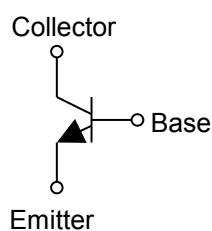


Parameter	Value
$V_{CEO}$	60V
$I_C$	2.0A

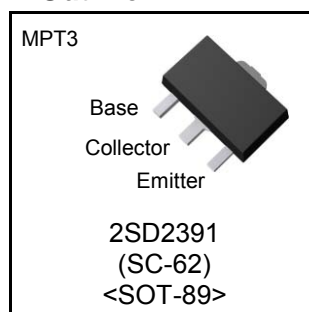
### ●Features

- 1) Suitable for Middle Power Driver
- 2) Complementary PNP Types : 2SB1561
- 3) Low  $V_{CE(sat)}$   
 $V_{CE(sat)} = 0.35V(\text{Max.})$   
 $(I_C/I_B = 1A/50mA)$
- 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
2SD2391	MPT3	4540	T100	180	12	1,000	DT

**●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	A
	Pulsed	$I_{CP}^{*1}$	6.0	A
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

\*2 Each terminal mounted on a reference land

\*3 Mounted on a ceramic board (40×40×0.7mm)

**●Electrical characteristics(Ta = 25°C)**

Parameter	Symbol	Conditions	Min.	Typ.	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	$BV_{EBO}$	$I_E = 50\mu A$	6	-	-	V
Collector cut-off current	$I_{CBO}$	$V_{CB} = 50V$	-	-	0.1	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 5V$	-	-	0.1	$\mu A$
Collector-emitter saturation voltage	$V_{CE(sat)}^{*4}$	$I_C = 1A, I_B = 50mA$	-	0.13	0.35	V
DC current gain	$h_{FE1}$	$V_{CE} = 2V, I_C = 0.5A$	120	-	270	-
	$h_{FE2}$	$V_{CE} = 2V, I_C = 1.5A$	45	-	-	-
Transition frequency	$f_T^{*4}$	$V_{CE} = 2V, I_E = -500mA$ $f = 100MHz$	-	210	-	MHz
Output capacitance	$C_{ob}$	$V_{CB} = 10V, I_E = 0A,$ $f = 1MHz$	-	21	-	pF

\*4 Pulsed

**● $h_{FE}$  rank categories**

Rank	Q
$h_{FE}$	120 to 270

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

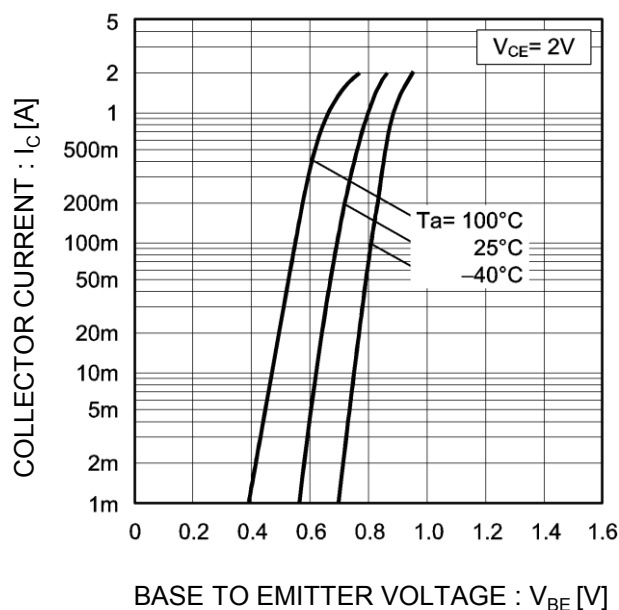


Fig.2 Typical Output Characteristics

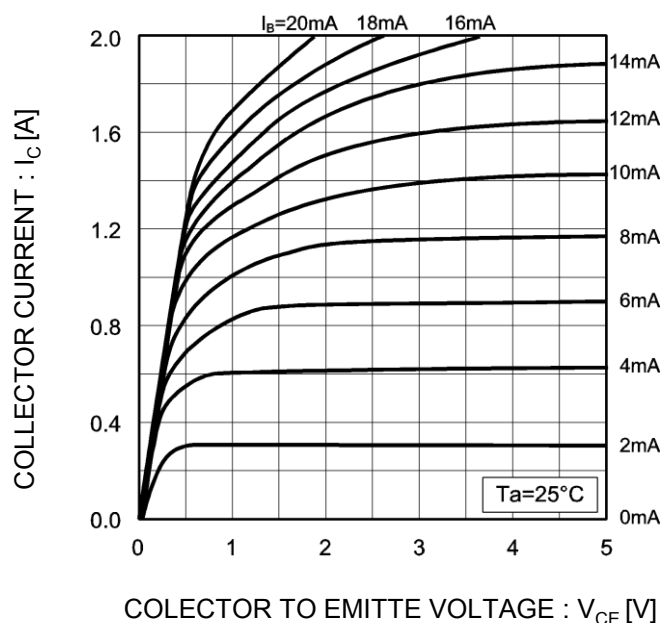


Fig.3 DC Current Gain vs. Collector Current(I)

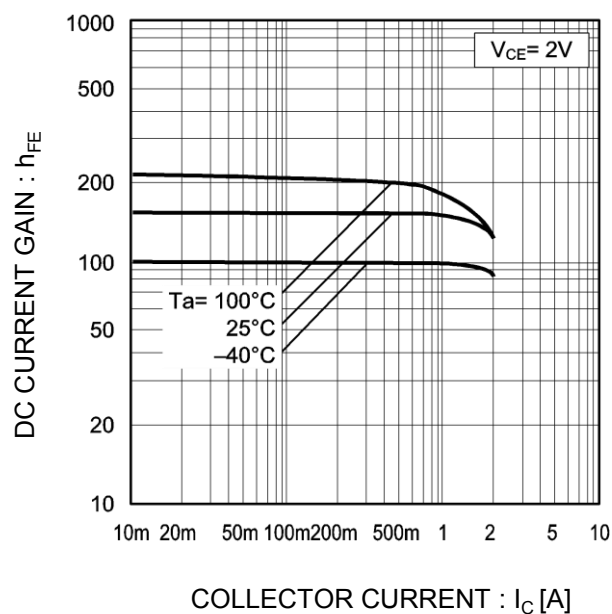
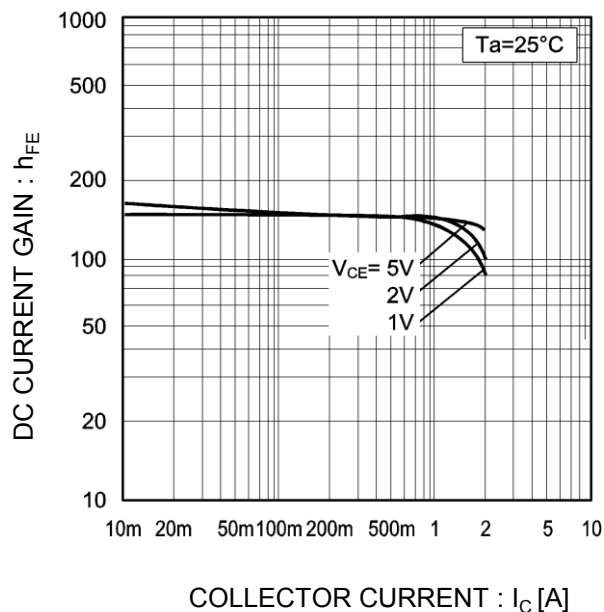


Fig.4 DC current gain vs. output current (II)



●Electrical characteristic curves(Ta = 25°C)

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

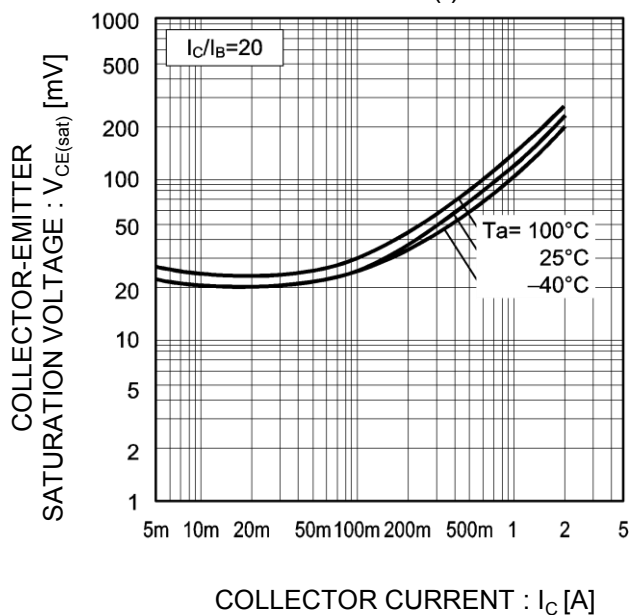


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

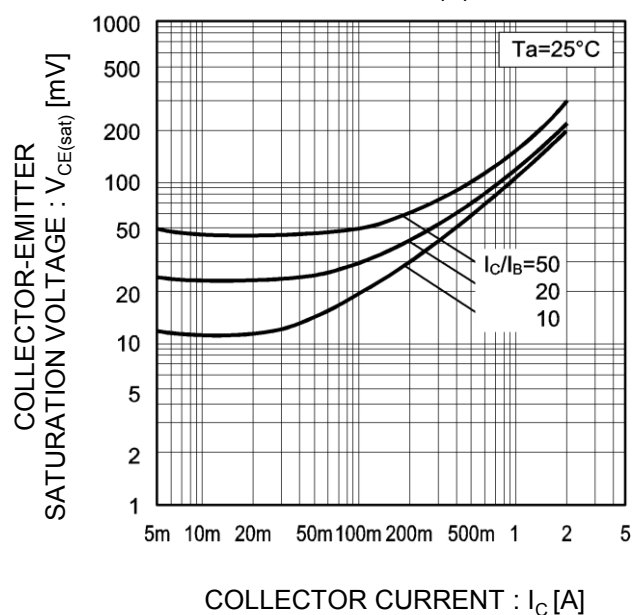


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

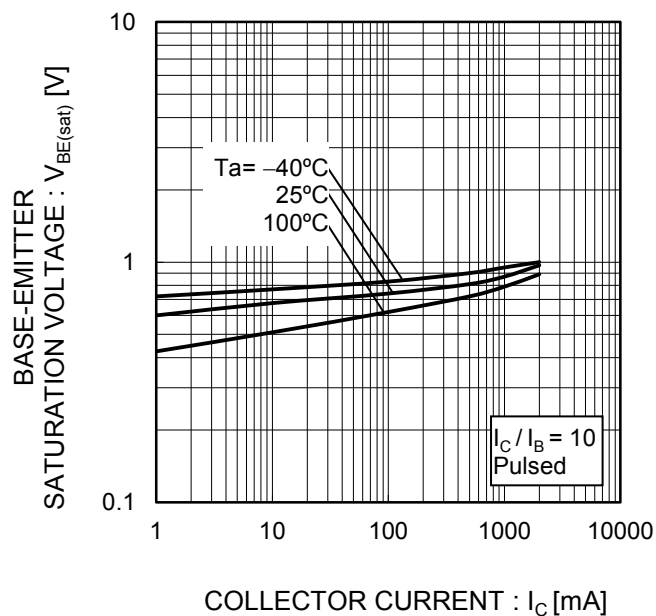
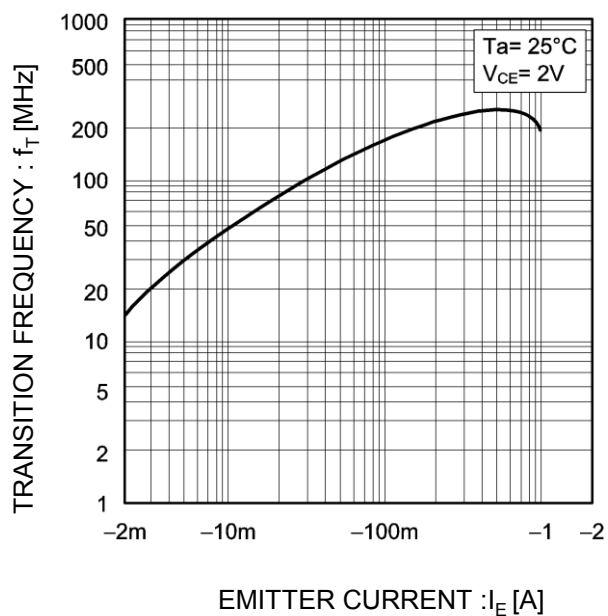


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

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

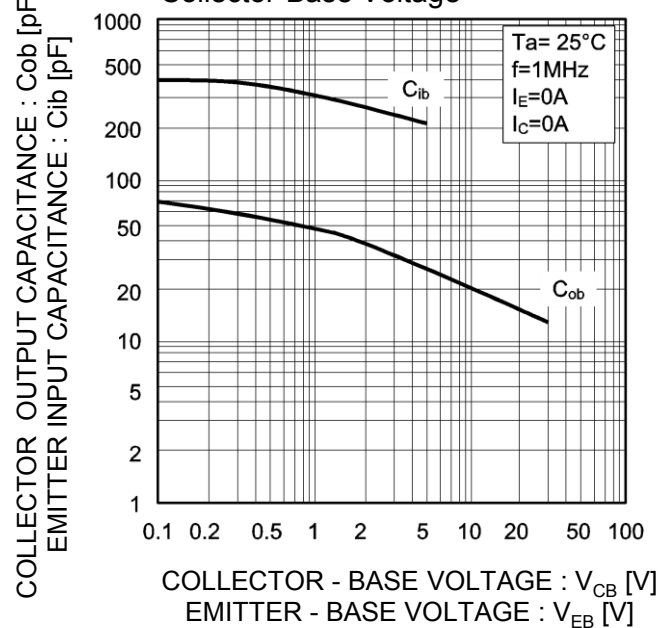
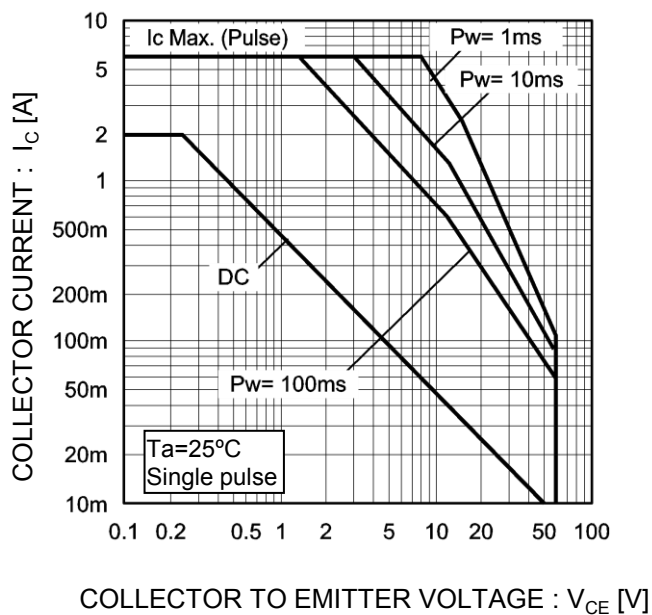
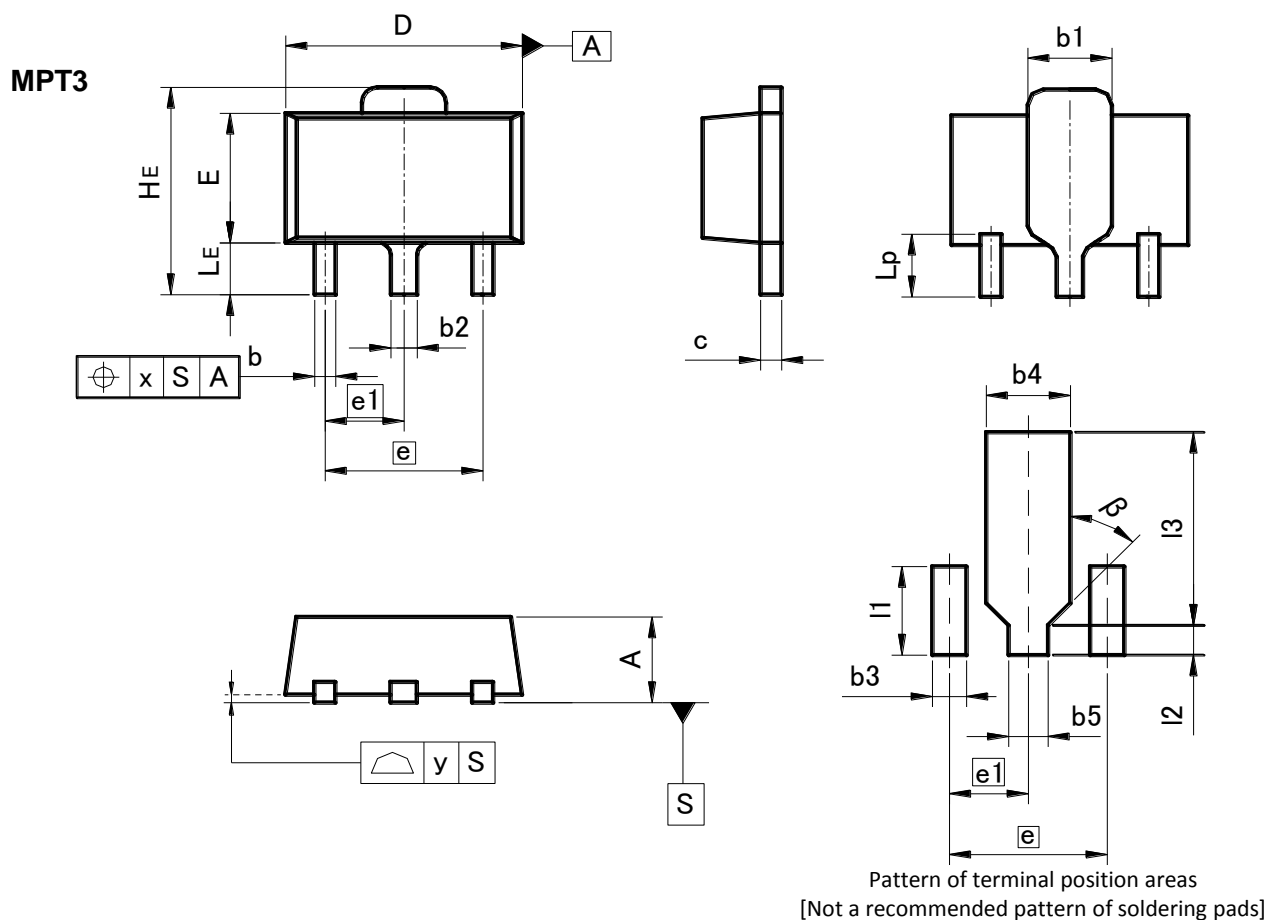


Fig.10 Safe Operating Area



●Dimensions (Unit : mm)



DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	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
c	0.35	0.50	0.014	0.020
D	4.40	4.70	0.173	0.185
E	2.40	2.70	0.094	0.106
e	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
x	—	0.15	—	0.006
y	—	0.10	—	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b3	—	0.65	—	0.026
b4	—	1.70	—	0.067
b5	—	0.75	—	0.030
l1	—	1.71	—	0.067
l2	—	0.58	—	0.023
l3	—	3.72	—	0.146
β	45°		45°	

Dimension in mm / inches

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