Ordering number : ENA1169A

SFT1202

Bipolar Transistor
150V, 2A, 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

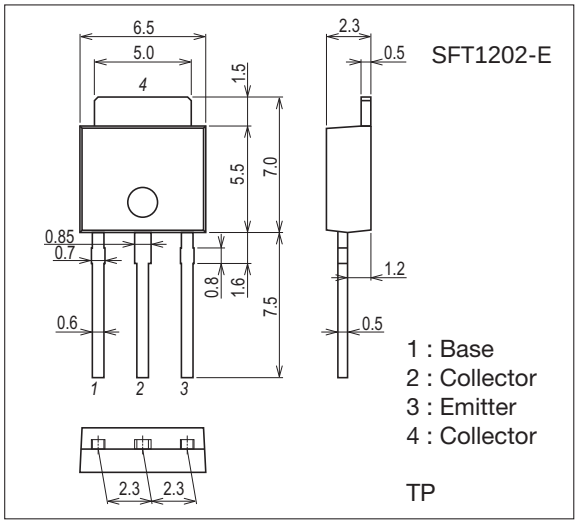
Specifications
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		180	V
Collector-to-Emitter Voltage	V_{CES}		180	V
Collector-to-Emitter Voltage	V_{CEO}		150	V
Emitter-to-Base Voltage	V_{EBO}		7	V
Collector Current	I_C		2	A
Collector Current (Pulse)	I_{CP}		3	A
Base Current	I_B		400	mA

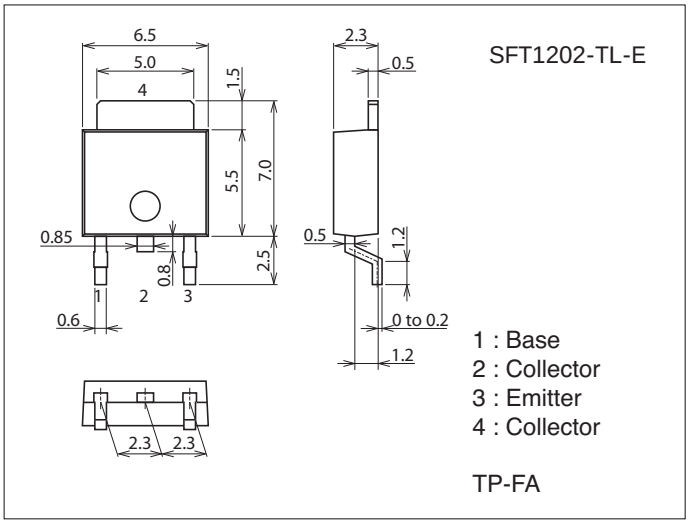
Continued on next page.

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



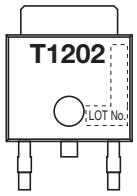
Package Dimensions unit : mm (typ)
7003-003



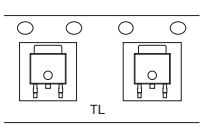
Product & Package Information
- Package : TP
- JEITA, JEDEC : SC-64, TO-251
- Minimum Packing Quantity : 500 pcs./bag

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

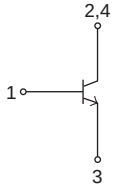
Marking (TP, TP-FA)



Packing Type (TP-FA) : TL



Electrical Connection



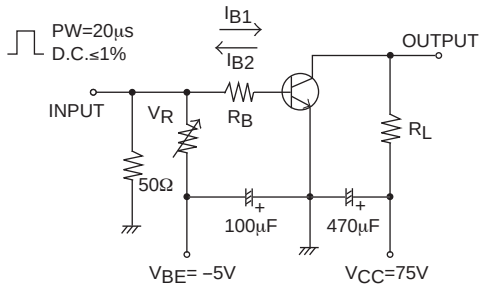
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings	Unit
Collector Dissipation	P_C		1	W
		Tc=25°C	15	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=80V, I_E=0A			1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=4V, I_C=0A			1	μA
DC Current Gain	h_{FE}	V_{CE}=5V, I_C=100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=300mA		140		MHz
Output Capacitance	Cob	V_{CB}=10V, f=1MHz		12		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)1	I_C=1A, I_B=100mA		110	165	mV
	V_{CE}(sat)2	I_C=0.5A, I_B=50mA		65	100	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=1A, I_B=100mA		0.85	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0A	180			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=100μA, R_{BE}=0Ω	180			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA, R_{BE}=∞	150			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0A	7			V
Turn-ON Time	t_{on}	See specified Test Circuit.		50		ns
Storage Time	t_{stg}			1460		ns
Fall Time	t_f			70		ns

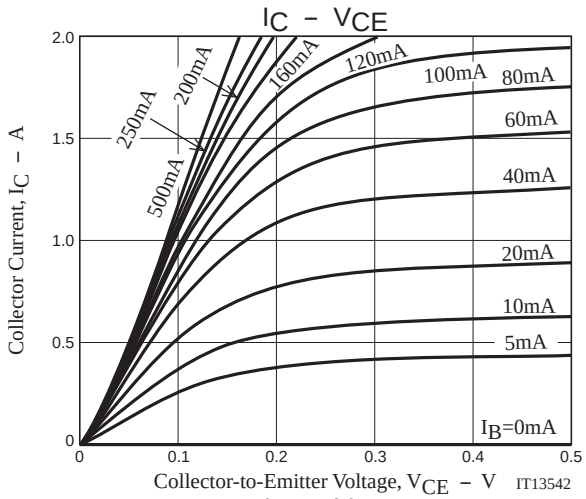
Switching Time Test Circuit

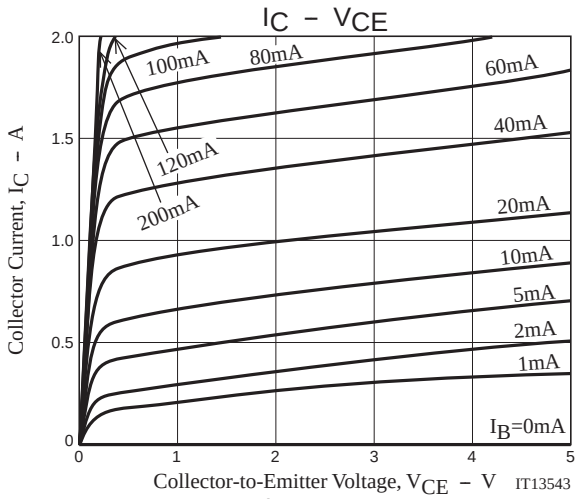


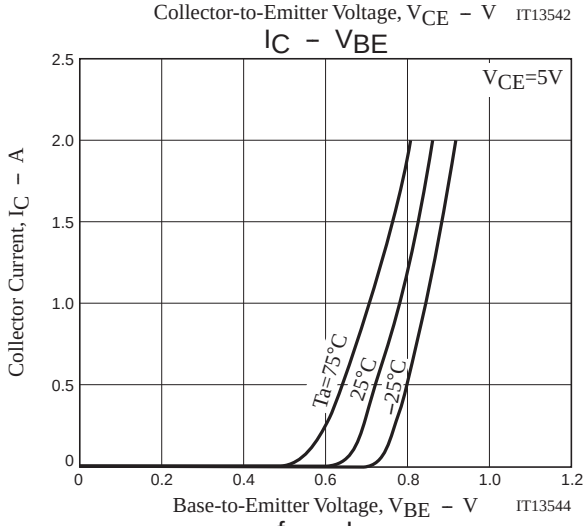
I_C=10I_{B1}= −10I_{B2}=0.5A

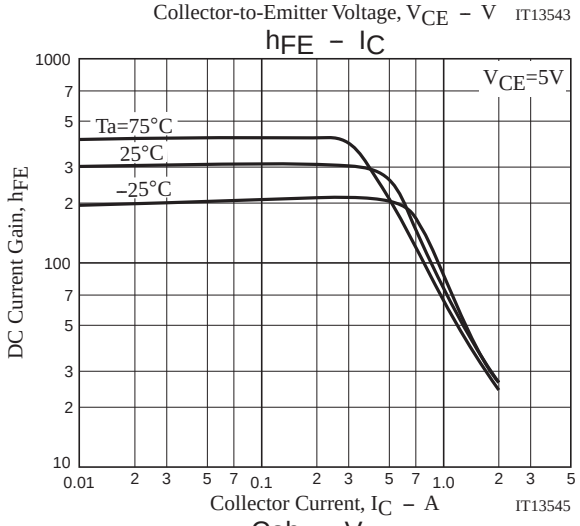
Ordering Information

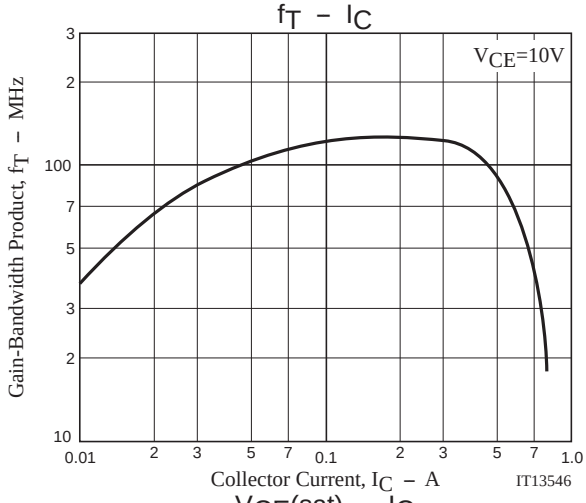
Device	Package	Shipping	memo
SFT1202-E	TP	500pcs./bag	Pb Free
SFT1202-TL-E	TP-FA	700pcs./reel	

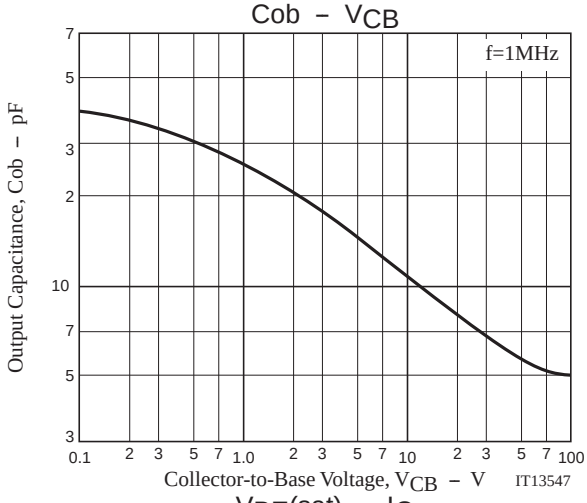

IC – VCE
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT13542
250mA
200mA
160mA
120mA
100mA
80mA
60mA
40mA
20mA
10mA
5mA
500mA
IB=0mA

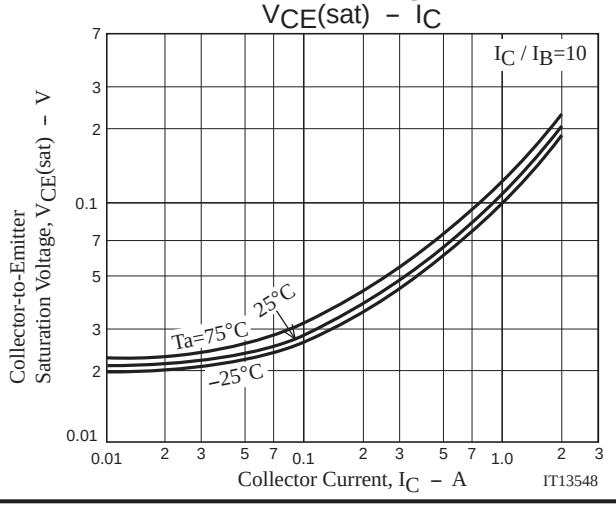

IC – VCE
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT13543
100mA
80mA
60mA
40mA
120mA
200mA
20mA
10mA
5mA
2mA
1mA
IB=0mA

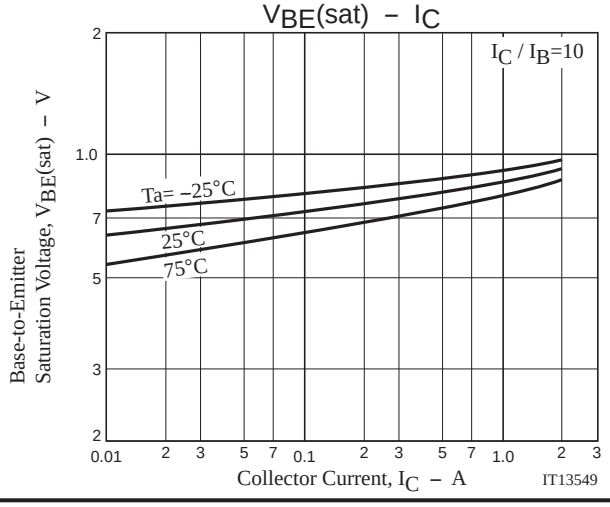

IC – VBE
VCE=5V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT13544
Ta=75°C
25°C
–25°C

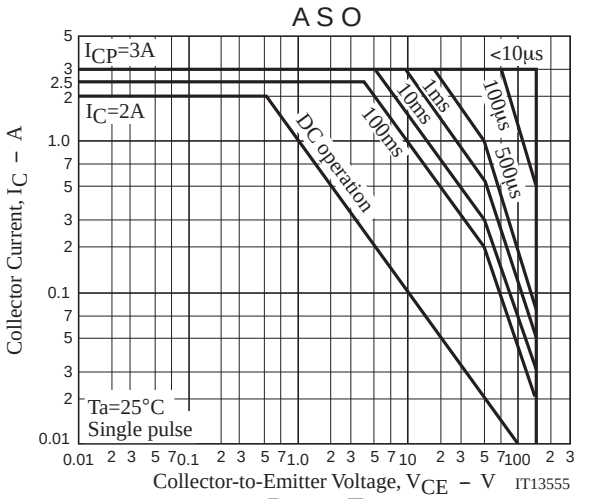

hFE – IC
VCE=5V
DC Current Gain, hFE
Collector Current, IC – A
IT13545
Ta=75°C
25°C
–25°C

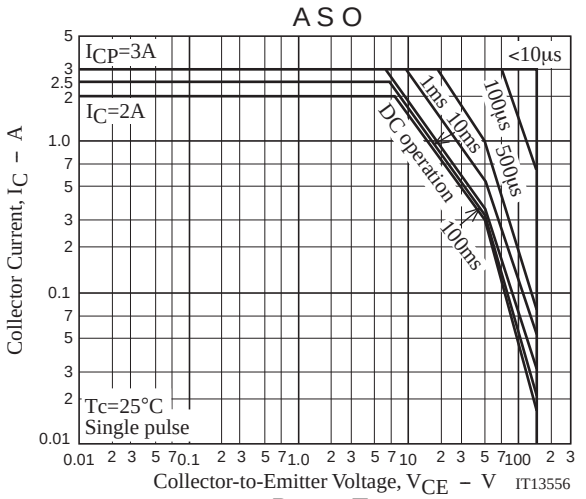

fT – IC
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT13546

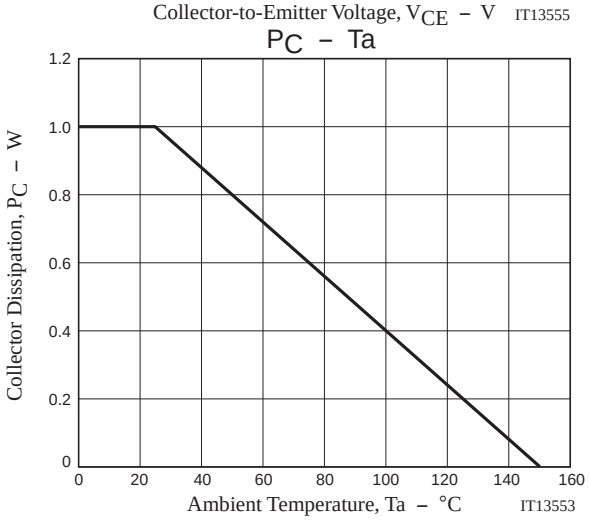

Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT13547

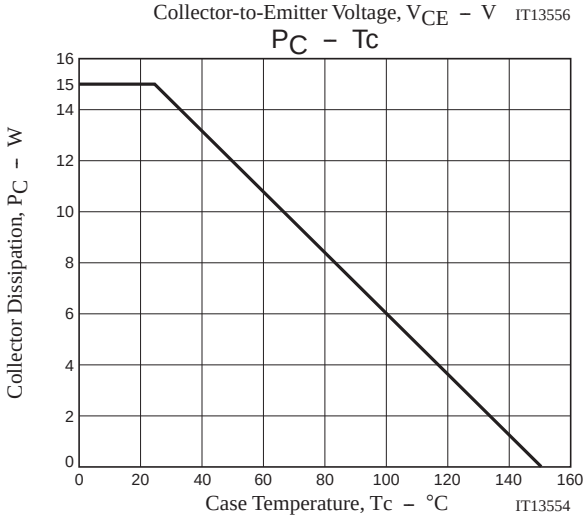

VCE(sat) – IC
IC / IB=10
Collector-to-Emitter
Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT13548
Ta=75°C
25°C
–25°C


VBE(sat) – IC
IC / IB=10
Base-to-Emitter
Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT13549
Ta= –25°C
25°C
75°C


ASO
ICP=3A
<10μs
IC=2A
DC operation
100ms
10ms
1ms
100μs
500μs
Ta=25°C
Single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT13555


ASO
ICP=3A
<10μs
IC=2A
DC operation
100ms
10ms
1ms
100μs
500μs
Tc=25°C
Single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT13556


PC – Ta
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT13553


PC – Tc
Collector Dissipation, PC – W
Case Temperature, Tc – °C
IT13554

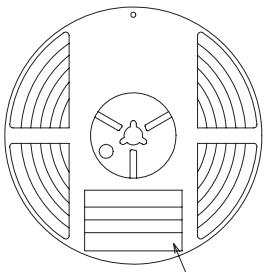
Taping Specification

SFT1202-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

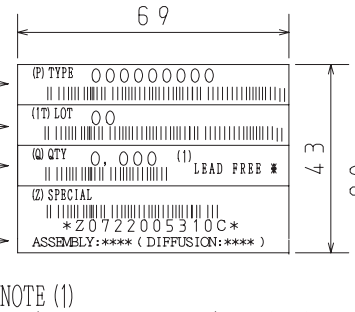
Packing method



Reel label

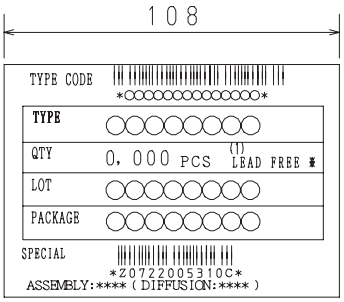
Reel label, Inner box label

(unit:mm)



Outer box label

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

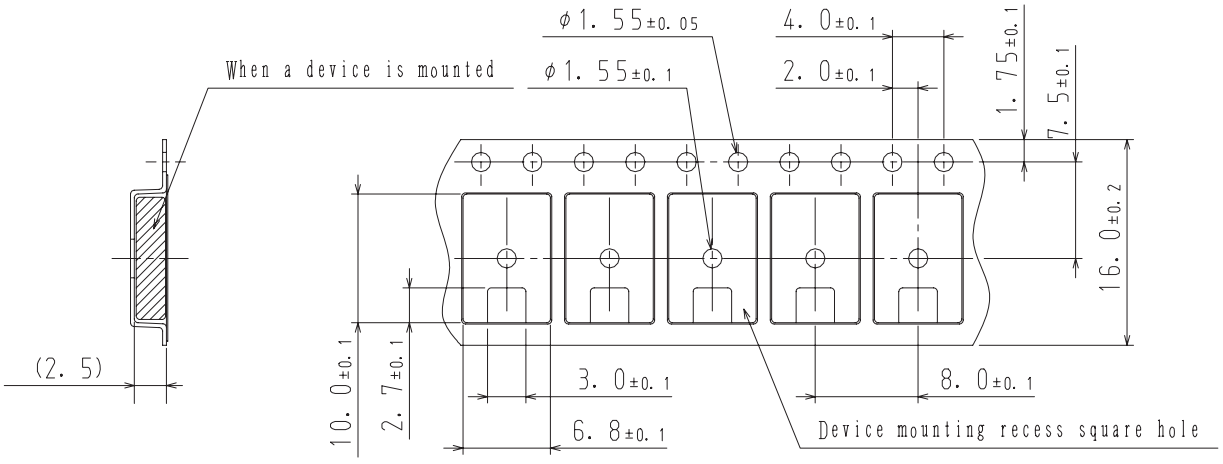


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

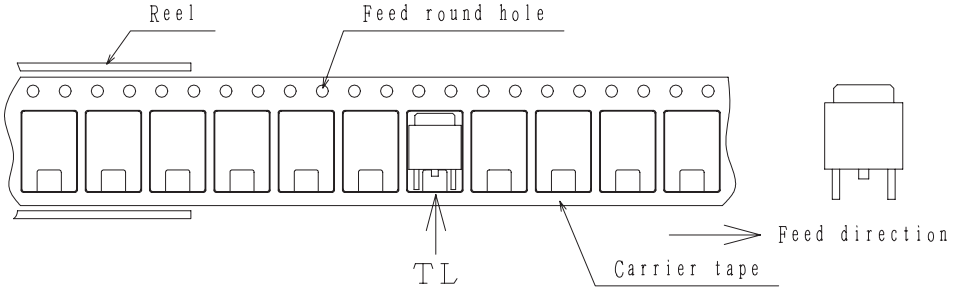
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

Taping configuration

1. Carrier tape size (unit:mm)



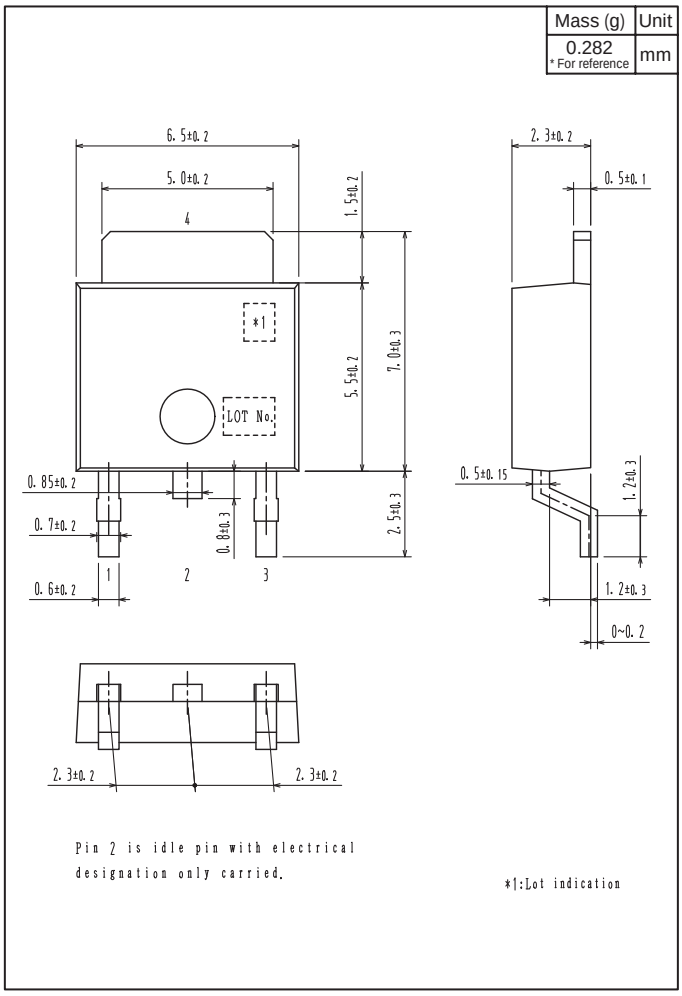
2. Device placement direction



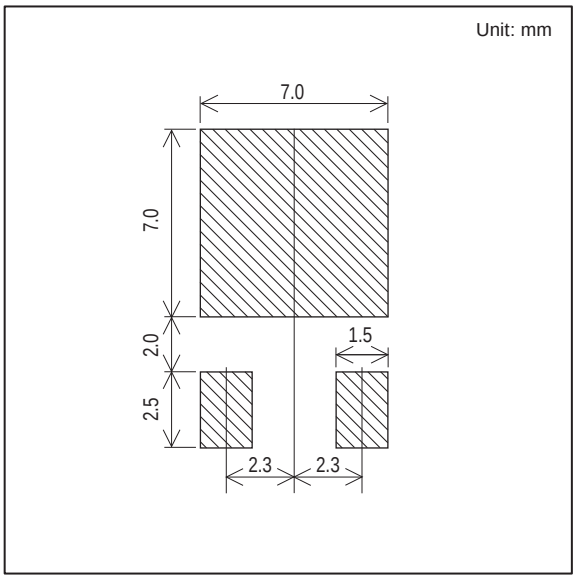
Those with one electrode terminal on the feed hole side·····TL

Outline Drawing

SFT1202-TL-E



Land Pattern Example



Bag Packing Specification

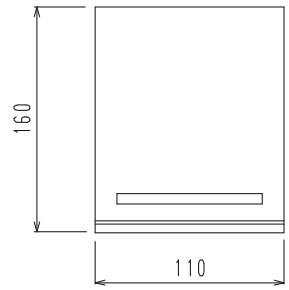
SFT1202-E

1. Packing Format

Package Name	Maximum Number of devices contained (pcs)			
	Bag	Inner box	Outer box	
TP		B-1	A-1	A-2
	500	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

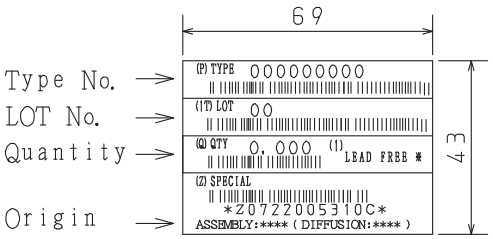
2. Bag dimensions

(unit: mm)



3. Bag label, Inner box label

(unit: mm)



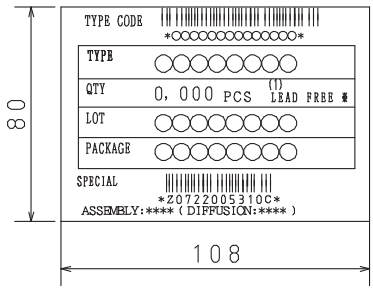
NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

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

4. Outer box label

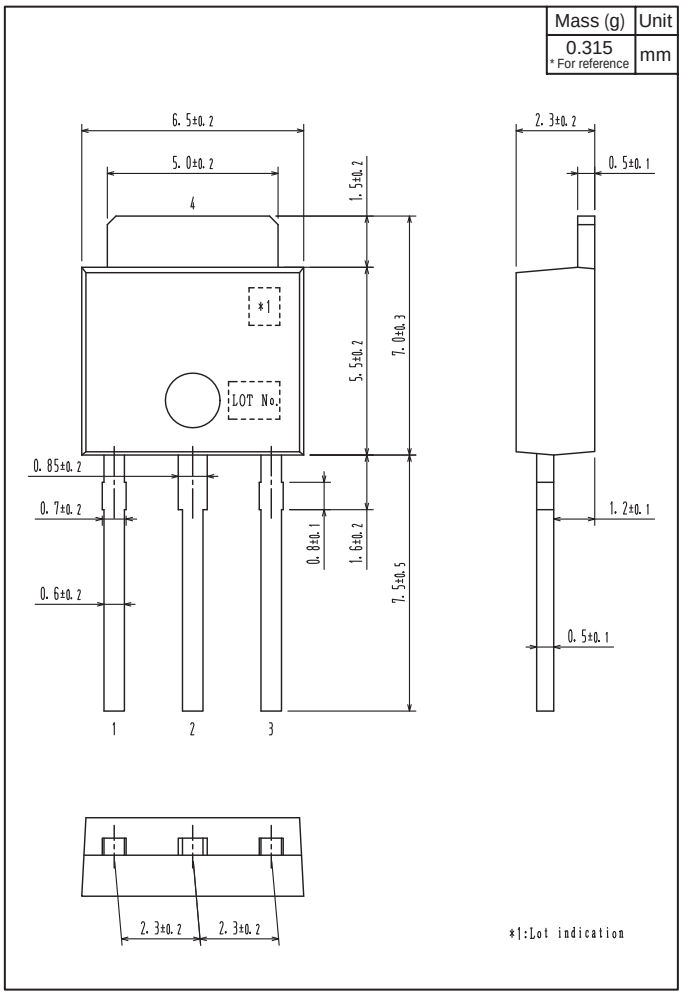
(unit: mm)

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



Outline Drawing

SFT1202-E



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