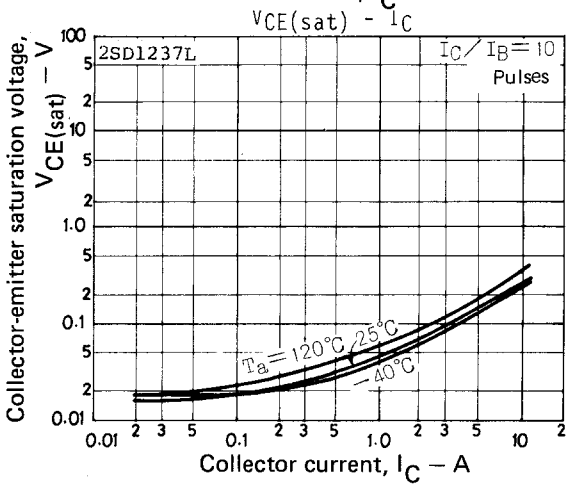

I_C - V_{BE}
2SB921L
V_{CE} = −2V
Pulses
120°C
25°C
T_a = −40°C
Collector current, I_C − A
Base-to-emitter voltage, V_{BE} − V

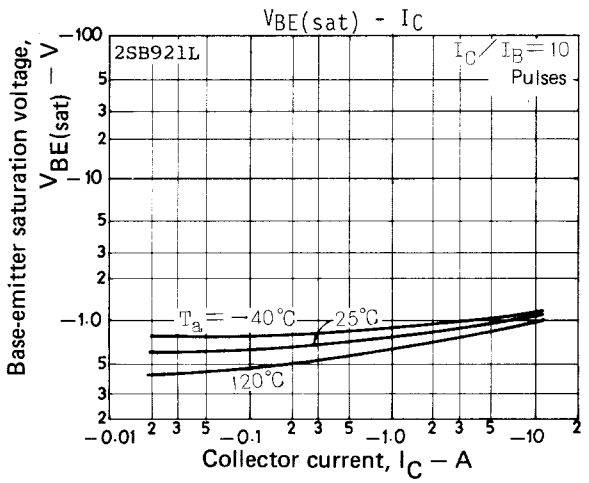

I_C - V_{BE}
2SD1237L
V_{CE} = 2V
Pulses
120°C
25°C
T_a = −40°C
Collector current, I_C − A
Base-to-emitter voltage, V_{BE} − V

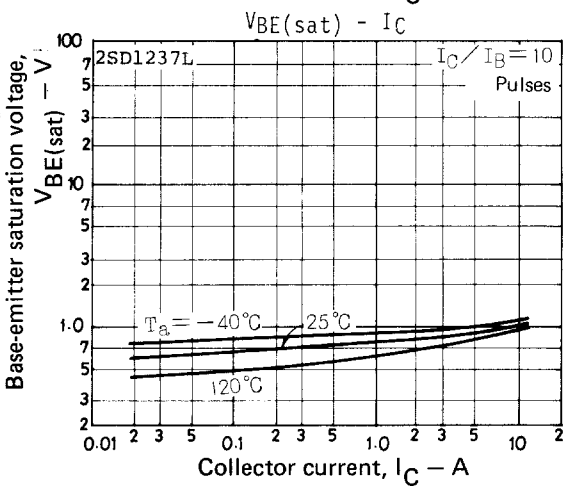

h_{FE} - I_C
2SB921L
V_{CE} = −2V
Pulses
T_a = 120°C
25°C
−40°C
DC current gain, h_{FE}
Collector current, I_C − A


h_{FE} - I_C
2SD1237L
V_{CE} = 2V
Pulses
T_a = 120°C
25°C
−40°C
DC current gain, h_{FE}
Collector current, I_C − A


$V_{CE(sat)}$ - I_C
2SB921L
I_C / I_B = 10
Pulses
T_a = 120°C
25°C
−40°C
Collector-emitter saturation voltage, $V_{CE(sat)}$ − V
Collector current, I_C − A


$V_{CE(sat)}$ - I_C
2SD1237L
I_C / I_B = 10
Pulses
T_a = 120°C
25°C
−40°C
Collector-emitter saturation voltage, $V_{CE(sat)}$ − V
Collector current, I_C − A


$V_{BE(sat)}$ - I_C
2SB921L
I_C / I_B = 10
Pulses
T_a = −40°C
25°C
120°C
Base-emitter saturation voltage, $V_{BE(sat)}$ − V
Collector current, I_C − A


$V_{BE(sat)}$ - I_C
2SD1237L
I_C / I_B = 10
Pulses
T_a = −40°C
25°C
120°C
Base-emitter saturation voltage, $V_{BE(sat)}$ − V
Collector current, I_C − A