

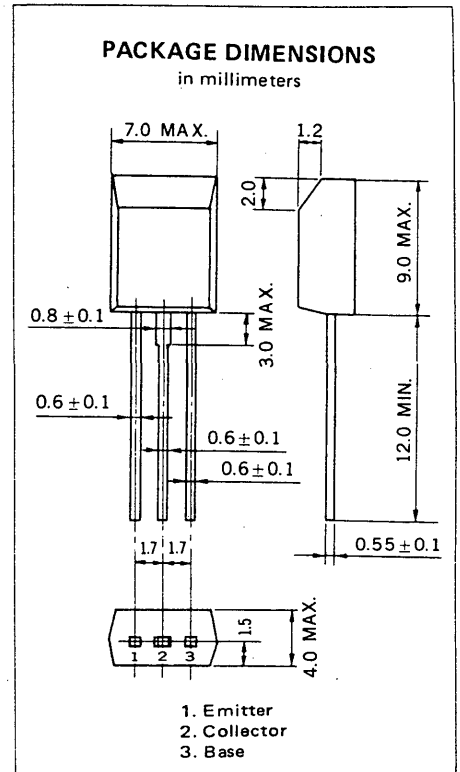
DESCRIPTION The 2SB1117 is a Low $V_{CE(sat)}$ transistor which has a large current capability and wide ASO. It is suitable for driver of solenoid or motor, or electronic flash.

- FEATURES**
- Low Collector Saturation Voltage.
 $V_{CE(sat)} = -0.2$ V TYP. (@ $I_C/I_B = -2.0$ A/ -0.2 A)
 - Large Current.
 $I_{C(DC)} = -3.0$ A, $I_{C(pulse)} = -5.0$ A
 - High DC Current Gain. :
 $h_{FE} = 300$ TYP. (@ $V_{CE} = -2.0$ V, $I_C = -1.0$ A)
 - High Total Power Dissipation. : $P_T = 1.0$ W
 - Complementary to the NEC 2SD1617 NPN Transistor.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures	
Storage Temperature	-55 to +150 °C
Junction Temperature	150 °C Maximum
Maximum Power Dissipation ($T_a = 25$ °C)	
Total Power Dissipation	1.0 W
Maximum Voltages and Currents ($T_a = 25$ °C)	
V_{CBO} Collector to Base Voltage	-30 V
V_{CEO} Collector to Emitter Voltage	-25 V
V_{EBO} Emitter to Base Voltage	-6.0 V
I_C Collector Current (DC)	-3.0 A
I_C Collector Current (pulse)*	-5.0 A

*PW ≤ 10 ms, Duty Cycle ≤ 50 %



ELECTRICAL CHARACTERISTICS ($T_a = 25$ °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1}^{**}	DC Current Gain	135	300	600	—	$V_{CE} = -2.0$ V, $I_C = -1.0$ A
h_{FE2}^{**}	DC Current Gain	81			—	$V_{CE} = -2.0$ V, $I_C = -2.0$ A
f_T	Gain Bandwidth Product	100	280		MHz	$V_{CE} = -5.0$ V, $I_E = 1.0$ A
C_{ob}	Output Capacitance		90		pF	$V_{CB} = -10$ V, $I_E = 0$, $f = 1.0$ MHz
I_{CBO}	Collector Cutoff Current			-100	nA	$V_{CB} = -30$ V, $I_E = 0$
I_{EBO}	Emitter Cutoff Current			-100	nA	$V_{EB} = -6.0$ V, $I_C = 0$
V_{BE}^{**}	Base to Emitter Voltage	-600	-660	-700	mV	$V_{CE} = -2.0$ V, $I_C = -0.1$ A
$V_{CE(sat)1}^{**}$	Collector Saturation Voltage		-0.2	-0.3	V	$I_C = -2.0$ A, $I_B = -0.2$ A
$V_{CE(sat)2}^{**}$	Collector Saturation Voltage		-0.3	-0.5	V	$I_C = -3.0$ A, $I_B = -0.3$ A
$V_{BE(sat)}^{**}$	Base Saturation Voltage		-1.0	-1.2	V	$I_C = -2.0$ A, $I_B = -0.2$ A
t_{on}	Turn On Time		80		ns	$V_{CE} = -10$ V, $I_C = -500$ mA $I_{B1} = -I_{B2} = -50$ mA $V_{BE(off)} = 2$ to 3 V
t_{stg}	Storage Time		500		ns	
t_f	Fall Time		70		ns	

**Pulsed PW ≤ 350 μs, Duty Cycle ≤ 2%

Classification of h_{FE1}

Rank	L	K	U
Range	135 to 270	200 to 400	300 to 600

Test Conditions: $V_{CE} = -2.0$ V, $I_C = -1.0$ A

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

