

Transistors

# Power Transistor (-15V, -1A)

## 2SB1590K

### ●Features

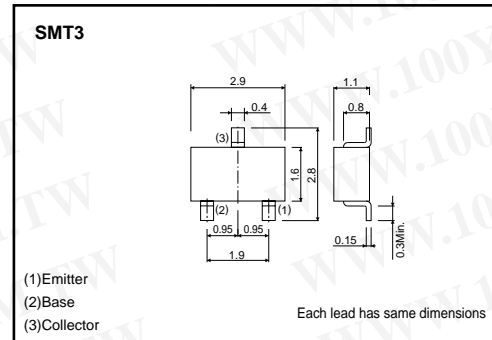
- 1) Low saturation voltage,  $V_{CE(sat)} = -0.3V$  (Max.)  
at  $I_C / I_B = -0.4A / -20mA$ .
- 2)  $I_C = -1A$
- 3) Complements the 2SD2444K.

### ●Packaging specification and $h_{FE}$

Type	2SB1590K
Package	SMT3
$h_{FE}$	Q
Marking	BK*
Code	T146
Basic ordering unit (pieces)	3000

\* Denotes  $h_{FE}$

### ●External dimensions (Unit : mm)



### ●Absolute maximum ratings ( $T_a=25^\circ C$ )

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	-15	V
Collector-emitter voltage	$V_{CEO}$	-15	V
Emitter-base voltage	$V_{EBO}$	-6	V
Collector current	$I_C$	-1	A (DC)
	$I_{CP}$	-2	A (pw=10ms)
Collector power dissipation	$P_C$	0.2	W
Junction temperature	$T_J$	150	$^\circ C$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$

### ●Electrical characteristics ( $T_a=25^\circ C$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	-15	-	-	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	$BV_{CEO}$	-15	-	-	V	$I_C = -1mA$
Emitter-base breakdown voltage	$BV_{EBO}$	-6	-	-	V	$I_E = -50\mu A$
Collector cutoff current	$I_{CBO}$	-	-	-0.5	$\mu A$	$V_{CB} = -12V$
Emitter cutoff current	$I_{EBO}$	-	-	-0.5	$\mu A$	$V_{EB} = -5V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	-0.3	V	$I_C = -0.4A, I_B = -20mA$
DC current transfer ratio	$h_{FE1}$	120	-	270	-	$V_{CE} / I_C = -2V / -0.5A$
	$h_{FE2}$	80	-	-	-	$V_{CE} = -2V, I_C = -800mA$
Transition frequency	$f_T$	-	200	-	MHz	$V_{CE} = -2V, I_E = 50mA, f = 100MHz$
Output capacitance	$C_{ob}$	-	15	-	pF	$V_{CB} = -10V, I_E = 0A, f = 1MHz$

Transistors

●Electrical characteristic curves

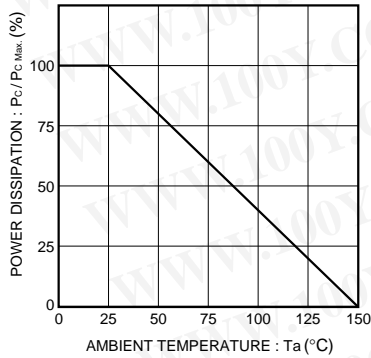


Fig.1 Grounded emitter output characteristics

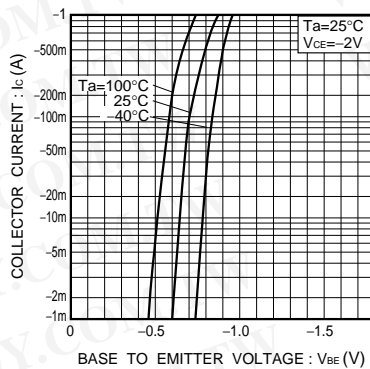


Fig.2 Grounded emitter propagation characteristics

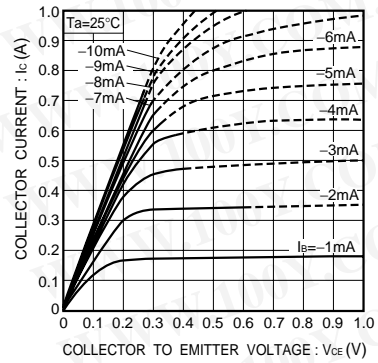


Fig.3 Grounded emitter output characteristics

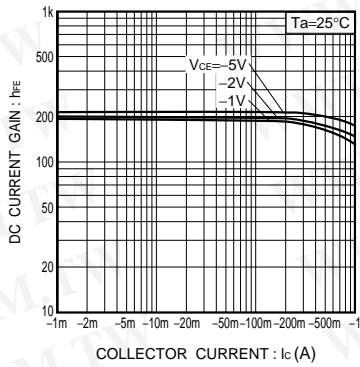


Fig.4 DC current gain vs. collector current (I)

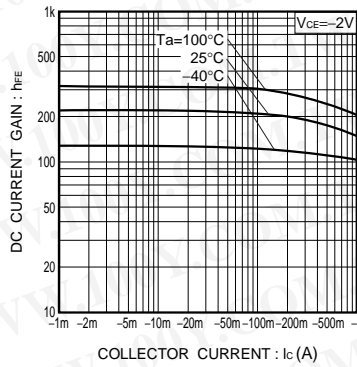


Fig.5 DC collector gain vs. collector current (II)

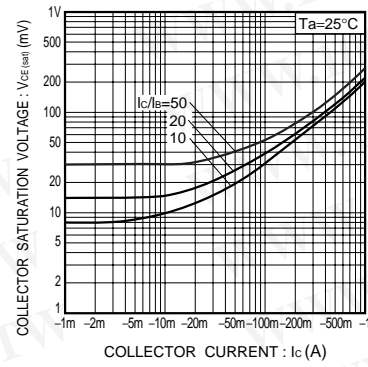


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

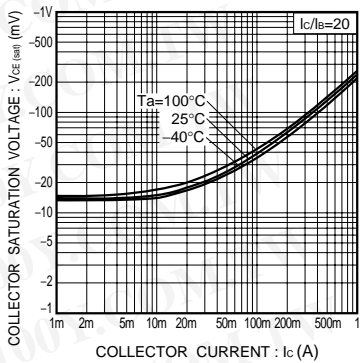


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

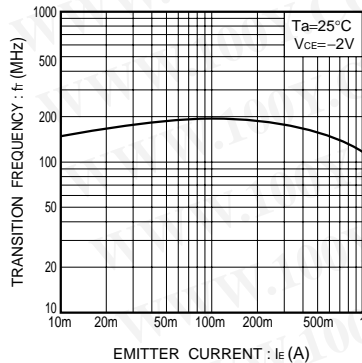


Fig.8 Transition frequency vs. emitter current

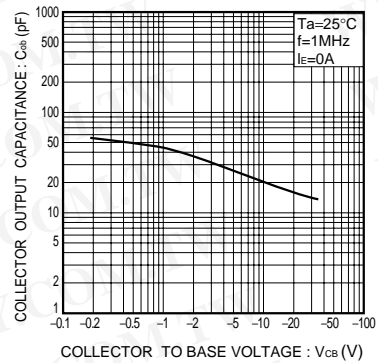


Fig.9 Collector output capacitance vs. collector-base voltage

## Appendix

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