PNP -2.0A -60V Middle Power Transistor

Doromotor	Value
Parameter	Value
V_{CEO}	-60V
Ic	-2.0A

Features

1) Suitable for Middle Power Driver

2) Complementary NPN Types: 2SD2391

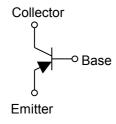
3) Low V_{CE(sat)}

$$V_{CE(sat)} = -0.35V(Max.)$$

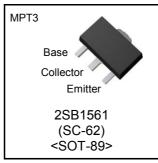
($I_C/I_B = -1A / -50mA$)

4) Lead Free/RoHS Compliant.

•Inner circuit



Outline



Applications

Motor driver , LED driver Power supply

Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
2SB1561	MPT3	4540	T100	180	12	1,000	BL

● Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Values	Unit
Collector-base voltage		V _{CBO}	-60	V
Collector-emitter voltage		V _{CEO}	-60	V
Emitter-base voltage		V _{EBO}	-6	V
Collector current	DC	I _C	-2.0	Α
	Pulsed	I _{CP} *1	-6.0	Α
Power dissipation		P_{D}^{*2}	0.5	W
		P _D *3	2.0	W
Junction temperature		T _j	150	°C
Range of storage temperature		T _{stg}	−55 to +150	°C

^{*1} Pw=10ms, single pulse

●Electrical characteristics(Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit
Collector-emitter breakdown voltage	BV _{CEO}	I _C = -1mA	-60	-	-	V
Collector-base breakdown voltage	BV _{CBO}	$I_{C} = -50 \mu A$	-60	-	-	V
Emitter-base breakdown voltage	BV _{EBO}	I _E = -50μA	–6	ı	-	V
Collector cut-off current	I _{CBO}	V _{CB} = -50V	ı	ı	-0.1	μА
Emitter cut-off current	I _{EBO}	V _{EB} = -5V	1	1	-0.1	μА
Collector-emitter saturation voltage	V _{CE(sat)} *4	$I_{\rm C} = -1A, \ I_{\rm B} = -50 {\rm mA}$	ı	-0.15	-0.35	V
DC current gain	h _{FE1}	$V_{CE} = -2V, I_{C} = -500 \text{mA}$	120	ı	270	-
Do current gain	h _{FE2}	$V_{CE} = -2V, I_{C} = -1.5A$	45	1	ı	-
Transition frequency	f _T *4	$V_{CE} = -2V, I_{E} = 500 \text{mA}$ f=100MH _Z	ı	200	-	MHz
Output capacitance	C_{ob}	$V_{CB} = -10V, I_{E} = 0A,$ f = 1MHz	-	23	-	pF

^{*4} Pulsed

●h_{FE} rank categories

Rank	Q		
h _{FE}	120 to 270		

^{*2} Each terminal mounted on a reference land

^{*3} Mounted on a ceramic board (40×40×0.7 mm)

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

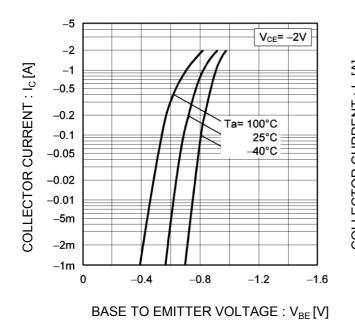
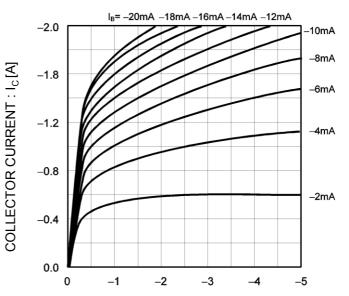
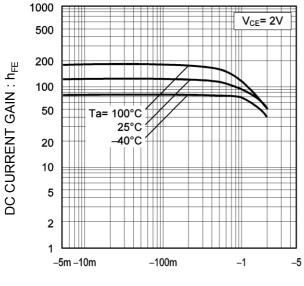


Fig.2 Typical Output Characteristics



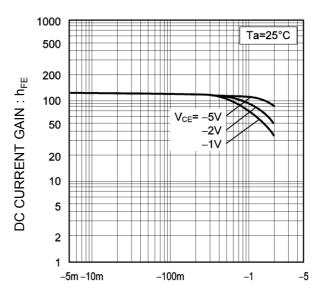
COLECTOR TO EMITTE VOLTAGE : $V_{CE}[V]$

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



COLLECTOR CURRENT : I_C[A]

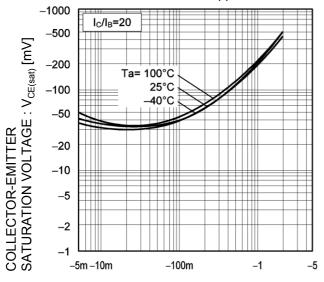
Fig.4 DC current gain vs. output current (II)



COLLECTOR CURRENT : I_C [A]

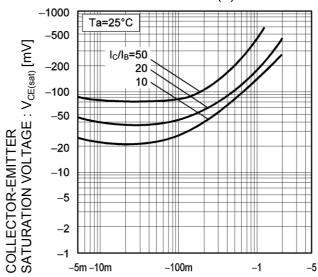
●Electrical characteristic curves(Ta = 25°C)

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



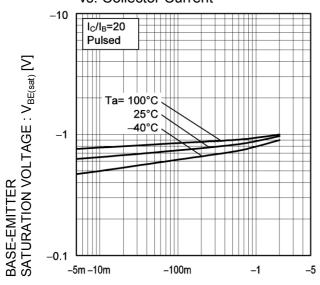
COLLECTOR CURRENT : I_C [A]

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



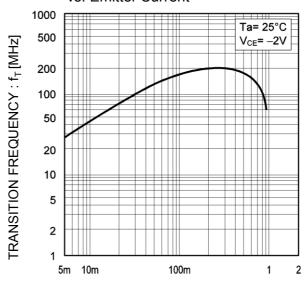
COLLECTOR CURRENT : I_C[A]

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



COLLECTOR CURRENT : I_C [mA]

Fig.8 Gain Bandwidth Product vs. Emitter Current



EMITTER CURRENT : $I_E[A]$

●Electrical characteristic curves(Ta = 25°C)

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

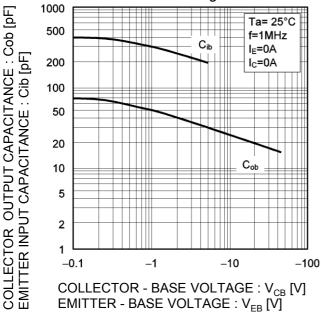
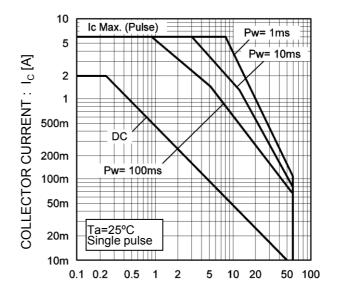
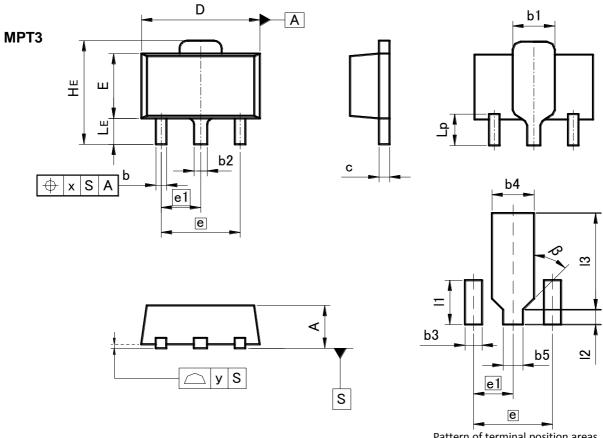


Fig.10 Safe Operating Area



COLLECTOR TO EMITTER VOLTAGE : $V_{CE}[V]$

●Dimensions (Unit: mm)



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

DIM	MILIM	ETERS	INCHES		
DIM	MIN	MAX	MIN	MAX	
Α	1.40	1.50	0.055	0.059	
b	0.30	0.50	0.012	0.020	
b1	1.50	1.70	0.059	0.067	
b2	0.40	0.60	0.016	0.024	
С	0.35	0.50	0.014	0.020	
D	4.40	4.70	0.173	0.185	
Е	2.40	2.70	0.094	0.106	
е	3.00		0.118		
e1	1.50		0.059		
HE	3.70	4.30	0.146	0.169	
LE	0.80	1.20	0.031	0.047	
Lp	1.01	1.41	0.040	0.056	
Х	_	0.15	_	0.006	
У	_	0.10	_	0.004	

DIM	MILIMETERS		INCHES		
	MIN	MAX	MIN	MAX	
b3	-	0.65	-	0.026	
b4	ı	1.70	-	0.067	
b5	ı	0.75	-	0.030	
11	ı	1.71	I	0.067	
12	ı	0.58	I	0.023	
13	-	3.72	-	0.146	
β	45°		45°		

Dimension in mm / inches

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