

**/ Descriptions**

Silicon NPN transistor in a TO-251 Plastic Package.

**/ Features**

Low  $V_{CE(sat)}$ , high current and high  $f_T$ , excellent linearity of  $h_{FE}$ , fast switching time.

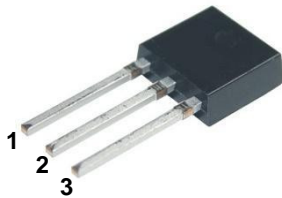
**/ Applications**

Relay drivers, high-speed inverters, and other general high-current switching applications.

**/ Equivalent Circuit**



**/ Pinning**



PIN1 Base      PIN 2 Collector      PIN 3 Emitter

**/  $h_{FE}$  Classifications & Marking**

$h_{FE}$ Classifications Symbol	Q	R	S	T
$h_{FE}$ Range	70 140	100 200	140 280	200 400

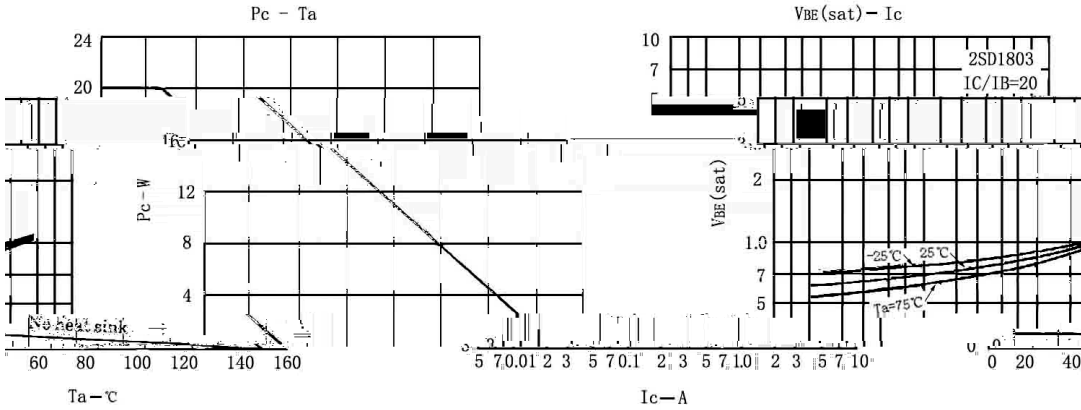
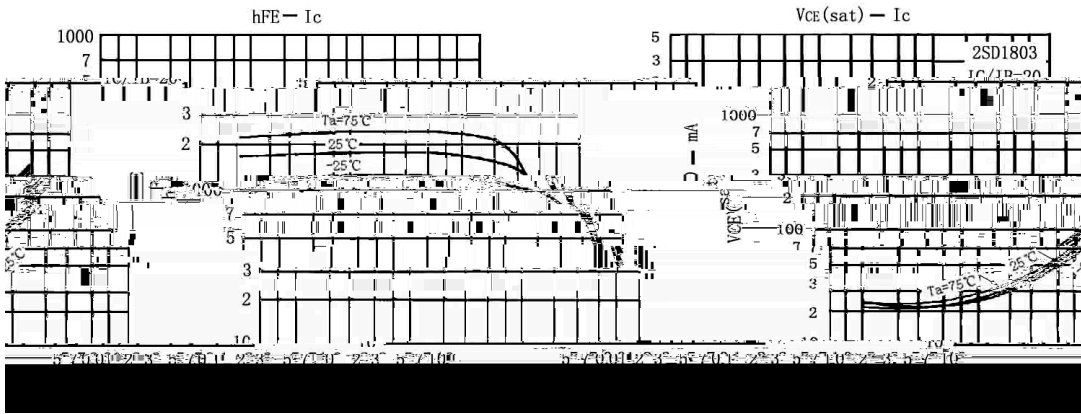
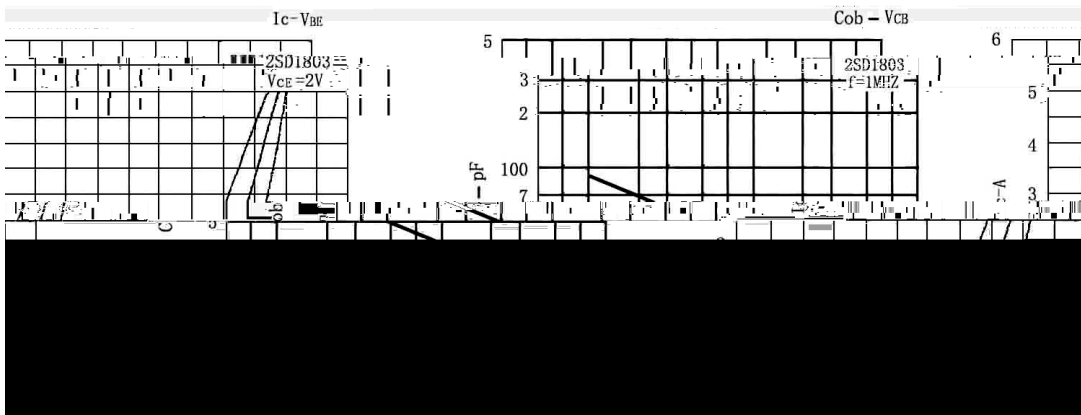
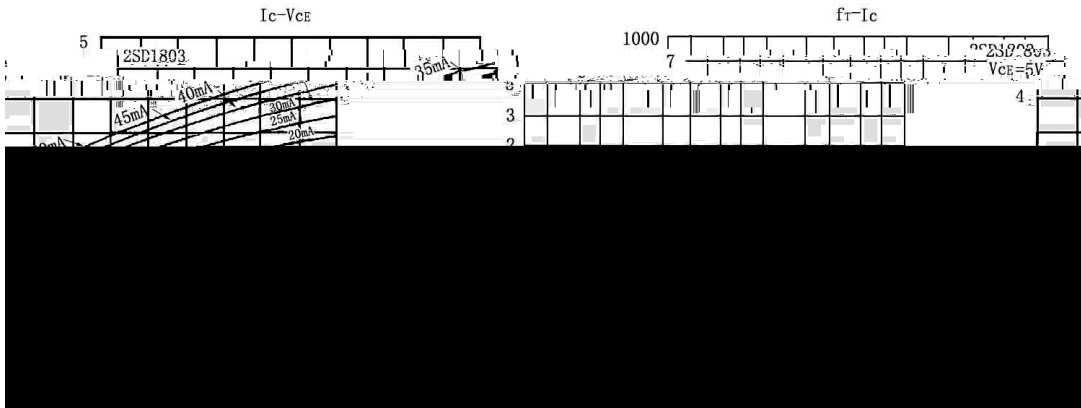
**/ Absolute Maximum Ratings(Ta=25 )**

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	$V_{CBO}$	60	V
Collector to Emitter Voltage	$V_{CEO}$	50	V
Emitter to Base Voltage	$V_{EBO}$	6	V
Collector Current - Continuous	$I_C$	5	A
Collector Current – Continuous(Pulse)	$I_{CP}$	8	A
Collector Power Dissipation	$P_C$	1.0	W
Collector Power Dissipation	$P_C(T_C=25 )$	20	W
Junction Temperature	$T_j$	150	
Storage Temperature Range	$T_{stg}$	-55 150	

**/ Electrical Characteristics(Ta=25 )**

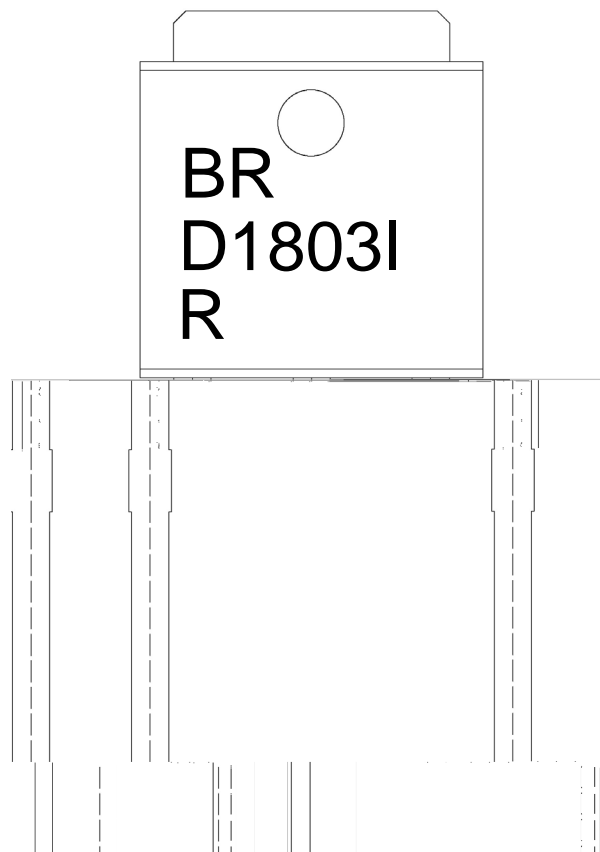
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	$V_{CBO}$	$I_C=10\mu A$ $I_E=0$	60			V
Collector to Emitter Breakdown Voltage	$V_{CBO}$	$I_C=1mA$ $R_{BE}=\infty$	50			V
Emitter to Base Breakdown Voltage	$V_{EBO}$	$I_E=10\mu A$ $I_C=0$	6			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=40V$ $I_E=0$			1.0	$\mu A$
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=4.0V$ $I_C=0$			1.0	$\mu A$
DC Current Gain	$h_{FE(1)}$	$V_{CE}=2.0V$ $I_C=0.5A$	70		400	
	$h_{FE(2)}$	$V_{CE}=2.0V$ $I_C=4.0A$	35			
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=3.0A$ $I_B=0.15A$		0.22	0.4	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=3.0A$ $I_B=0.15A$		0.95	1.3	V
Transition Frequency	$f_T$	$V_{CE}=5.0V$ $I_C=1.0A$		180		MHZ
Collector output capacitance	$C_{ob}$	$V_{CB}=10V$ $f=1MHz$		40		pF
Turn-On Time	$t_{on}$	$I_C=10I_{B1}=-10I_{B2}=2.0A$		50		ns
Storage Time	$t_{stg}$			500		ns
Fall Time	$t_f$			20		ns

/ Electrical Characteristic Curve





/ Marking Instructions



Note:

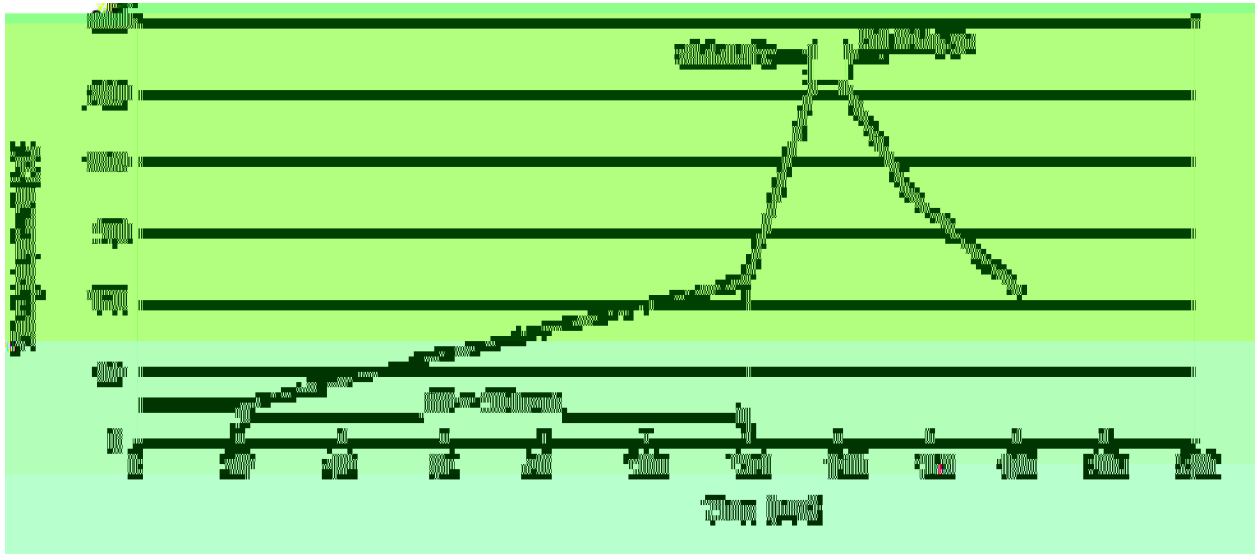
BR: Company Code

D1803I: Product Type.

R:  $h_{FE}$  Classifications Symbol

\*\*\*: Lot No. Code, code change with Lot No.

( ) / Temperature Profile for Dip Soldering(Pb-Free)



- |   |     |     |    |          |       |   |
|---|-----|-----|----|----------|-------|---|
| 1 | 25  | 150 | 60 | 90sec;   | Note: | 1.Preheating:25~150 , Time:60~90sec.    |
| 2 | 255 | 5   | 5  | 0.5sec;  |       | 2.Peak Temp.:255 5 , Duration:5 0.5sec. |
| 3 |     |     | 2  | 10 /sec. |       | 3. Cooling Speed: 2~10 /sec.            |

/ Resistance to Soldering Heat Test Conditions

270 5                      10 1 sec.                      Temp.:270±5                      Time:10±1 sec

/ Packaging SPEC.

/ BULK

Package Type	Units				Dimension (unit mm <sup>3</sup> )		

/ TUBE

Package Type	Units				Dimension (unit mm <sup>3</sup> )		

/ Notices