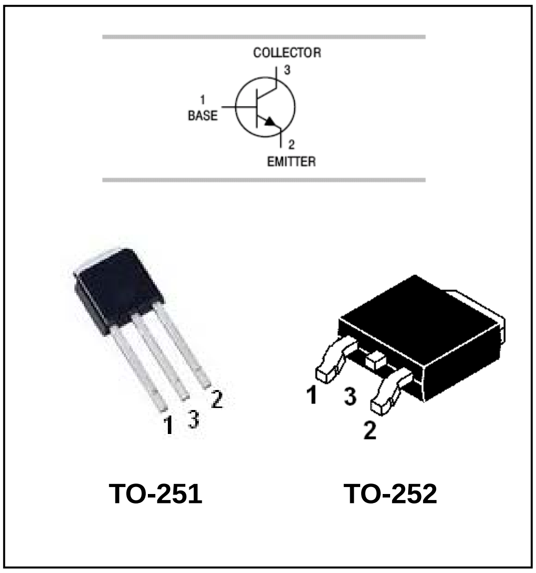
NPN Epitaxial Planar Silicon Transistors 2SD1815

FEATURES

- Adoption of FBET,MBIT processes.
- Large current capacity and wide ASO.
- Low collector-to-emitter saturation voltage.
- Exclient linearity of h_{FE}.
- High f_T.
- Fast switching time.

Lead-free



APPLICATIONS

- Relay drivers,high-speed inverters, Converters,and other high-current Switching applications.

MAXIMUM RATING operating temperature range applies unless otherwise specified

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Volage	120	V
V_{CEO}	Collector-Emitter Voltage	100	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	3	A
I_{CP}	Collector Power Dissipation	6	A
P_C	Collector Power Dissipation	1	W
T_j ,T_{stg}	Junction and Storage temperature range	-55 to +150	℃

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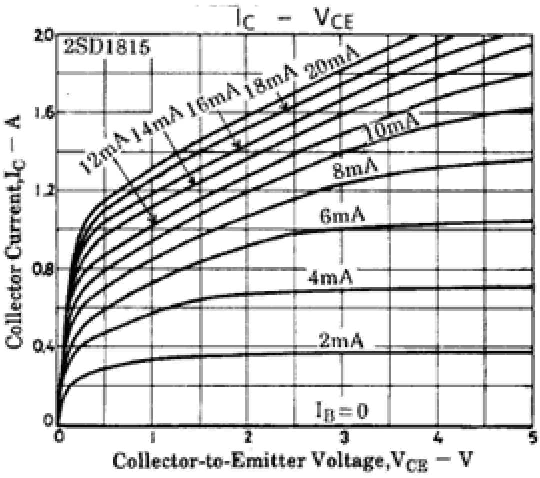
ELECTRICAL CHARACTERISTICS@ Ta=25℃ unless otherwise specified

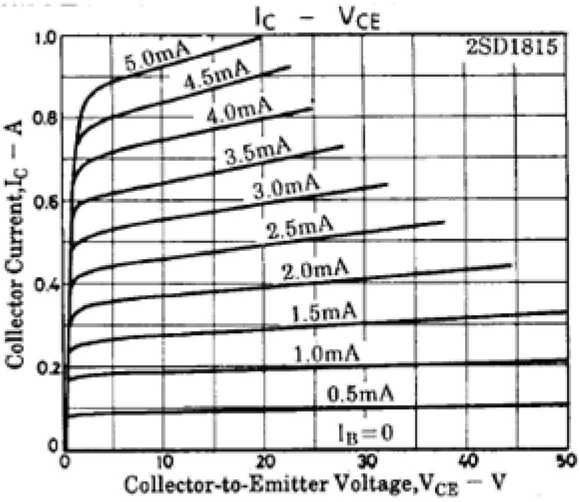
Parameter	**Symbol**	**Test conditions**	**MIN**	**TYP**	**MAX**	**UNIT**
Collector-base breakdown voltage	V_{CBO}	I_C=10uA,I_E=0	120			V
Collector-emitter breakdown voltage	V_{CEO}	I_C=1mA,I_B=0	100			V
Emitter-base breakdown voltage	V_{EBO}	I_E=10uA,I_C=0	6			V
Collector cut-off current	I_{CBO}	V_{CB}=100V,I_E=0			1	uA
Emitter cut-off current	I_{EBO}	V_{EBO}=4V,I_C=0			1	uA
DC current gain	h_{FE}	V_{CE}=5V,I_C=0.5A V_{CE}=5V,I_C=2A	70 40		400	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=1.5A ,I_B=0.15A		0.15	0.4	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=1.5A ,I_B=0.15A		0.9	1.2	V
Transition frequency	f_T	V_{CE}=10V,I_E=0.5A		180		MHz
Collector output capacitance	C_{ob}	V_{CB}=10V,f=1MHz		25		pF
Turn-ON Time	t_{on}			100		ns
Storage Time	t_{stg}			900		ns
Fall Time	t_f			50		ns

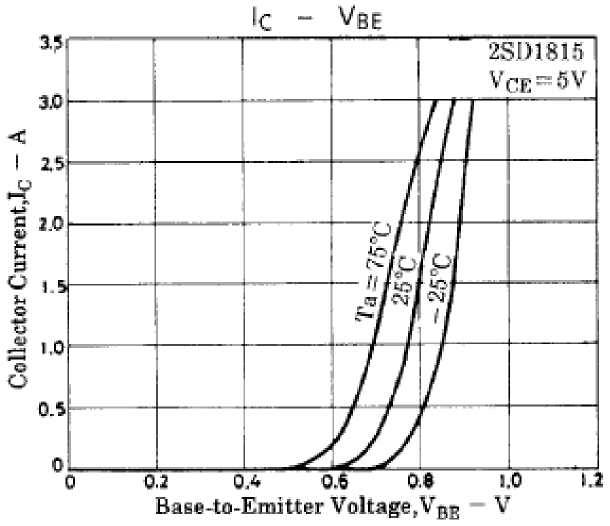
CLASSIFICATION OF $h_{FE(1)}$

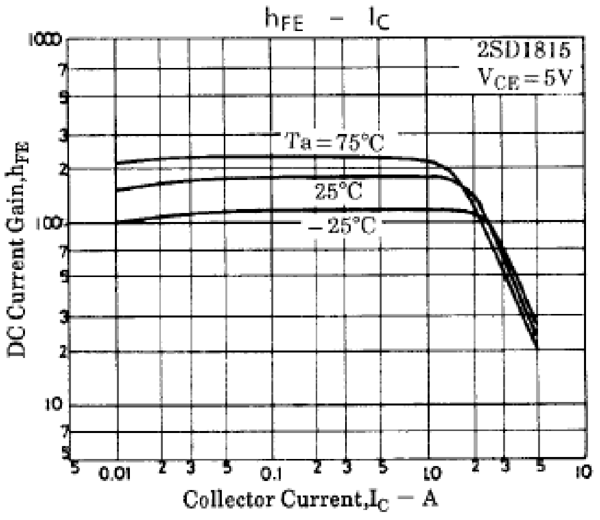
Rank	Q	R	S	T
Range	70-140	100-200	140-280	200-400

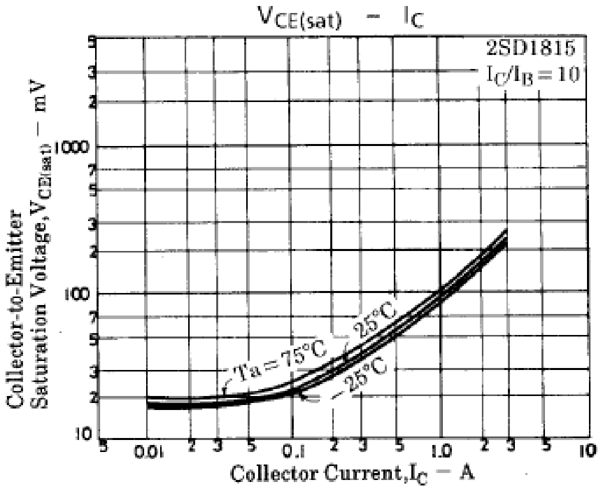
TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

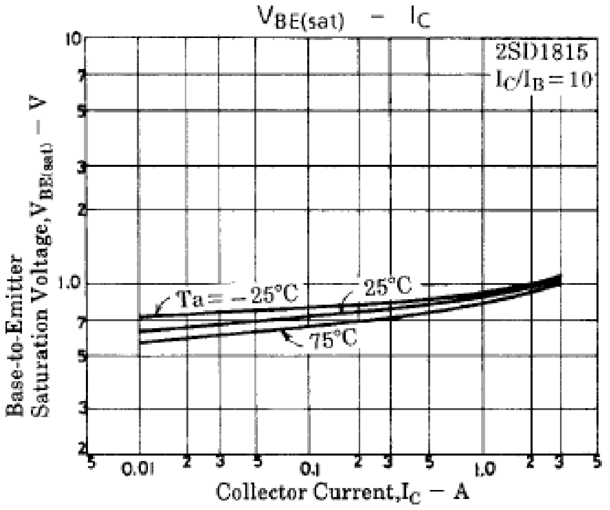


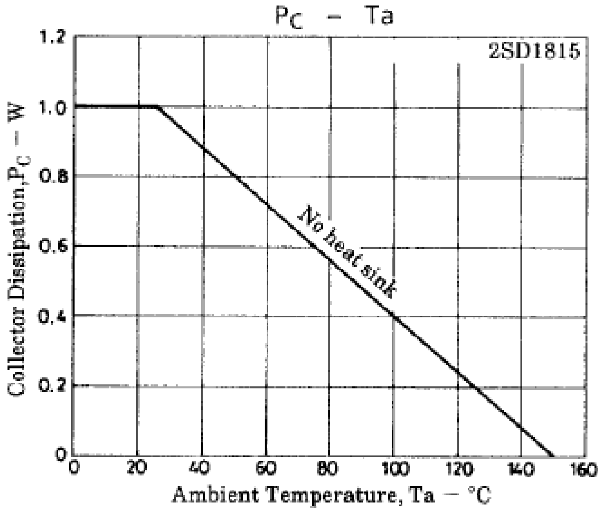



IC – VBE
2SD1815
VCE = 5V
Ta = 75°C
25°C
– 25°C
Collector Current, IC – A
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0
0
0.2
0.4
0.6
0.8
1.0
1.2
Base-to-Emitter Voltage, VBE – V


hFE – IC
2SD1815
VCE = 5V
Ta = 75°C
25°C
– 25°C
DC Current Gain, hFE
1000
7
5
3
2
100
7
5
3
2
10
7
5
5
0.01
2
3
5
0.1
2
3
5
1.0
2
3
5
10
Collector Current, IC – A


VCE(sat) – IC
2SD1815
IC/IB = 10
Ta = 75°C
25°C
– 25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
5
3
2
1000
7
5
3
2
100
7
5
3
2
10
5
0.01
2
3
5
0.1
2
3
5
1.0
2
3
5
10
Collector Current, IC – A


VBE(sat) – IC
2SD1815
IC/IB = 10
Ta = – 25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
10
7
5
3
2
1.0
7
5
3
2
5
0.01
2
3
5
0.1
2
3
5
1.0
2
3
5
Collector Current, IC – A

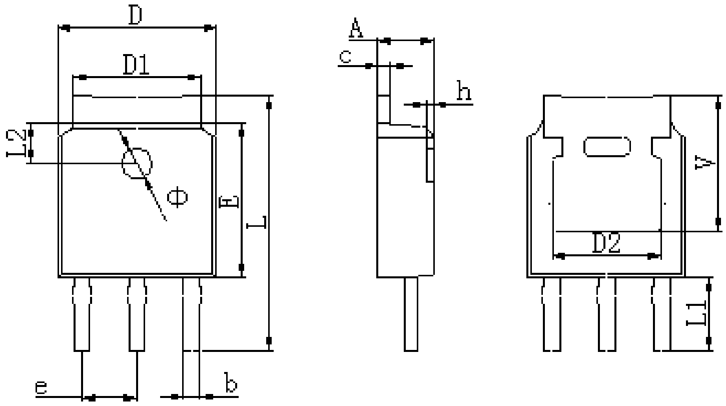

PC – Ta
2SD1815
No heat sink
Collector Dissipation, PC – W
1.2
1.0
0.8
0.6
0.4
0.2
0
0
20
40
60
80
100
120
140
160
Ambient Temperature, Ta – °C

NPN Epitaxial Planar Silicon Transistors **2SD1815**

PACKAGE OUTLINE

Plastic surface mounted package

TO-251

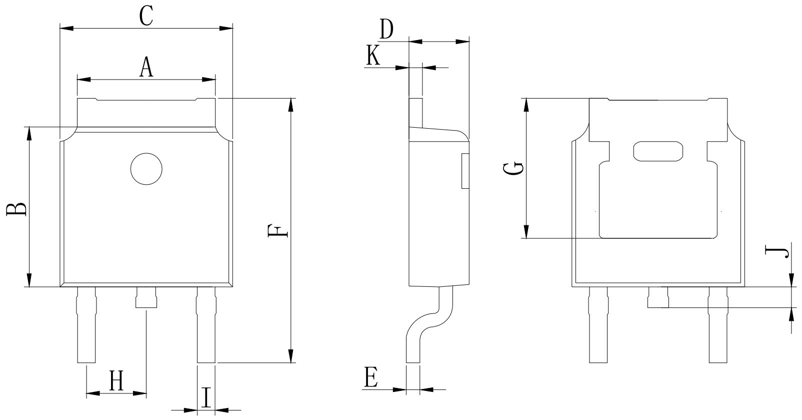


TO-251		
A	2.200	2.400
b	0.500	0.700
c	0.460	0.580
D	6.500	6.700
D1	5.100	5.460
D2	4.830 Typ.	
E	6.000	6.200
e	2.186	2.386
L	12.000	12.600
L1	5.100 Typ.	
L2	1.400	1.700
Φ	1.100	1.300
h	0.000	0.300
V	5.350 Typ.	
All Dimensions in mm		

PACKAGE OUTLINE

Plastic surface mounted package

TO-252



TO-252		
A	4.95	5.59
B	5.40	6.63
C	6.05	7.10
D	2.20	2.40
E	0.40	0.61
F	8.80	10.60
G	5.35 Typ.	
H	1.98	2.59
I	0.50	0.90
J	0.50	1.20
K	0.45	0.89
All Dimensions in mm		

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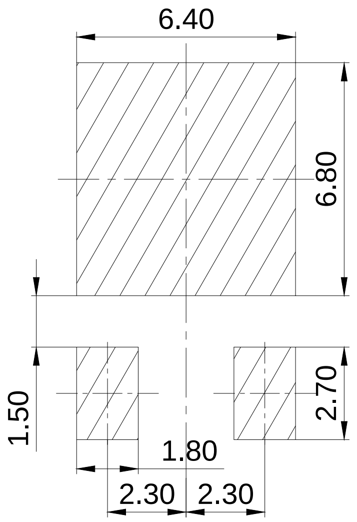
SOLDERING FOOTPRINT



Unit:mm

PACKAGE INFORMATION

Device	Package	Shipping
2SD1815	TO-251/252	80PCS/Tube
	TO-252	2500PCS/Tape&Reel