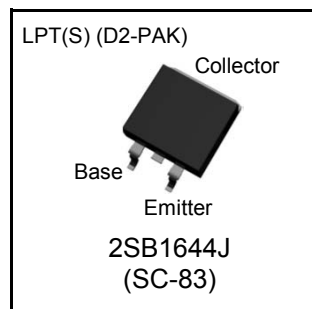


Parameter	Value
V_{CEO}	-80V
I_C	-4A

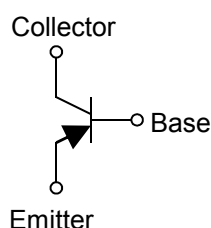
●Features

- 1) Suitable for Power Driver
- 2) Low $V_{CE(sat)}$
 $V_{CE(sat)} = -1.5V(\text{Max.}) (I_C/I_B = -3A/-300mA)$
- 3) Lead Free/RoHS Compliant.

●Outline



●Inner circuit



●Applications

Automotive power driver , LED driver
Power supply

●Packaging specifications

Part No.	Package	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
2SB1644J	Taping	TL	330	24	1,000	B1644

●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter		Symbol	Values	Unit
Collector-base voltage		V_{CBO}	−80	V
Collector-emitter voltage		V_{CEO}	−80	V
Emitter-base voltage		V_{EBO}	−5	V
Collector current	DC	I_C	−4	A
	Pulsed	I_{CP}^{*1}	−6	A
Power dissipation		P_D^{*2}	30	W
Junction temperature		T_j	150	°C
Range of storage temperature		T_{stg}	−55 to +150	°C

*1 $P_w=100\text{ms}$, single pulse

*2 $T_c=25^\circ\text{C}$

●Electrical characteristics (Ta = 25°C)

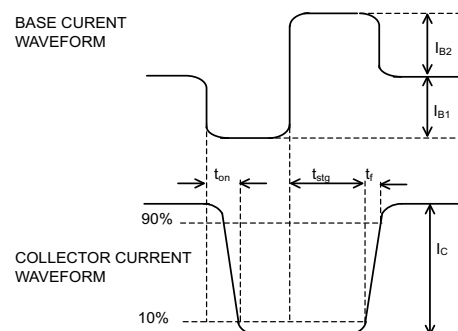
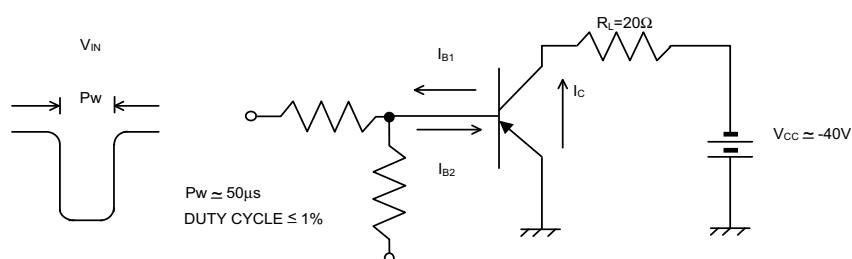
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = -1\text{mA}$	-80	-	-	V
Collector-base breakdown voltage	BV_{CBO}	$I_C = -50\mu\text{A}$	-80	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = -50\mu\text{A}$	-5	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB} = -80\text{V}$	-	-	-10	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -4\text{V}$	-	-	-10	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -3\text{A}$, $I_B = -300\text{mA}$	-	-	-1.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -3\text{A}$, $I_B = -300\text{mA}$	-	-	-1.5	V
DC current gain	h_{FE}^{*3}	$V_{CE} = -5\text{V}$, $I_C = -1\text{A}$	100	-	320	-
Transition frequency	f_T	$V_{CE} = -5\text{V}$, $I_E = 500\text{mA}$ $f = 5\text{MHz}$	-	12	-	MHz
Output capacitance	C_{ob}	$V_{CB} = -10\text{V}$, $I_E = 0\text{A}$, $f = 1\text{MHz}$	-	100	-	pF
Turn-on time	t_{on}^{*4}	$I_C = -2\text{A}$ $I_{B1} = -200\text{mA}$ $I_{B2} = 200\text{mA}$ $V_{CC} \approx -40\text{V}$	-	160	-	ns
Storage time	t_{stg}^{*4}		-	1000	-	ns
Fall time	t_f^{*4}		-	600	-	ns

*3 h_{FE} rank

*4 See switching time test circuit

● h_{FE} rank categories

Rank	E	F
h_{FE}	100 to 200	160 to 320



●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

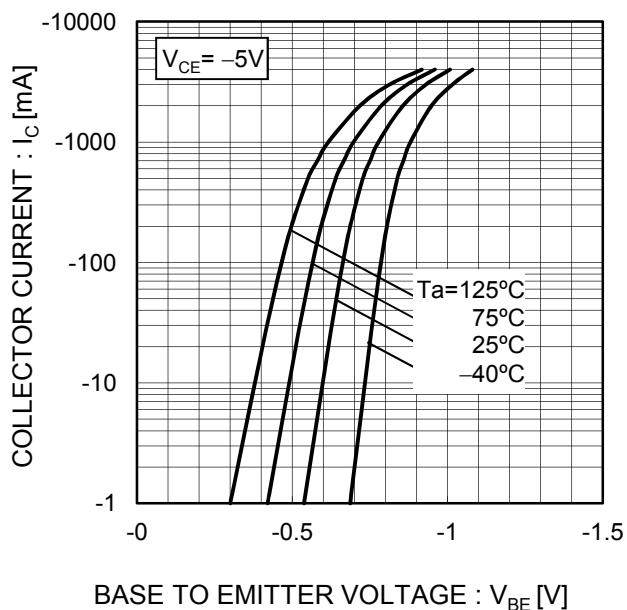


Fig.2 Typical Output Characteristics

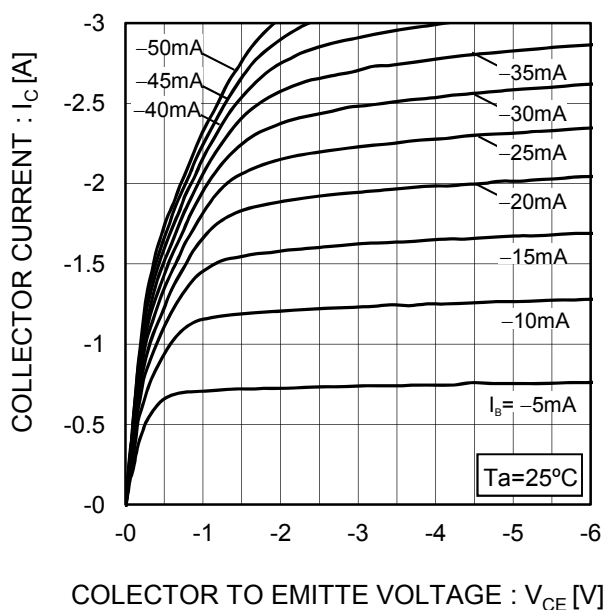


Fig.3 DC Current Gain vs. Collector Current (I)

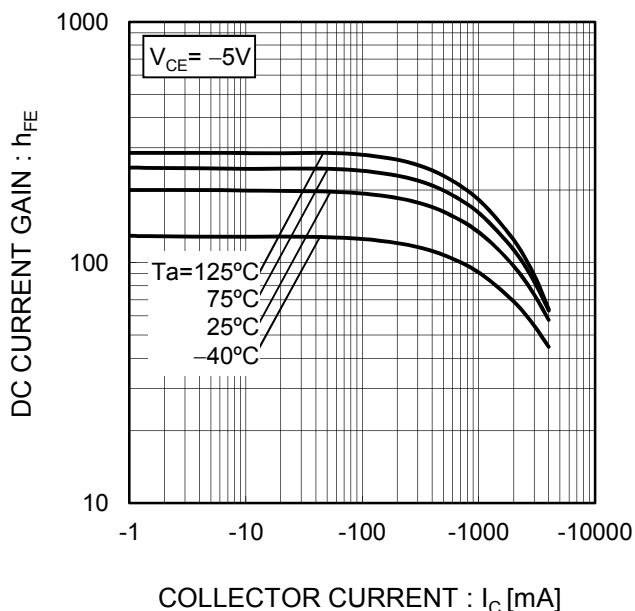
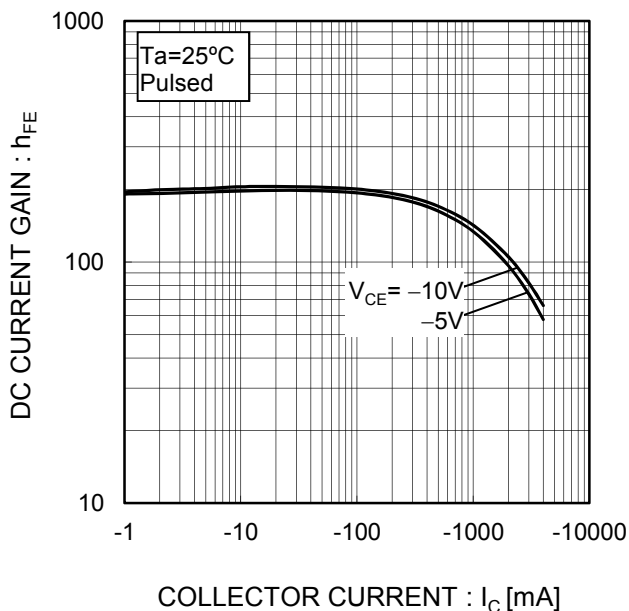


Fig.4 DC Current Gain vs. Collector Current (II)



●Electrical characteristic curves(Ta = 25°C)

Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

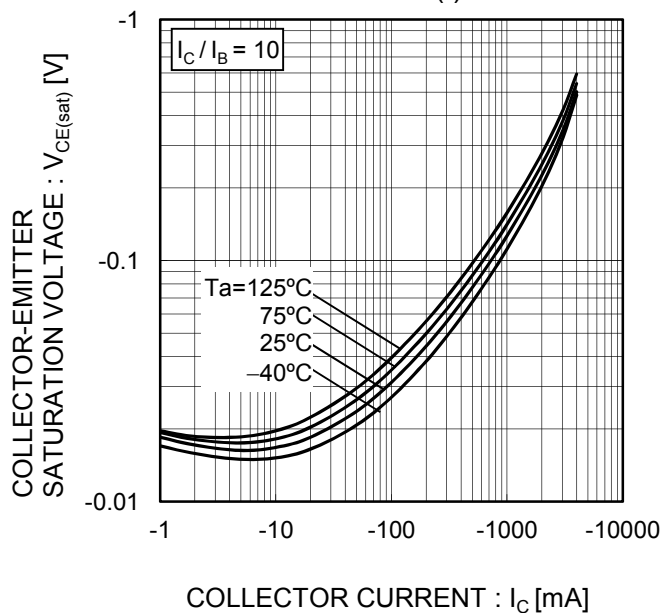


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

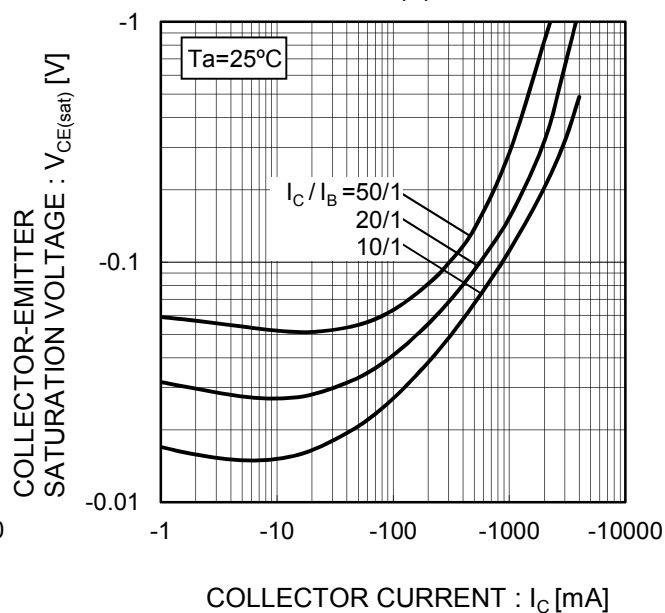


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

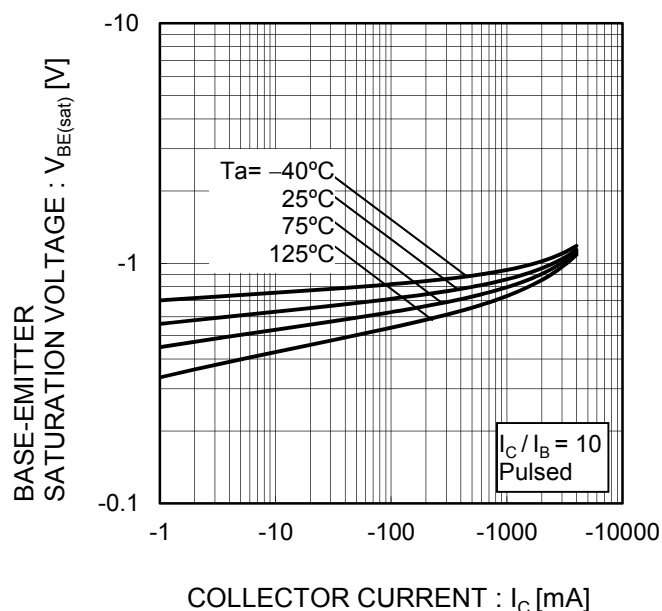
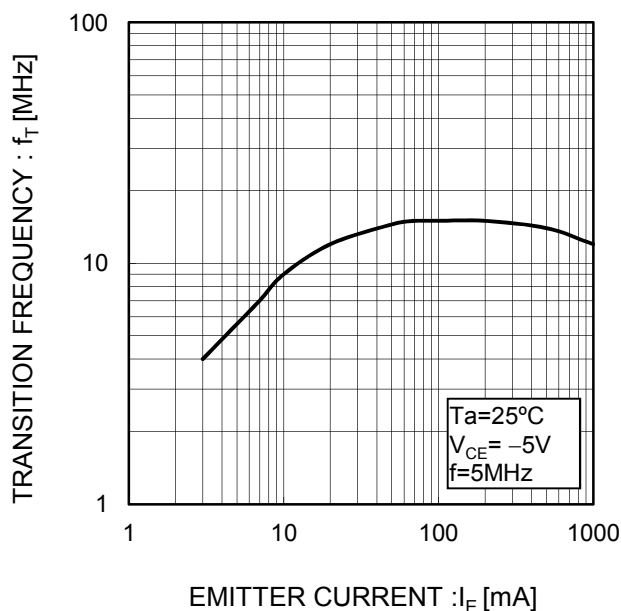


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

Fig.9 Emitter input capacitance vs.
Emitter-Base Voltage
Collector output capacitance vs.
Collector-Base Voltage

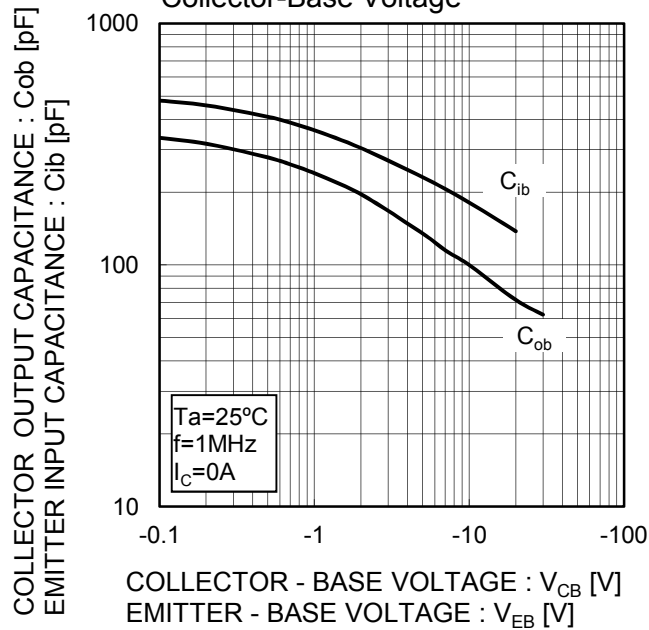
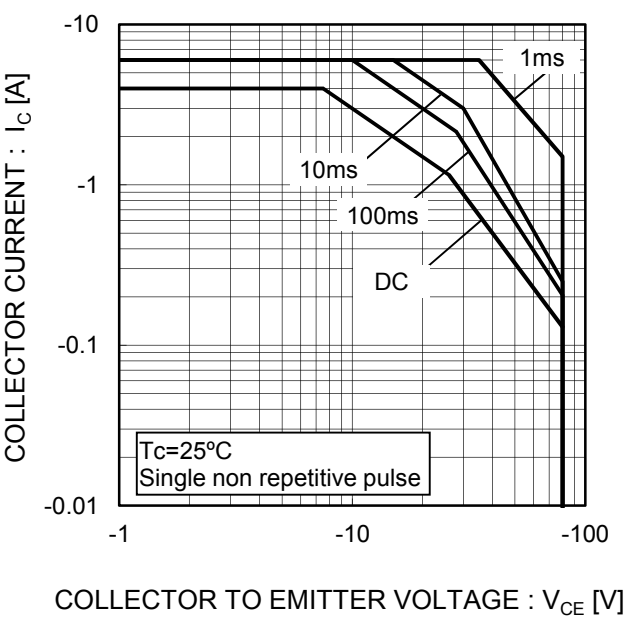
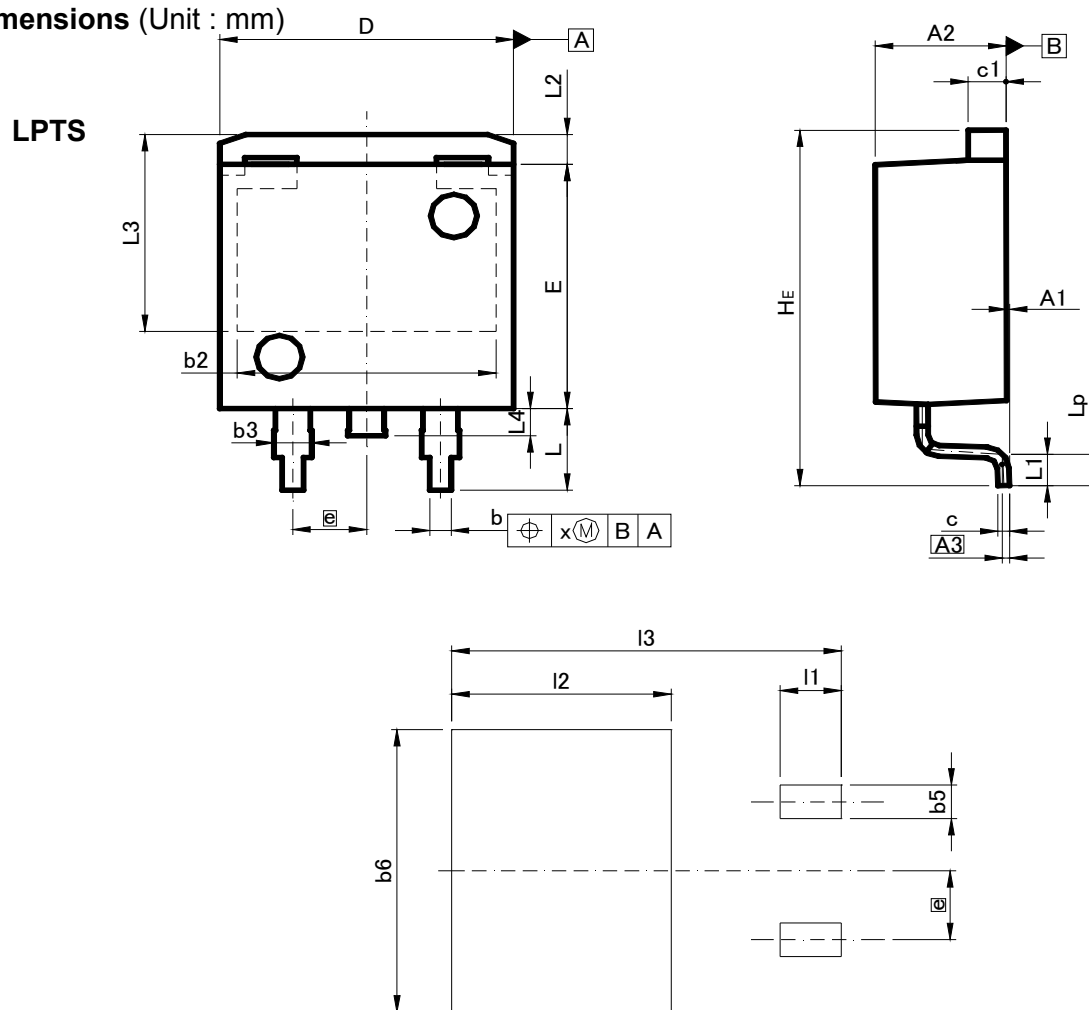


Fig.10 Safe Operating Area



●Dimensions (Unit : mm)



Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A1	0.00	0.30	0.000	0.012
A2	4.30	4.70	0.169	0.185
A3	0.25		0.010	
b	0.68	0.98	0.027	0.039
b2	8.90		0.350	
b3	1.14	1.44	0.045	0.057
c	0.30	0.60	0.012	0.024
c1	1.10	1.50	0.043	0.059
D	9.80	10.40	0.386	0.409
E	8.80	9.20	0.346	0.362
e	2.54		0.100	
HE	12.80	13.40	0.504	0.528
L	2.70	3.30	0.106	0.130
L1	0.90	1.50	0.035	0.059
L2	1.10		0.043	
L3	7.25		0.285	
L4	1.00		0.039	
Lp	0.90	1.50	0.035	0.059
x	-	0.25	-	0.010

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b5	-	1.23	-	0.049
b6	-	10.40	-	0.409
I1	-	2.10	-	0.083
I2	-	7.55	-	0.297
I3	-	13.40	-	0.528

Dimension in mm / inches

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