



2SB1202/2SD1802

Bipolar Transistor

(-50V, (-)3A, Low $V_{CE(sat)}$ (PNP)NPN Single TP/TP-FA

ON Semiconductor®

<http://onsemi.com>

Applicaitons

- Voltage regulators, relay drivers, lamp drivers, electrical equipment

Features

- Adoption of FBET and MBIT processes
- Low collector to emitter saturation voltage
- Small and slim package making it easy to make 2SB1202/2SD1802-used sets smaller
- Large current capacitance and wide ASO
- Fast switching speed

Specifications () : 2SB1202

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

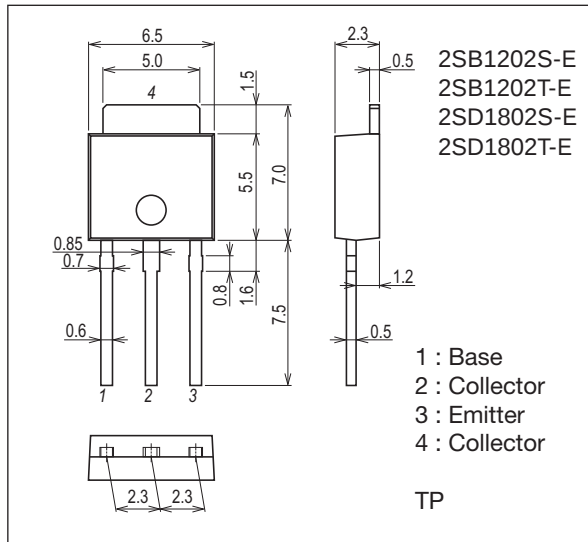
Parameter	Symbol	Conditions	Ratings	Unit
Collector to Base Voltage	V_{CBO}		(-)60	V
Collector to Emitter Voltage	V_{CEO}		(-)50	V
Emitter to Base Voltage	V_{EBO}		(-)6	V
Collector Current	I_C		(-)3	A
Collector Current (Pulse)	I_{CP}		(-)6	A

Continued on next page.

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

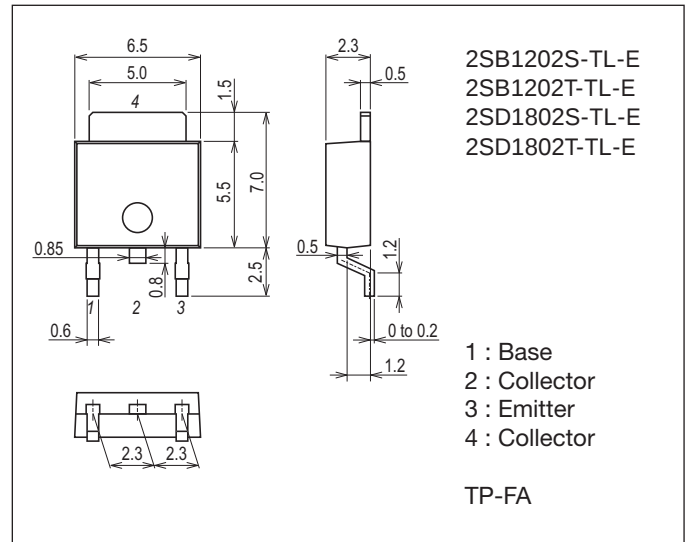
Package Dimensions unit : mm (typ)

7518-003



Package Dimensions unit : mm (typ)

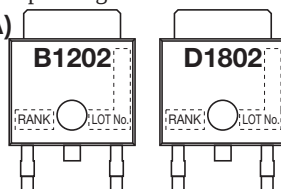
7003-003



Product & Package Information

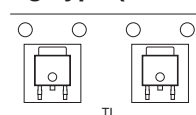
- Package : TP
- JEITA, JEDEC : SC-64, TO-251, SOT-553, DPAK
- Minimum Packing Quantity : 500 pcs./bag

Marking(TP, TP-FA)

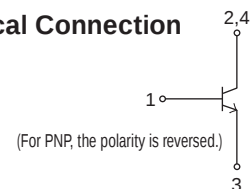


- Package : TP-FA
- JEITA, JEDEC : SC-63, TO-252, SOT-428, DPAK
- Minimum Packing Quantity : 700 pcs./reel

Packing Type (TP-FA) : TL



Electrical Connection



2SB1202/2SD1802

Continued from preceding page.

Parameter	Symbol	Conditions	Ratings	Unit
Collector Dissipation	P _C		1	W
		T _c =25°C	15	W
Junction Temperature	T _j		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

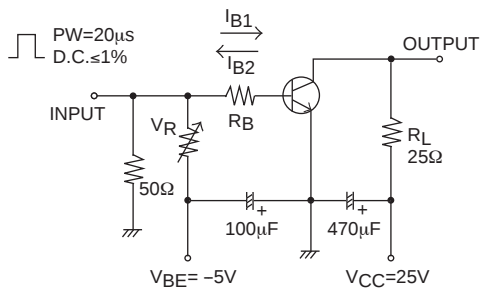
Electrical Characteristics at T_a=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I _{CBO}	V _{CB} =(-)40V, I _E =0A			(-)1	μA
Emitter Cutoff Current	I _{EBO}	V _{EB} =(-)4V, I _C =0A			(-)1	μA
DC Current Gain	h _{FE1}	V _{CE} =(-)2V, I _C =(-)100mA	100*		560*	
	h _{FE2}	V _{CE} =(-)2V, I _C =(-)3A	35			
Gain-Bandwidth Product	f _T	V _{CE} =(-)10V, I _C =(-)50mA		150		MHz
Output Capacitance	C _{ob}	V _{CB} =(-)10V, f=1MHz		(39)25		pF
Collector to Emitter Saturation Voltage	V _{CE(sat)}	I _C =(-)2A, I _B =(-)100mA		(-0.35)0.19	(-0.7)0.5	mV
Base to Emitter Saturation Voltage	V _{BE(sat)}	V _{CE} =(-)2V, I _C =(-)100mA		(-)0.94	(-)1.2	V
Collector to Base Breakdown Voltage	V _{(BR)CBO}	I _C =(-)10μA, I _E =0A	(-)60			V
Collector to Emitter Breakdown Voltage	V _{(BR)CEO}	I _C =(-)1mA, R _{BE} =∞	(-)50			V
Emitter to Base Breakdown Voltage	V _{(BR)EBO}	I _E =(-)10μA, I _C =0A	(-)6			V
Turn-On Time	t _{on}	See specified Test Circuit.		70		ns
Storage Time	t _{stg}			(450)650		ns
Fall Time	t _f			35		ns

* : The 2SB1202/2SD1802 are classified by 100mA hFE as follows :

Rank	R	S	T	U
h _{FE}	100 to 200	140 to 280	200 to 400	280 to 560

Switching Time Test Circuit

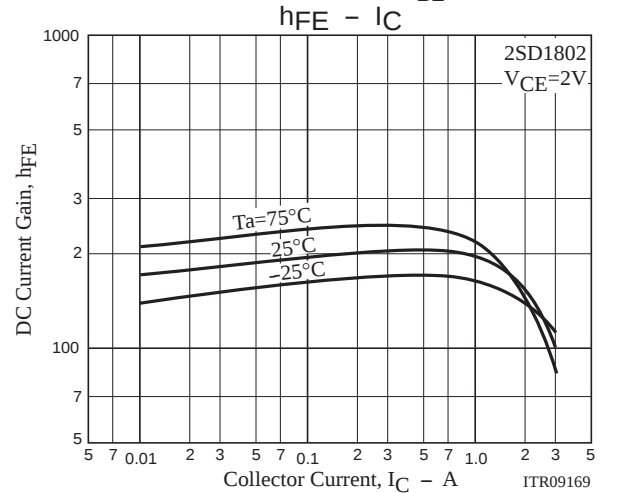
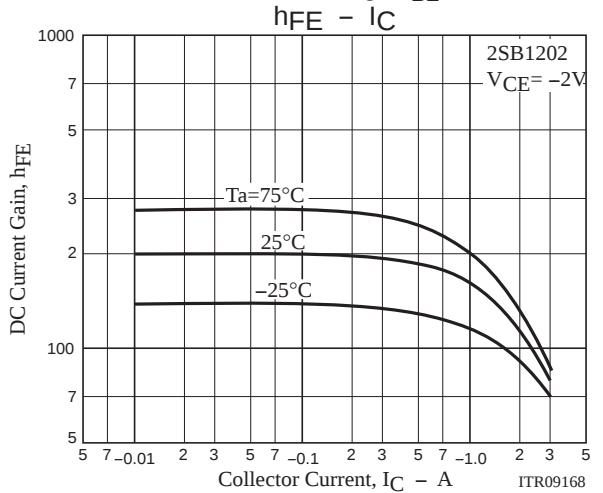
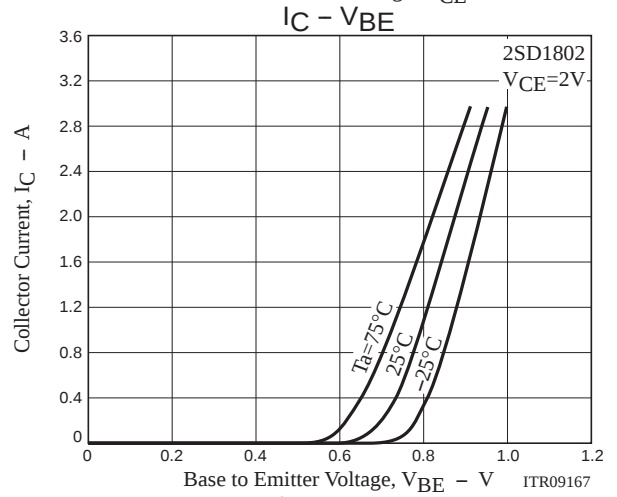
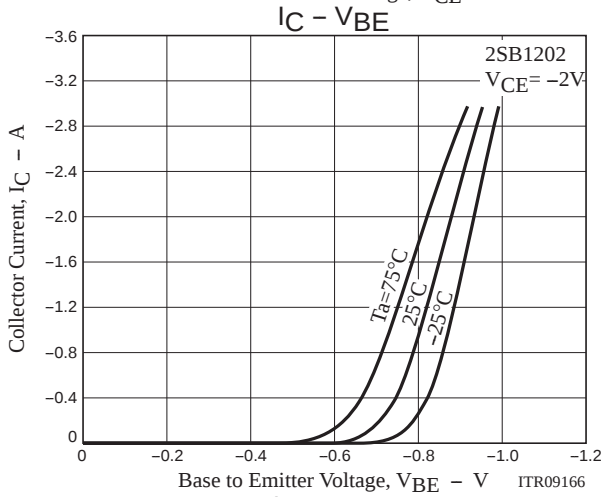
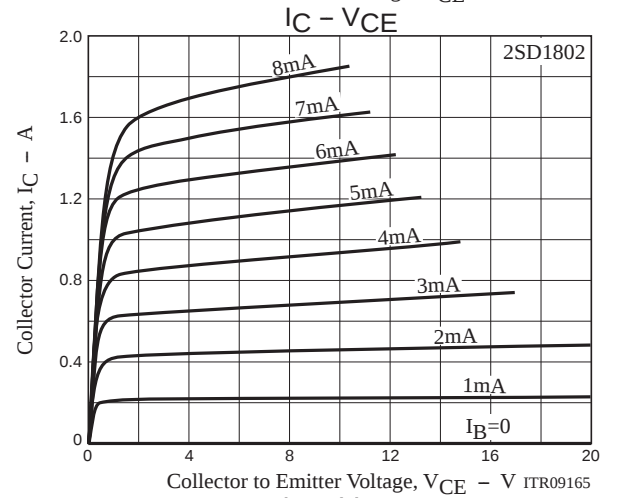
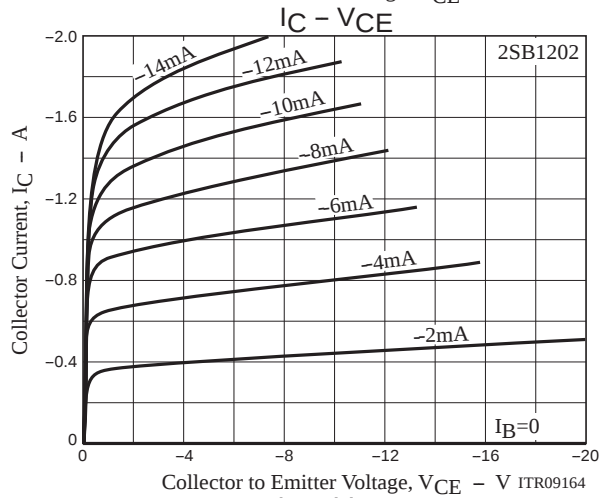
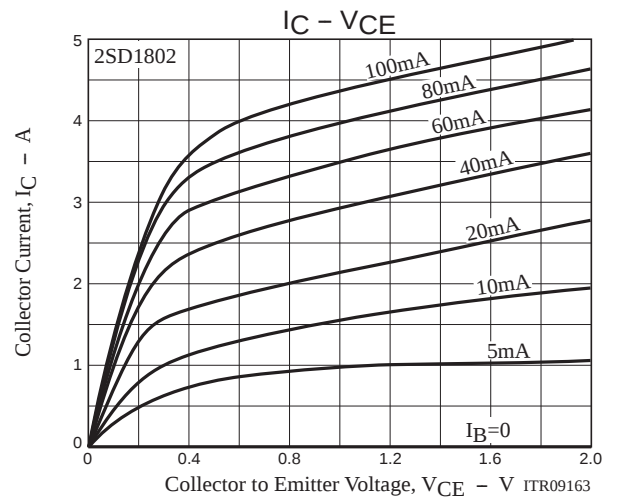
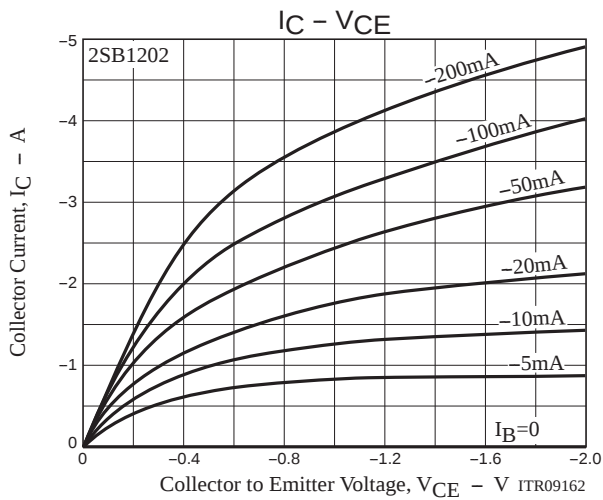


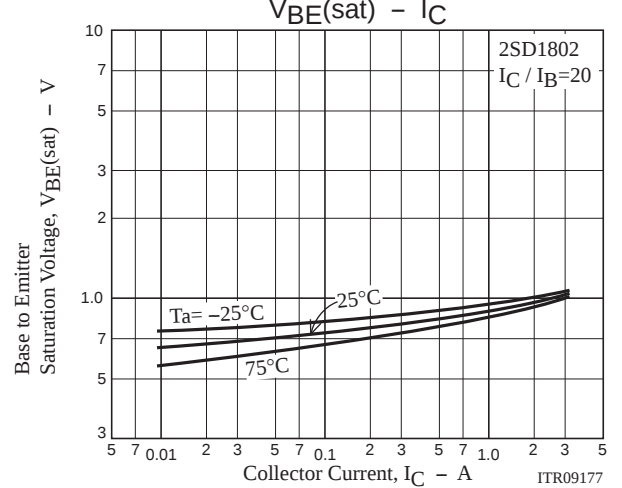
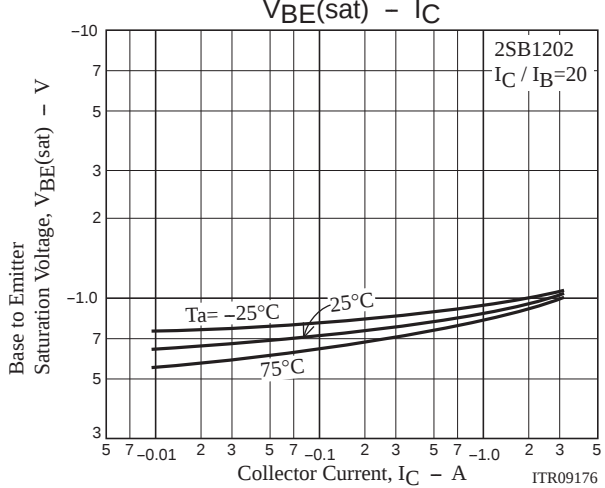
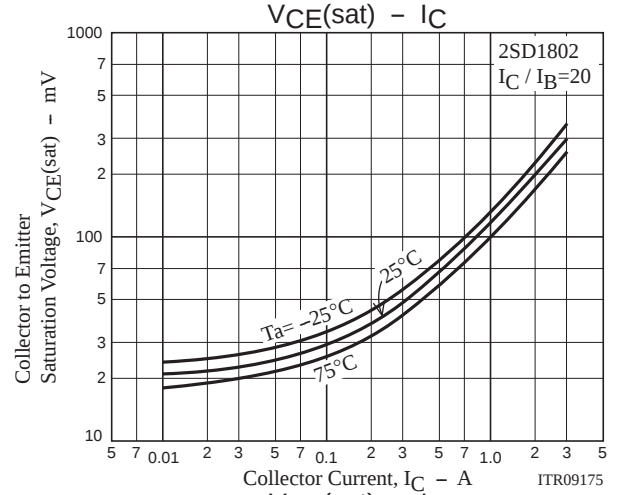
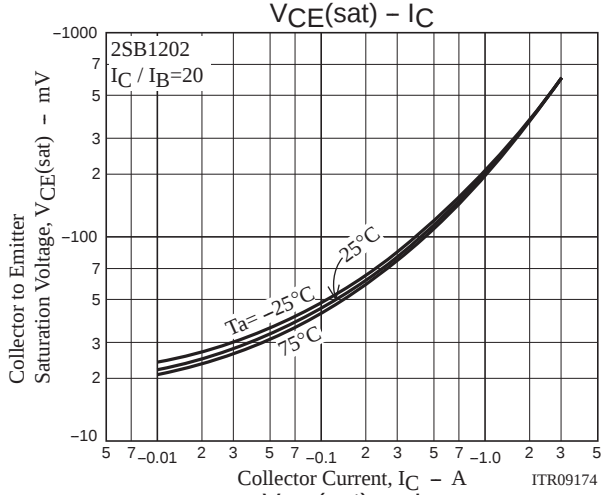
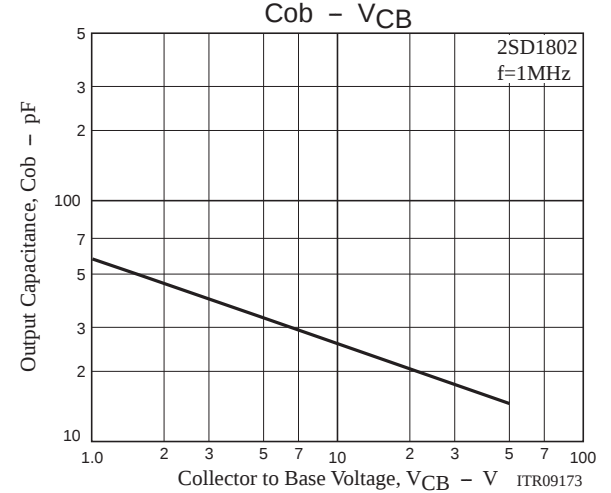
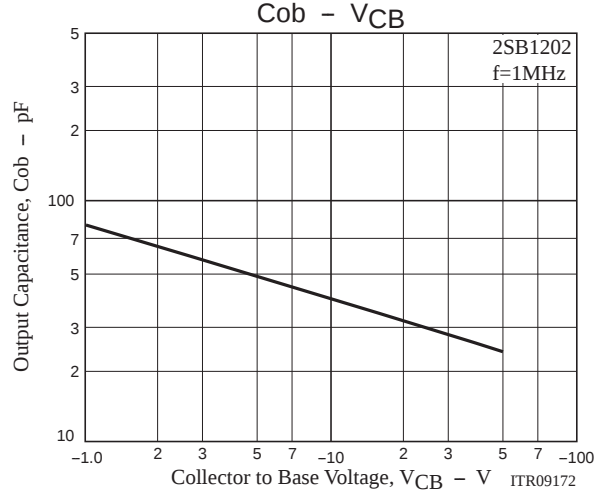
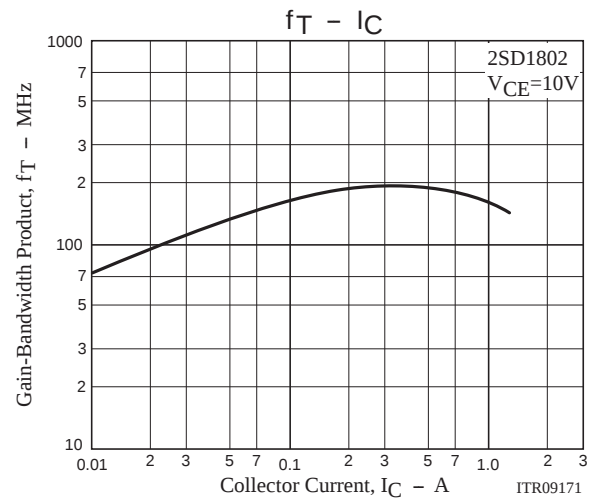
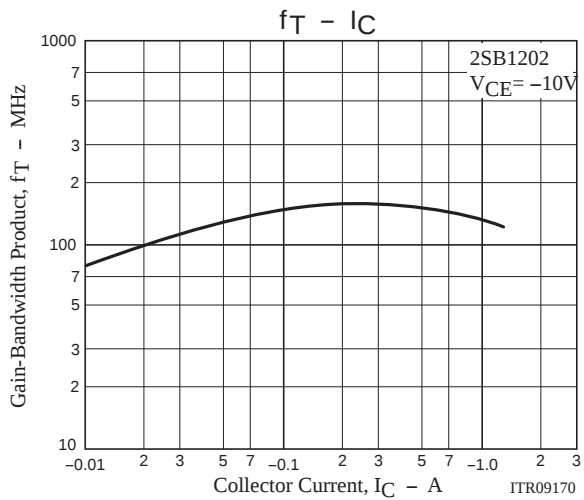
$$I_C = 10I_{B1} = -10I_{B2} = 1A$$

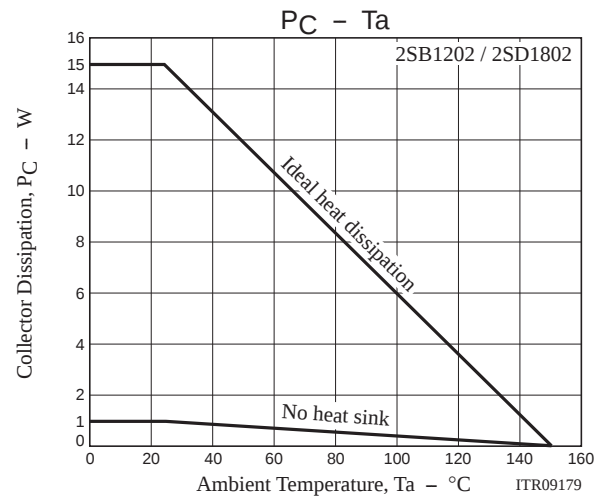
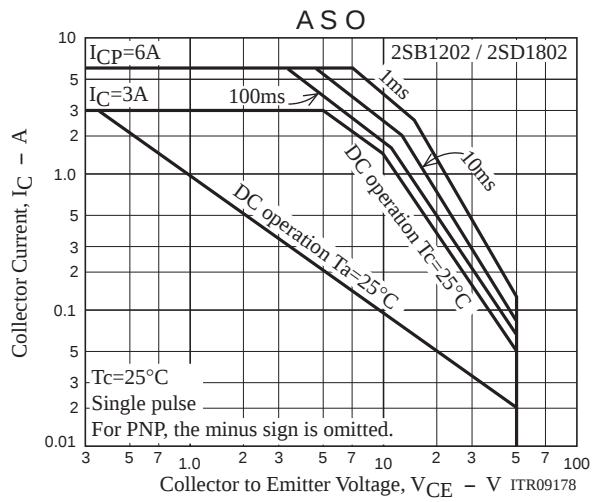
For PNP, the polarity is reversed.

Ordering Information

Device	Package	Shipping	memo
2SB1202S-E	TP	500pcs./bag	Pb Free
2SB1202T-E	TP	500pcs./bag	
2SD1802S-E	TP	500pcs./bag	
2SD1802T-E	TP	500pcs./bag	
2SB1202S-TL-E	TP-FA	700pcs./reel	
2SB1202T-TL-E	TP-FA	700pcs./reel	
2SD1802S-TL-E	TP-FA	700pcs./reel	
2SD1802T-TL-E	TP-FA	700pcs./reel	



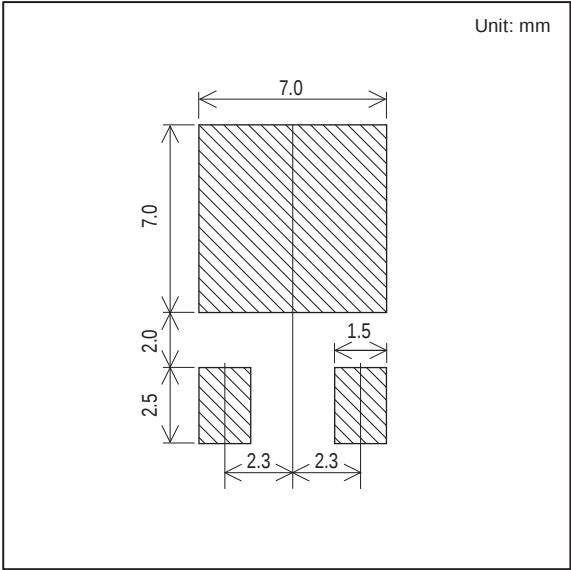
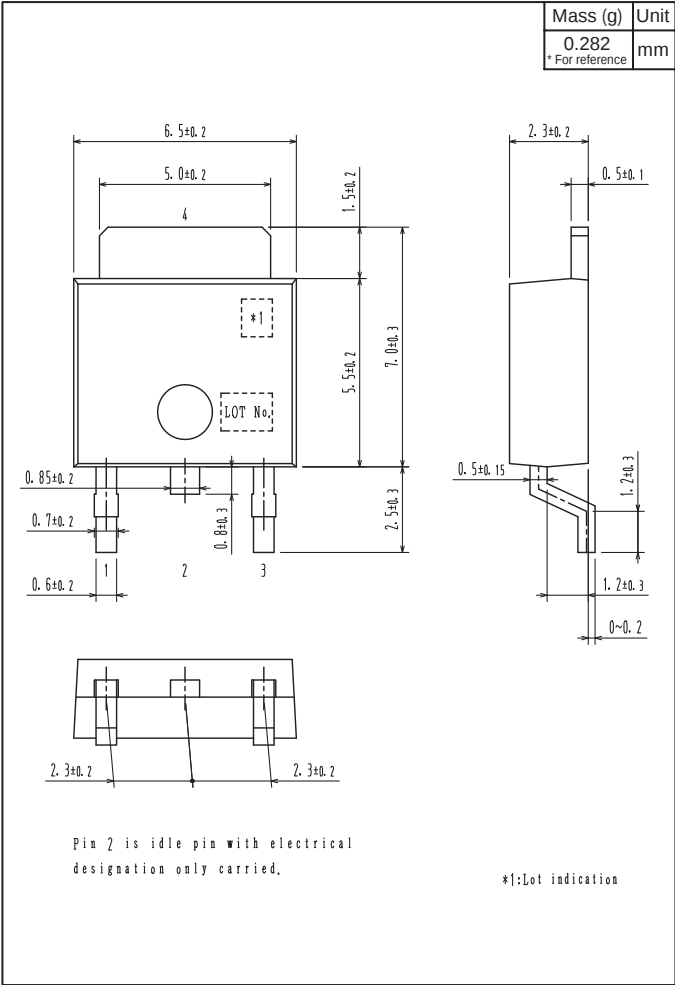




Outline Drawing

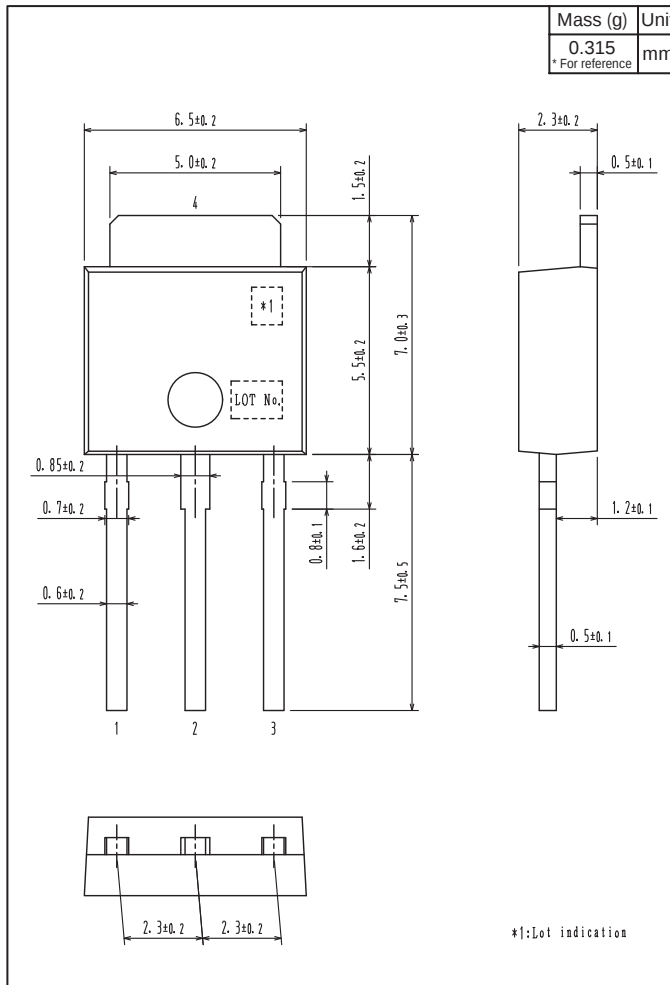
Land Pattern Example

2SB1202S-TL-E, 2SB1202T-TL-E, 2SD1802S-TL-E, 2SD1802T-TL-E



Outline Drawing

2SB1202S-E, 2SB1202T-E, 2SD1802S-E, 2SD1802T-E



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