



2SB1202/2SD1802

Bipolar Transistor

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

ON Semiconductor®

<http://onsemi.com>

Applications

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

Features

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

Specifications () : 2SB1202

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

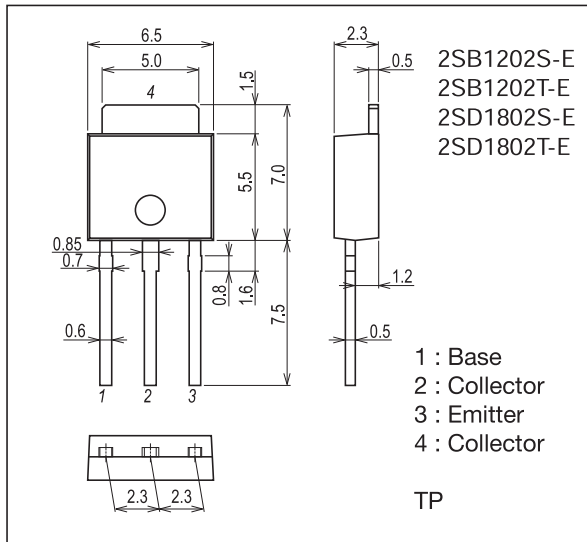
Parameter	Symbol	Conditions	Ratings	Unit
Collector to Base Voltage	V_{CBO}		(-60)	V
Collector to Emitter Voltage	V_{CEO}		(-50)	V
Emitter to Base Voltage	V_{EBO}		(-6)	V
Collector Current	I_C		(-3)	A
Collector Current (Pulse)	I_{CP}		(-6)	A

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.

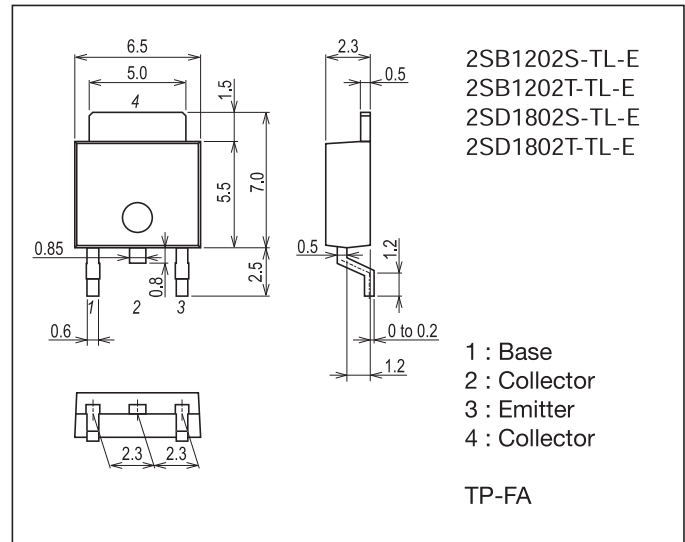
Package Dimensions unit : mm (typ)

7518-003



Package Dimensions unit : mm (typ)

7003-003

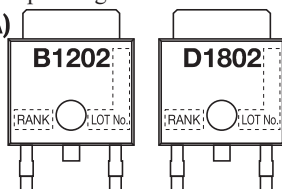


Product & Package Information

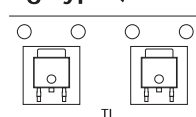
- Package : TP
- JEITA, JEDEC : SC-64, TO-251, SOT-553, DPAK
- Minimum Packing Quantity : 500 pcs./bag

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

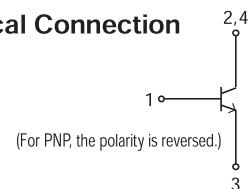
Marking (TP, TP-FA)



Packing Type (TP-FA) : TL



Electrical Connection



2SB1202/2SD1802

Continued from preceding page.

Parameter	Symbol	Conditions	Ratings	Unit
Collector Dissipation	PC		1	W
		$T_c=25^\circ\text{C}$	15	W
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

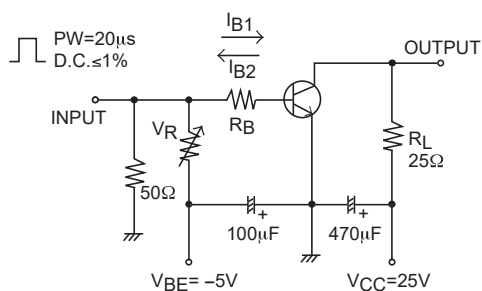
Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=-140\text{V}, I_E=0\text{A}$			(-1)	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-4\text{V}, I_C=0\text{A}$			(-1)	μA
DC Current Gain	h_{FE1}	$V_{CE}=-2\text{V}, I_C=-100\text{mA}$	100*		560*	
	h_{FE2}	$V_{CE}=-2\text{V}, I_C=-3\text{A}$	35			
Gain-Bandwidth Product	f_T	$V_{CE}=-10\text{V}, I_C=-50\text{mA}$		150		MHz
Output Capacitance	C_{ob}	$V_{CB}=-10\text{V}, f=1\text{MHz}$		(39)25		pF
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-2\text{A}, I_B=-100\text{mA}$		(-0.35)0.19	(-0.7)0.5	mV
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$V_{CE}=-2\text{V}, I_C=-100\text{mA}$		(-0.94)	(-1.2)	V
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0\text{A}$	(-60)			V
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, R_{BE}=\infty$	(-50)			V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0\text{A}$	(-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 h_{FE} 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



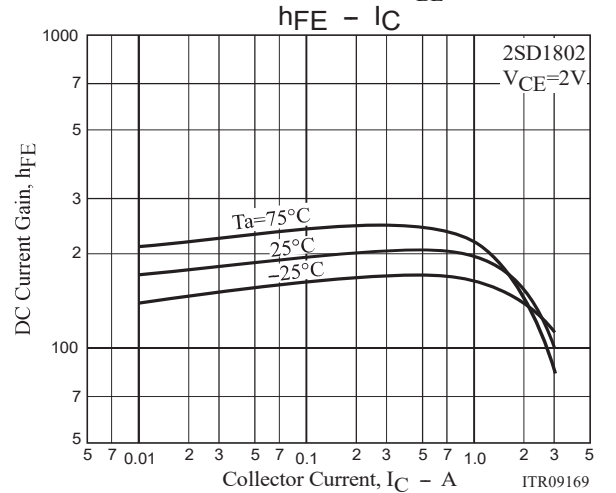
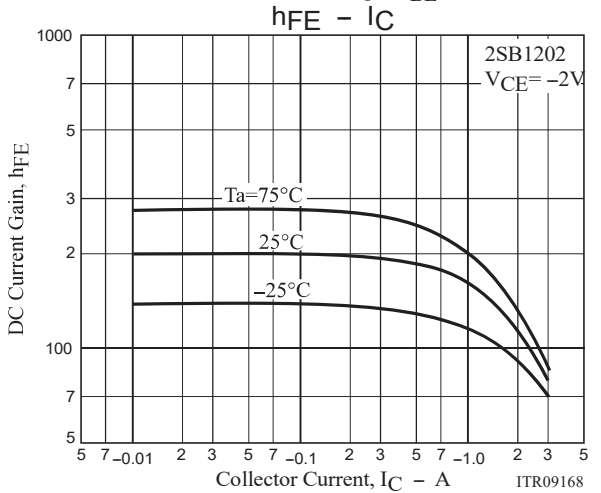
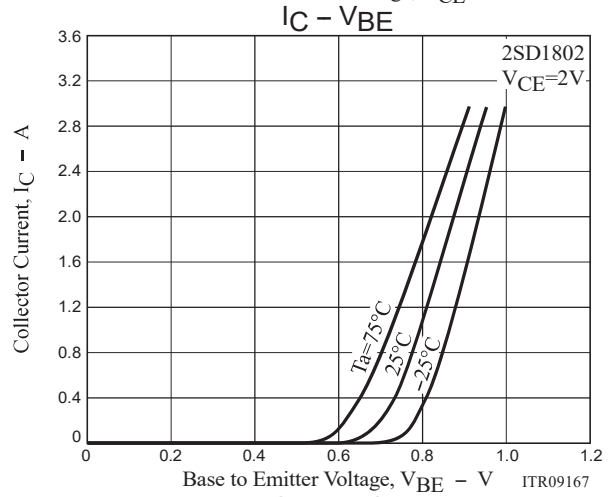
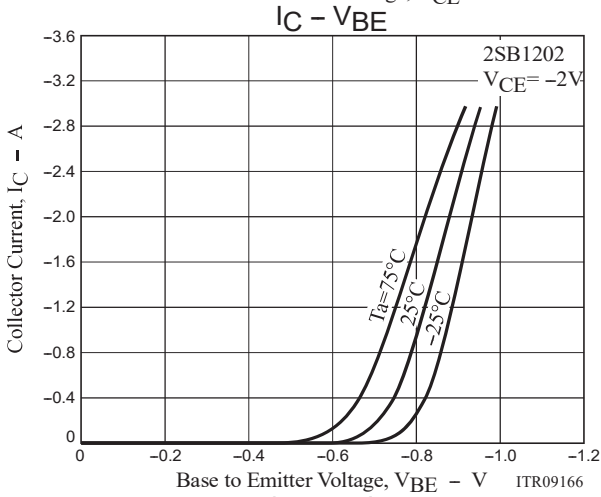
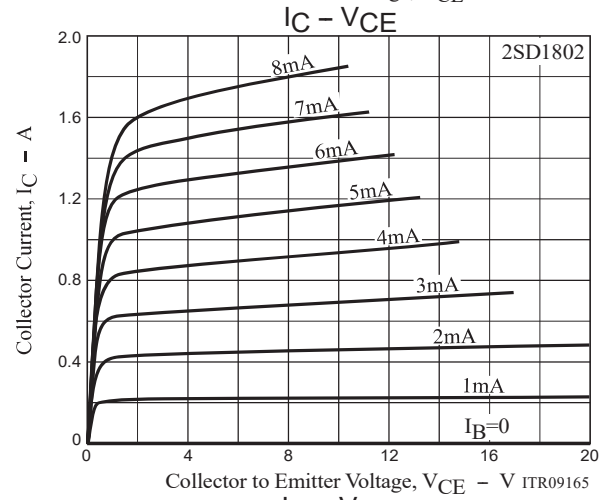
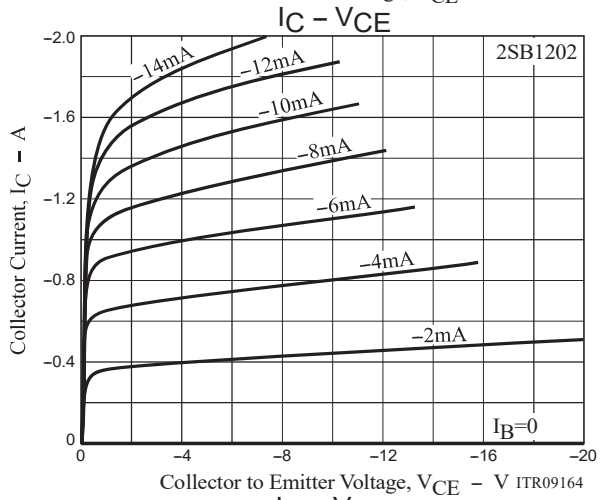
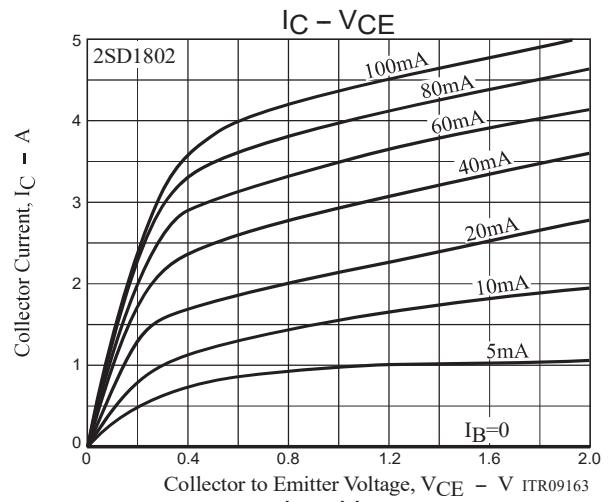
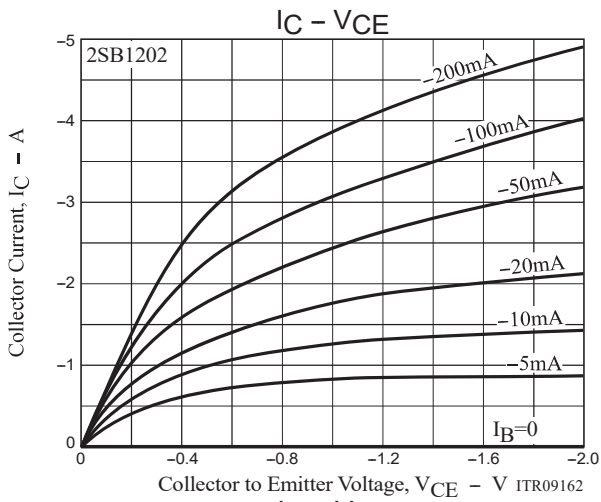
$$I_C=10I_{B1}=-10I_{B2}=1\text{A}$$

For PNP, the polarity is reversed.

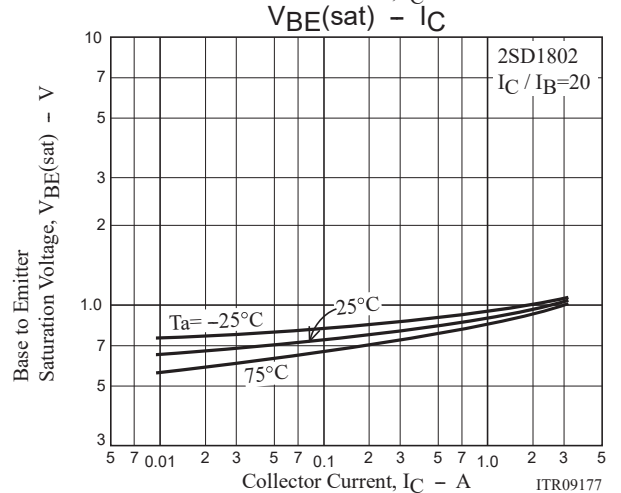
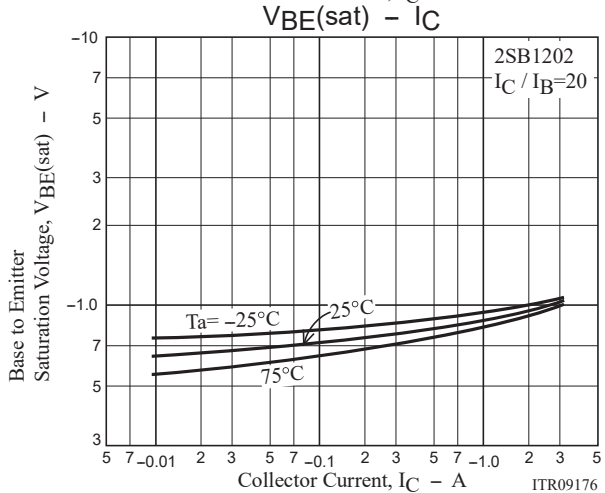
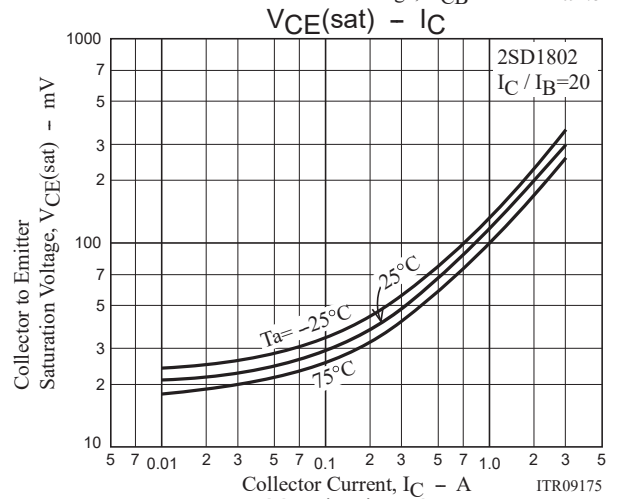
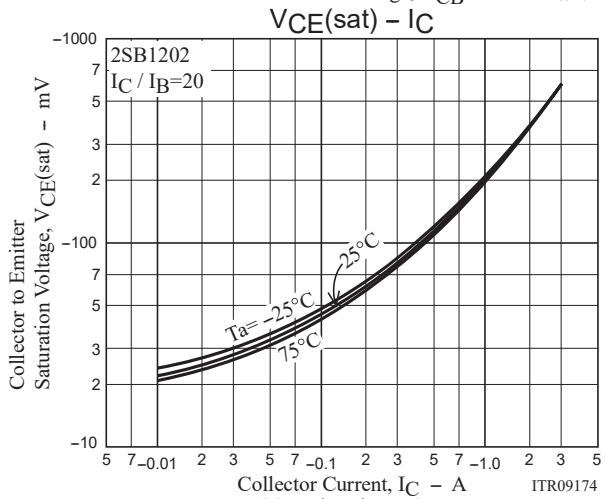
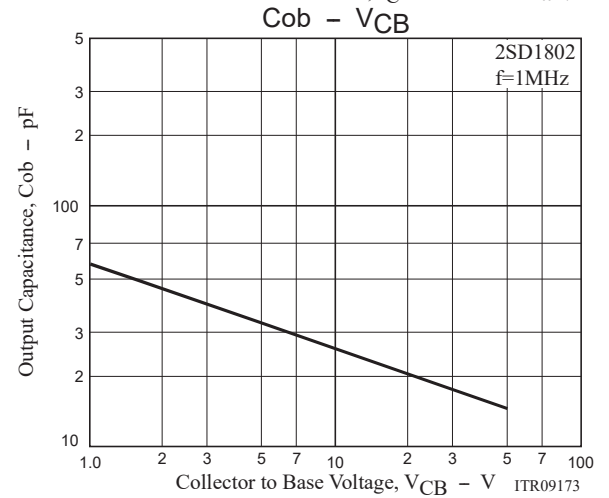
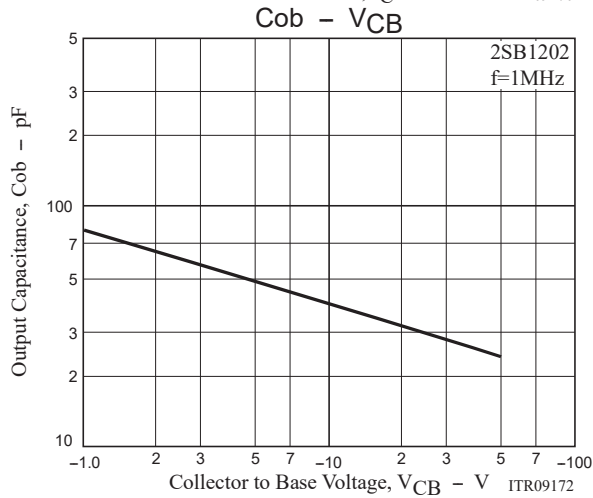
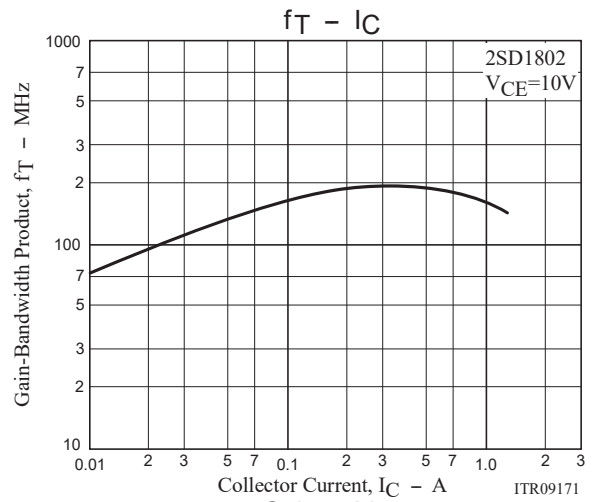
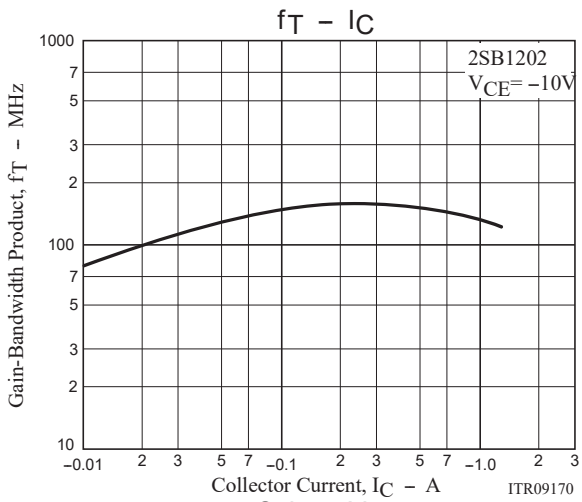
Ordering Information

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	

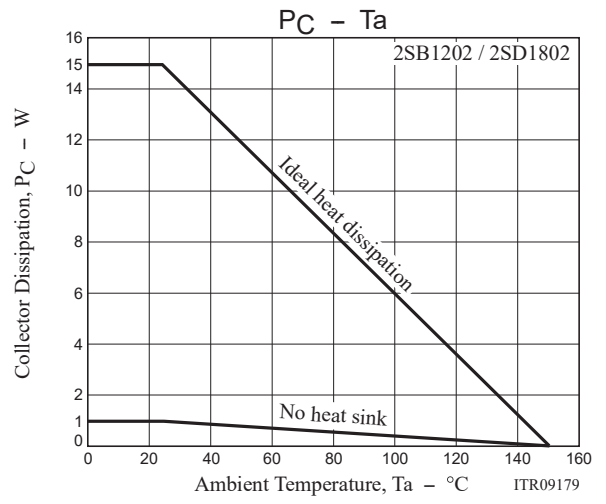
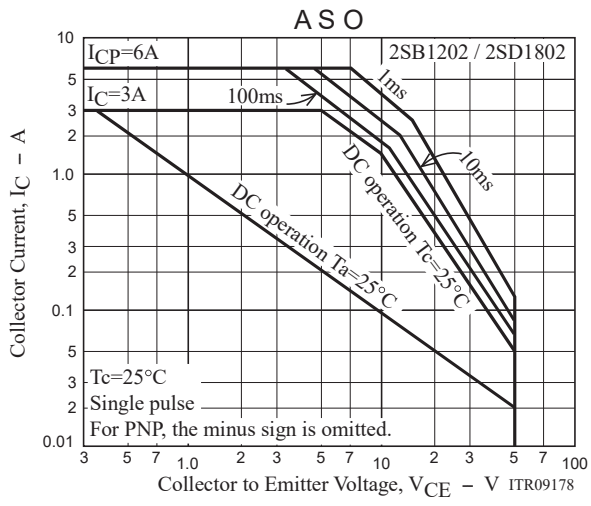
2SB1202/2SD1802



2SB1202/2SD1802



2SB1202/2SD1802

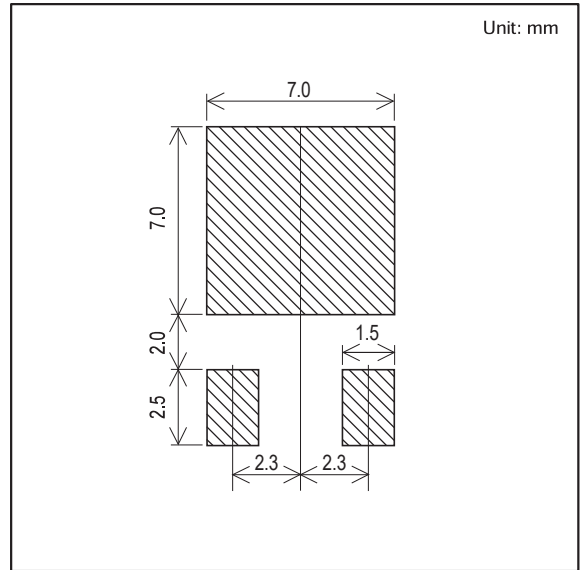
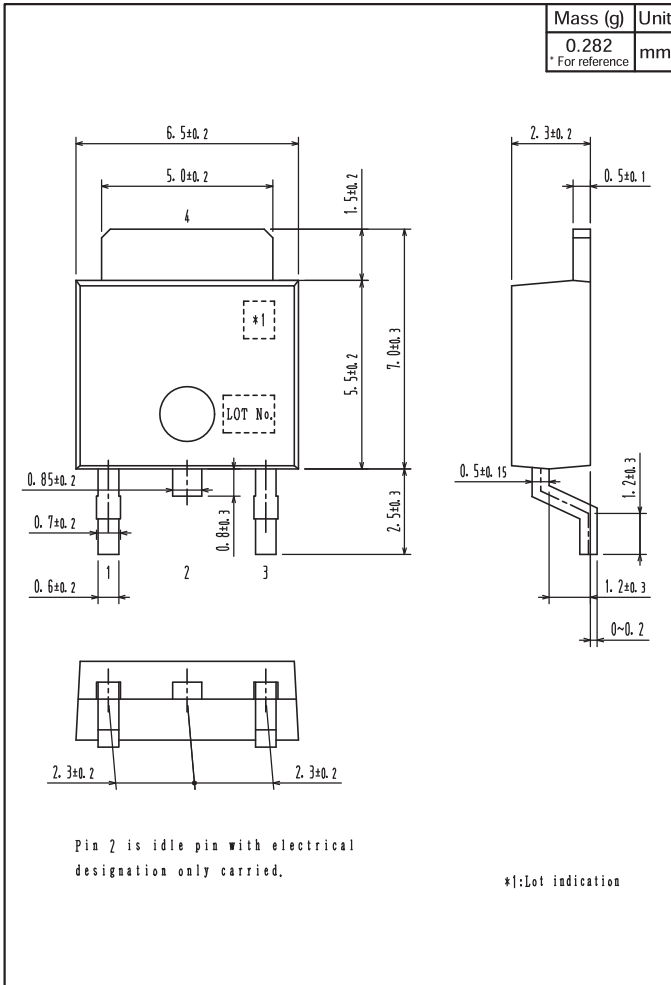


2SB1202/2SD1802

Outline Drawing

Land Pattern Example

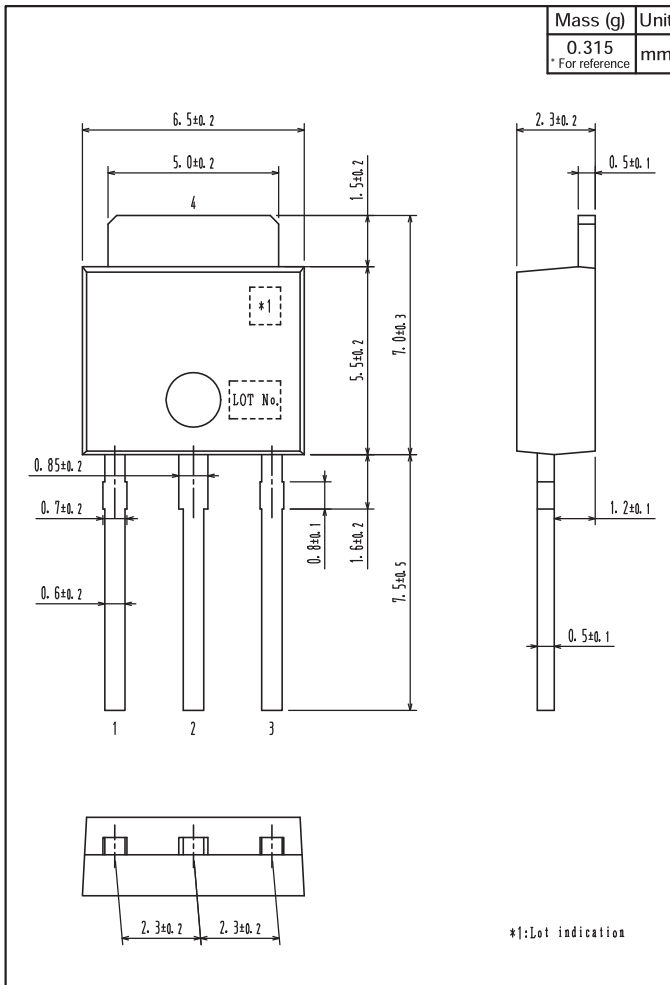
2SB1202S-TL-E, 2SB1202T-TL-E, 2SD1802S-TL-E, 2SD1802T-TL-E



2SB1202/2SD1802

Outline Drawing

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



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