



2SC6098

Bipolar Transistor

80V, 2.5A, Low $V_{CE(sat)}$, NPN Single TP/TP-FA

ON Semiconductor®

<http://onsemi.com>

Applications

- DC / DC converter, relay drivers, lamp drivers, motor drivers, inverter

Features

- Adoption of FBET, MBIT process
- Low collector-to-emitter saturation voltage
- High allowable power dissipation
- Large current capacity
- High-speed switching

Specifications

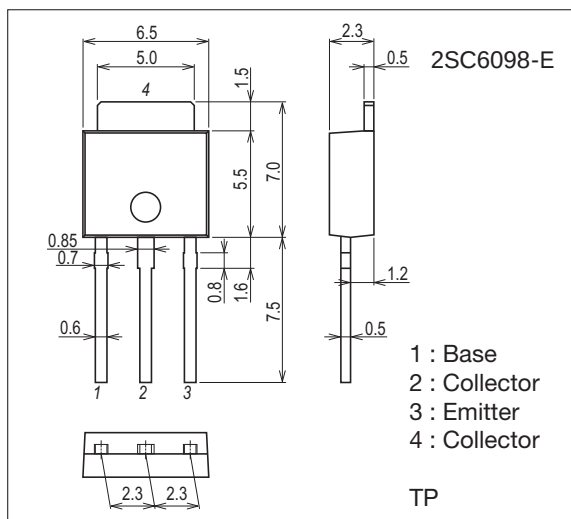
Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		120	V
Collector-to-Emitter Voltage	V_{CES}		120	V
	V_{CEO}		80	V
Emitter-to-Base Voltage	V_{EBO}		6.5	V

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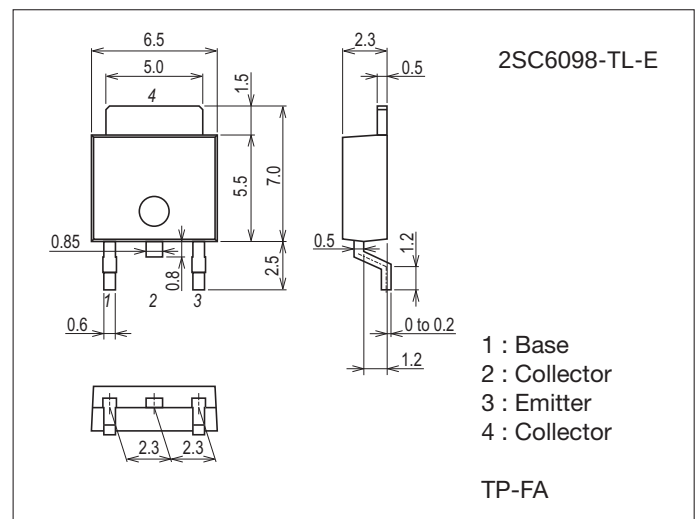
Package Dimensions unit : mm (typ)

7518-003



Package Dimensions unit : mm (typ)

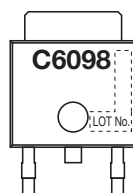
7003-003



Product & Package Information

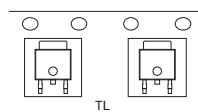
- Package : TP
- JEITA, JEDEC : SC-64, TO-251
- Minimum Packing Quantity : 500 pcs./bag

Marking (TP, TP-FA)

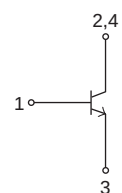


- Package : TP-FA
- JEITA, JEDEC : SC-63, TO-252
- Minimum Packing Quantity : 700 pcs./reel

Packing Type (TP-FA) : TL



Electrical Connection



2SC6098

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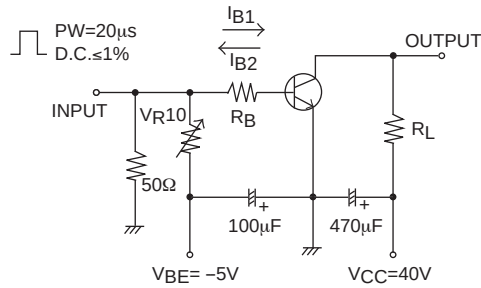
Parameter	Symbol	Conditions	Ratings	Unit
Collector Current	I_C		2.5	A
Collector Current (Pulse)	I_{CP}		4	A
Base Current	I_B		500	mA
Collector Dissipation	P_C		0.8	W
		$T_c=25^\circ\text{C}$	15	W
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

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.

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=70\text{V}$, $I_E=0\text{A}$			1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4\text{V}$, $I_C=0\text{A}$			1	μA
DC Current Gain	h_{FE}	$V_{CE}=5\text{V}$, $I_C=100\text{mA}$	300		600	
Gain-Bandwidth Product	f_T	$V_{CE}=10\text{V}$, $I_C=500\text{mA}$		350		MHz
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}$, $f=1\text{MHz}$		14		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=1\text{A}$, $I_B=50\text{mA}$		110	165	mV
	$V_{CE(sat)2}$	$I_C=1\text{A}$, $I_B=100\text{mA}$		100	150	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1\text{A}$, $I_B=100\text{mA}$		0.9	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}$, $I_E=0\text{A}$	120			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=100\mu\text{A}$, $R_{BE}=0\Omega$	120			V
	$V_{(BR)CEO}$	$I_C=1\text{mA}$, $R_{BE}=\infty$	80			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}$, $I_C=0\text{A}$	6.5			V
Turn-ON Time	t_{on}	See specified Test Circuit.		40		ns
Storage Time	t_{stg}			920		ns
Fall Time	t_f			32		ns

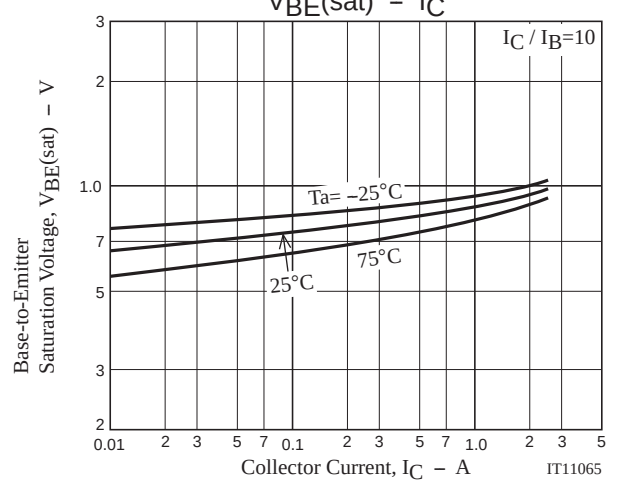
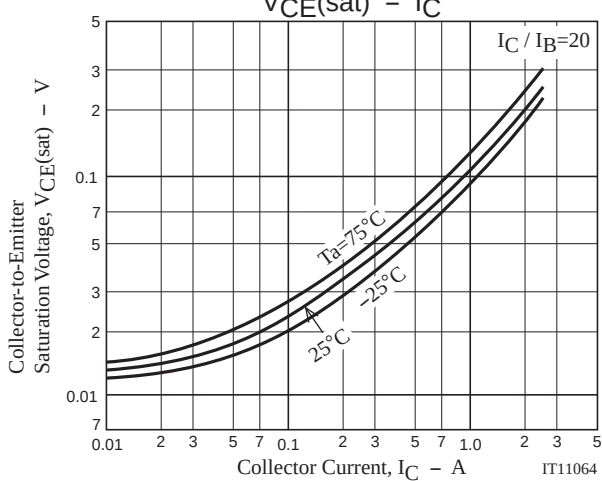
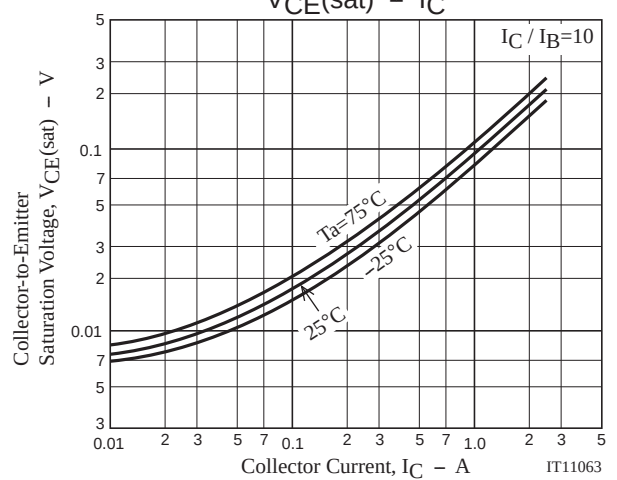
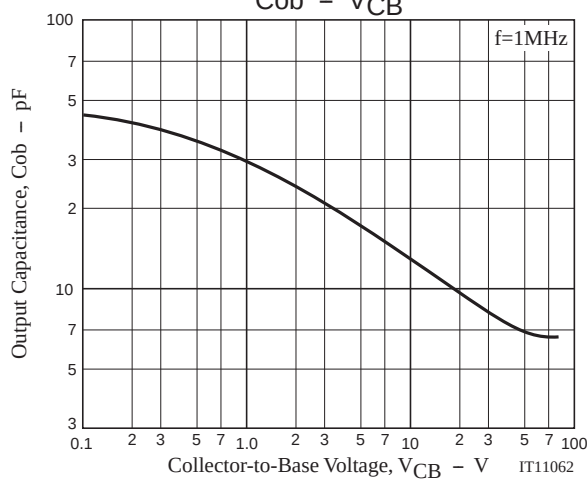
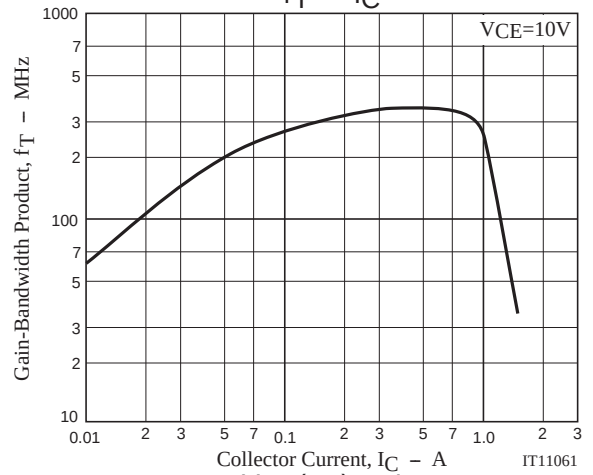
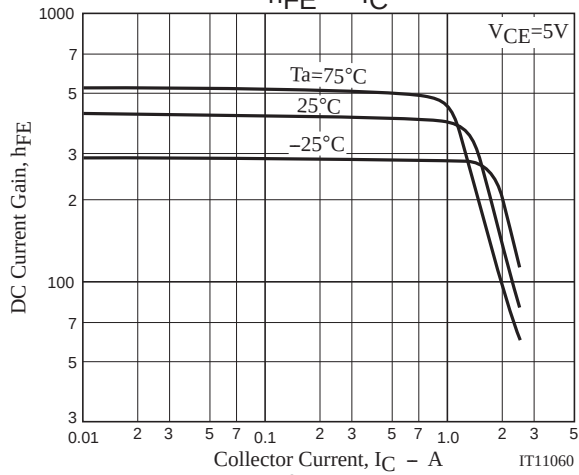
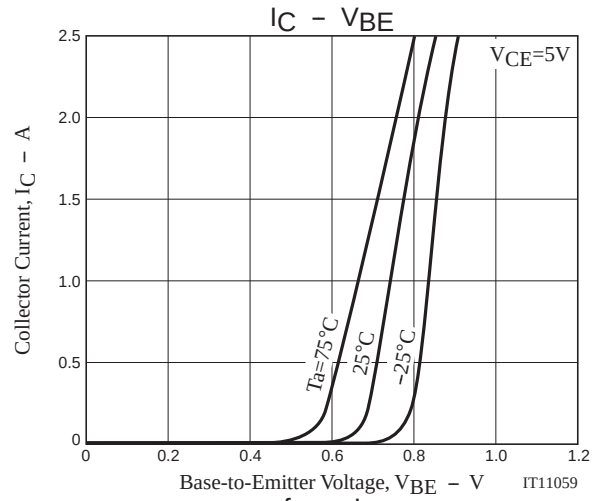
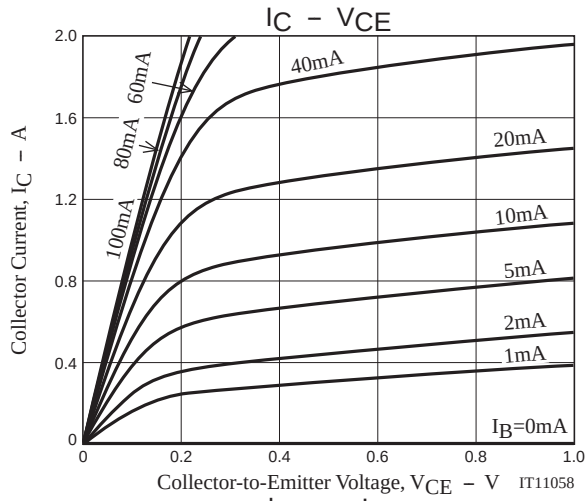
Switching Time Test Circuit

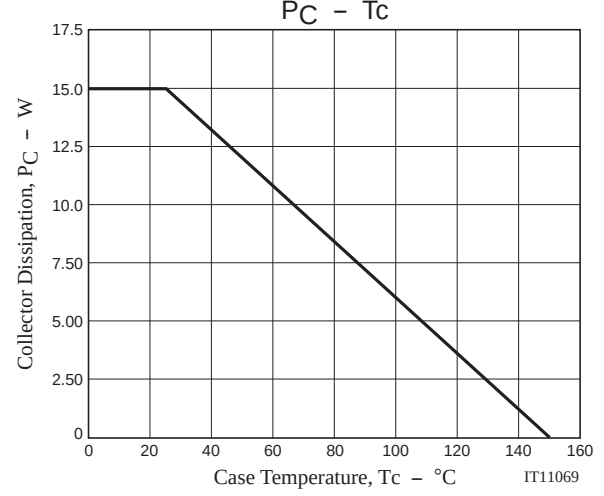
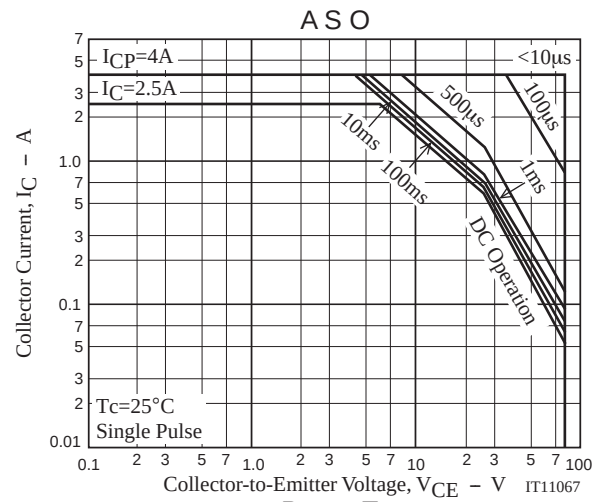
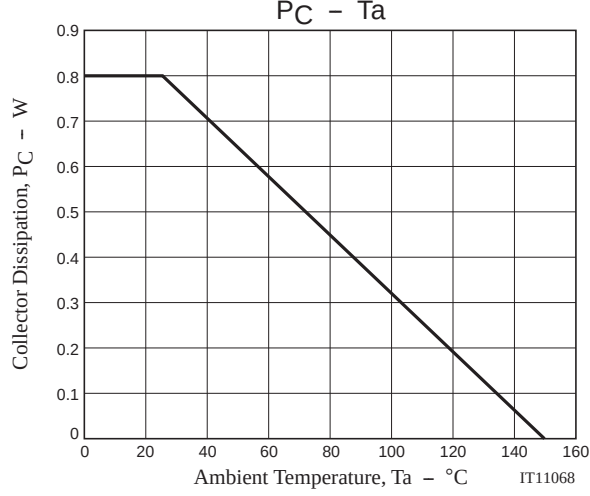
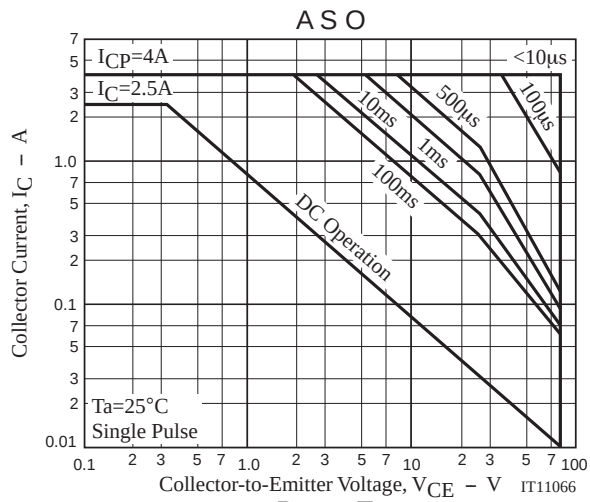


$$I_C = 10I_{B1} = -10I_{B2} = 0.5\text{A}$$

Ordering Information

Device	Package	Shipping	memo
2SC6098-E	TP	500pcs./bag	Pb Free
2SC6098-TL-E	TP-FA	700pcs./reel	





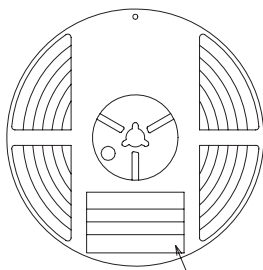
Taping Specification

2SC6098-TL-E

Packing Format

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
TP-FA	TP	700	2,100	12,600	3 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method



Reel label

Type No.
LOT No.
Quantity
Origin

Reel label, Inner box label
(unit:mm)

(P) TYPE	000000000
(1) LOT	00
(Q) QTY	0,000 (1) LEAD FREE *
(Z) SPECIAL	*20722005310C*
ASSEMBLY:****	(DIFFUSION:****)

Outer box label

It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.

TYPE CODE	
TYPE	○○○○○○○○
QTY	0,000 PCS (1) LEAD FREE *
LOT	○○○○○○○○
PACKAGE	○○○○○○○○
SPECIAL	
ASSEMBLY:****	(DIFFUSION:****)

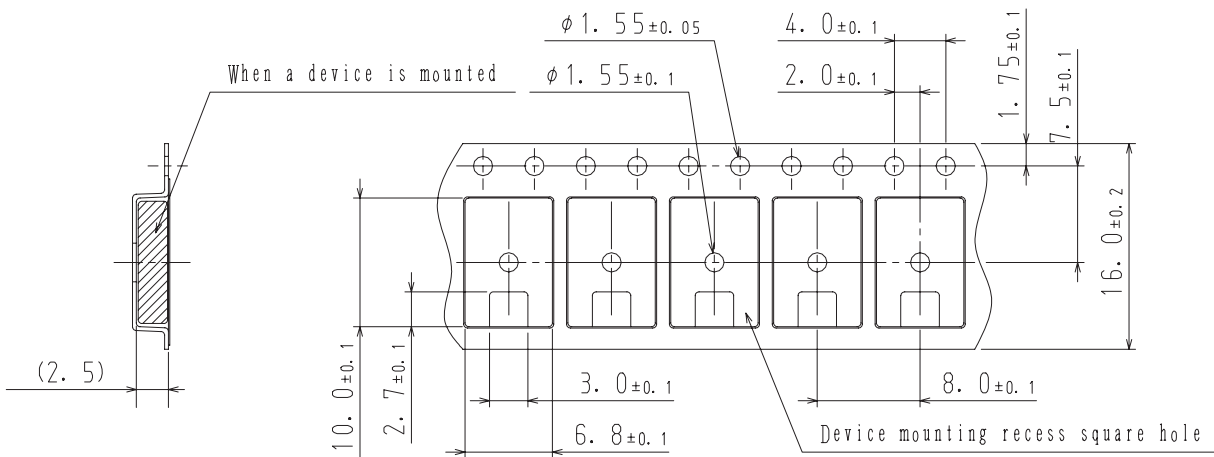
NOTE (1)

The LEAD FREE * description shows that the surface treatment of the terminal is lead free.

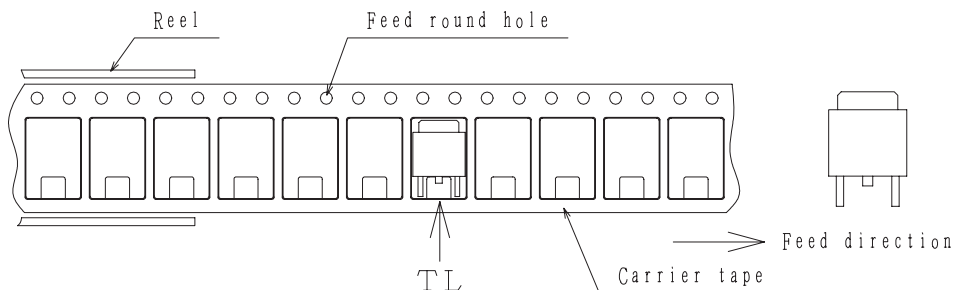
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

Taping configuration

1. Carrier tape size (unit:mm)

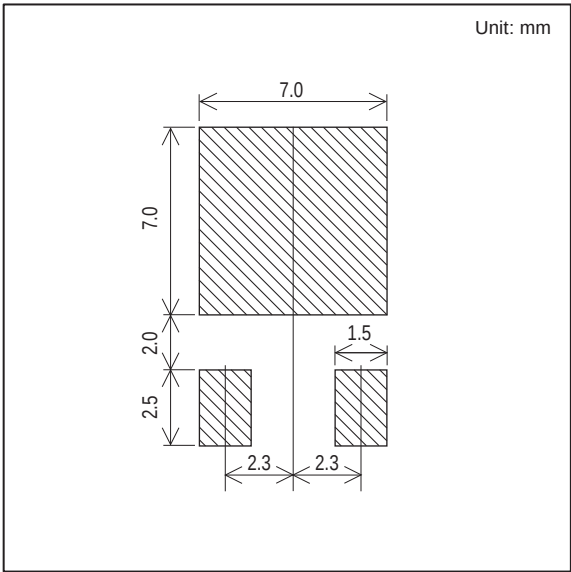
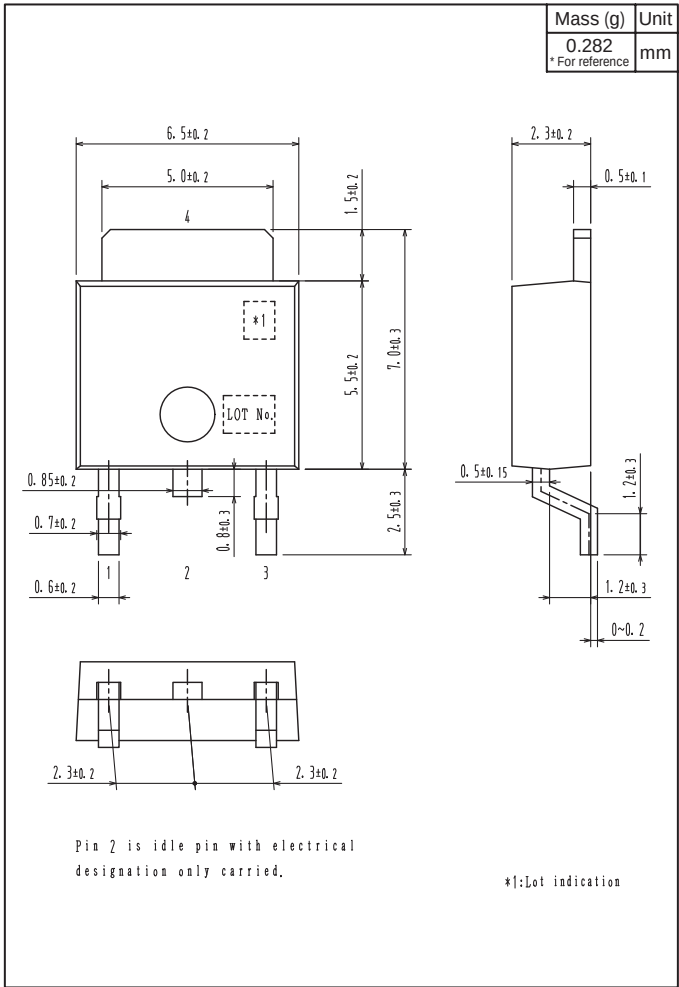


2. Device placement direction



Outline Drawing
2SC6098-TL-E

Land Pattern Example

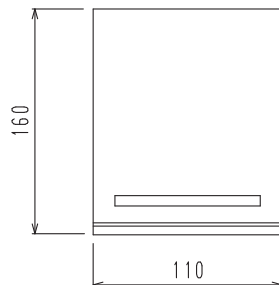
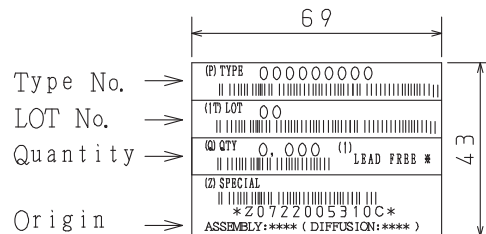


Bag Packing Specification

2SC6098-E

1. Packing Format

Package Name	Maximum Number of devices contained (pcs)			
	Bag	Inner box	Outer box	
TP	500	B-1	A-1	A-2
		10, 000	50, 000	30, 000
		Packing format (Dimensions:mm (external))		
		Inner box	Outer box	
		B-1	A-1	A-2
		445×225×55	470×250×300	470×250×190

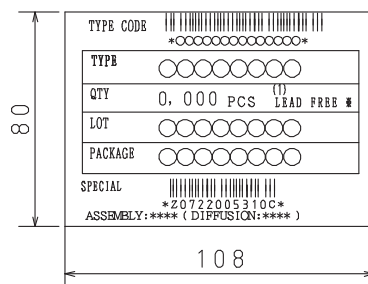
2. Bag dimensions
(unit:mm)3. Bag label, Inner box label
(unit:mm)4. Outer box label
(unit:mm)

It is a label at the time of factory shipments.
The form of a label may change in physical
distribution process.

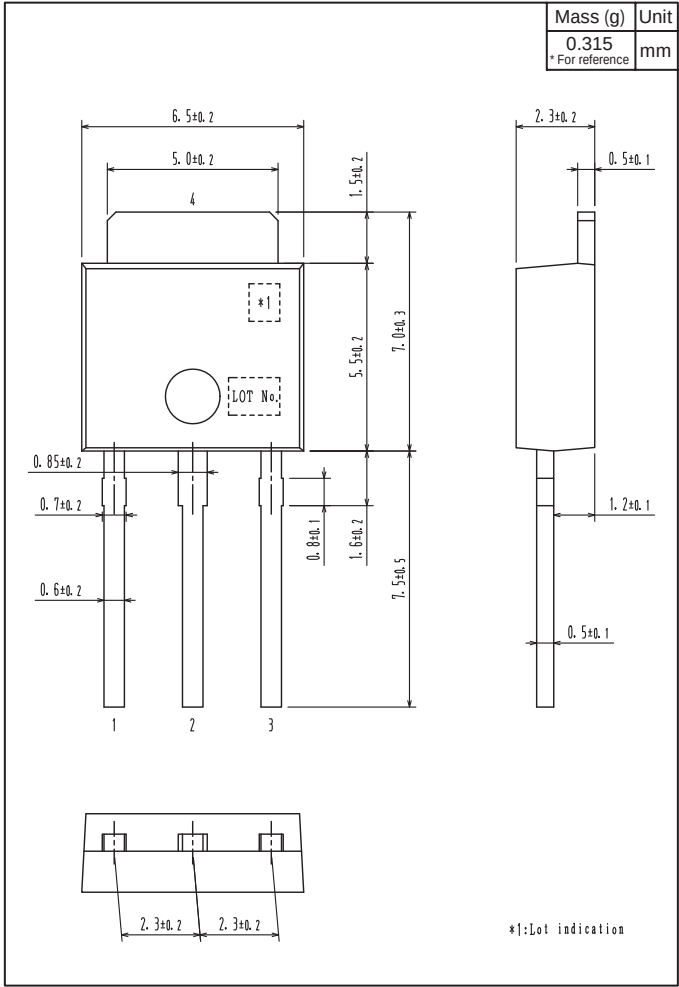
NOTE (1)

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surface treatment of the terminal is lead free.

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3



Outline Drawing
2SC6098-E



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