



MCH6103/MCH6203 — PNP / NPN Epitaxial Planar Silicon Transistors DC / DC Converter Applications

Applications

- Relay drivers, lamp drivers, motor drivers, flash

Features

- Adoption of MBIT processes
- Low collector-to-emitter saturation voltage
- Ultrasmall package facilitates miniaturization in end products (mounting height : 0.85mm)
- High allowable power dissipation
- Large current capacity
- High-speed switching

Specifications () : MCH6103

Absolute Maximum Ratings at Ta=25°C

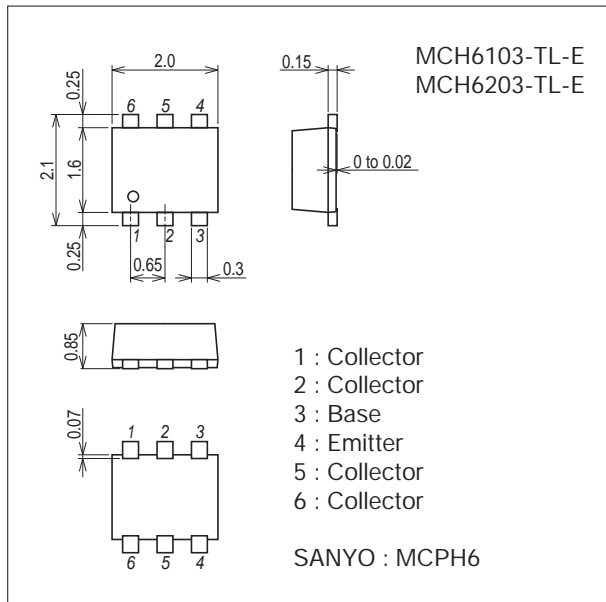
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CB0}		(-50)80	V
Collector-to-Emitter Voltage	V _{CES}		(-50)80	V
	V _{CEO}		(-)50	V
Emitter-to-Base Voltage	V _{EB0}		(-)5	V

Continued on next page.

Package Dimensions

unit : mm (typ)

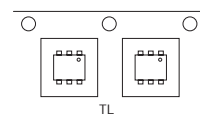
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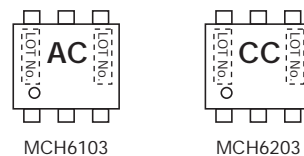
Product & Package Information

- Package : MCPH6
- JEITA, JEDEC : SC-88, SC-70-6, SOT-363
- Minimum Packing Quantity : 3,000 pcs./reel

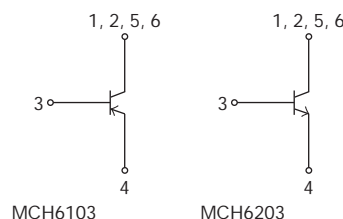
Packing Type: TL



Marking



Electrical Connection



MCH6103 / MCH6203

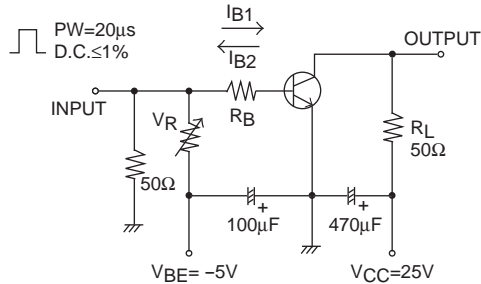
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Parameter	Symbol	Conditions	Ratings	Unit
Collector Current	I_C		(-)1.0	A
Collector Current (Pulse)	I_{CP}		(-)3	A
Base Current	I_B		200	mA
Collector Dissipation	P_C	When mounted on ceramic substrate (600mm ² ×0.8mm)	1.0	W
Junction Temperature	T_J		150	°C
Storage Temperature	T_{stg}		-55 to +150	°C

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)40\text{V}, I_E=0\text{A}$			(-)0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4\text{V}, I_C=0\text{A}$			(-)0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=(-)2\text{V}, I_C=(-)100\text{mA}$	200		560	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)10\text{V}, I_C=(-)300\text{mA}$		420		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10\text{V}, f=1\text{MHz}$		(9)6		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=(-)500\text{mA}, I_B=(-)10\text{mA}$		(-280)130	(-430)190	mV
	$V_{CE(sat)2}$	$I_C=(-)300\text{mA}, I_B=(-)6\text{mA}$		(-145)90	(-220)135	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)500\text{mA}, I_B=(-)10\text{mA}$		(-)0.81	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu\text{A}, I_E=0\text{A}$	(-50)80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=(-)100\mu\text{A}, R_{BE}=0\Omega$	(-50)80			V
	$V_{(BR)CEO}$	$I_C=(-)1\text{mA}, R_{BE}=\infty$	(-)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu\text{A}, I_C=0\text{A}$	(-)5			V
Turn-On Time	t_{on}	See specified Test Circuit.		(36)38		ns
Storage Time	t_{stg}			(173)332		ns
Fall Time	t_f			(28)40		ns

Switching Time Test Circuit



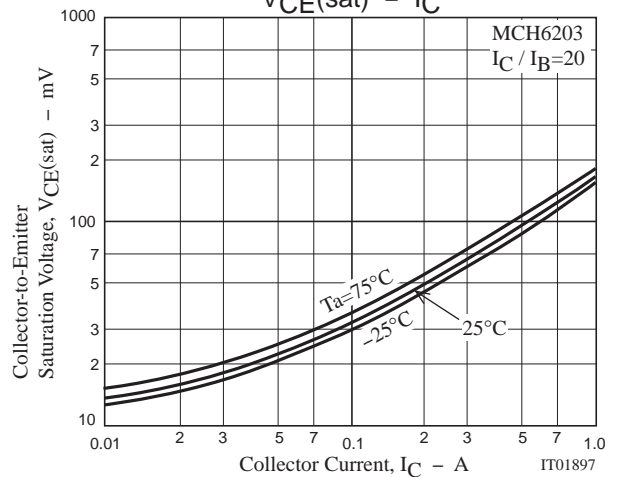
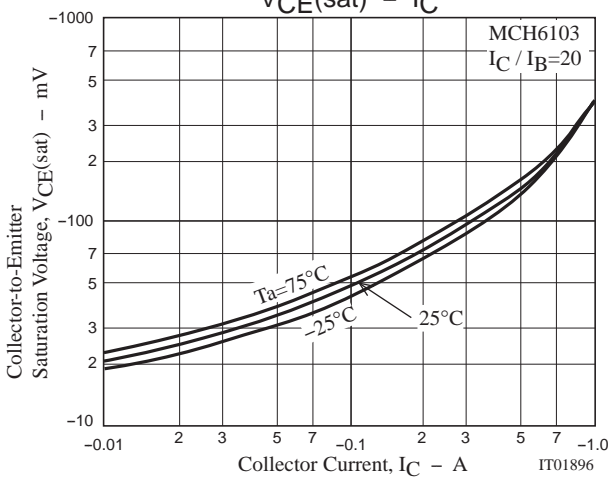
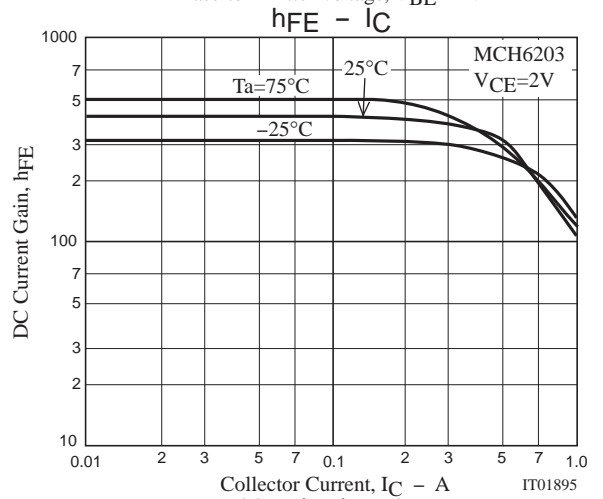
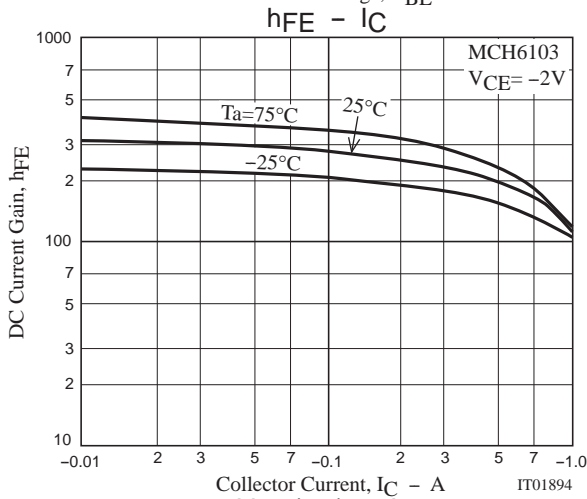
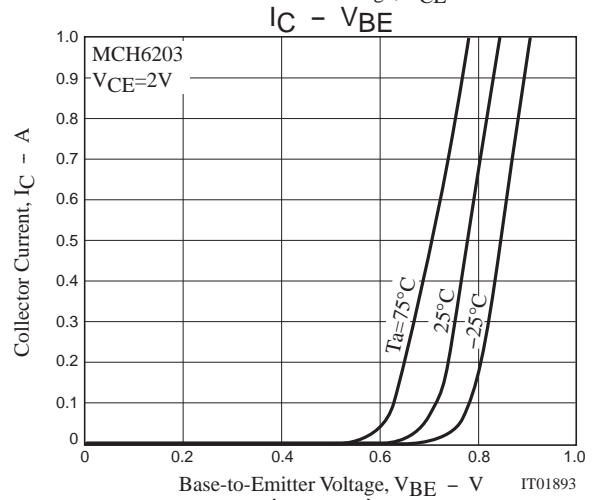
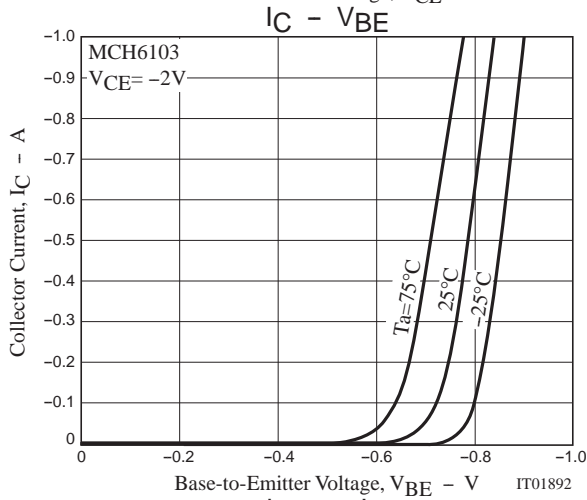
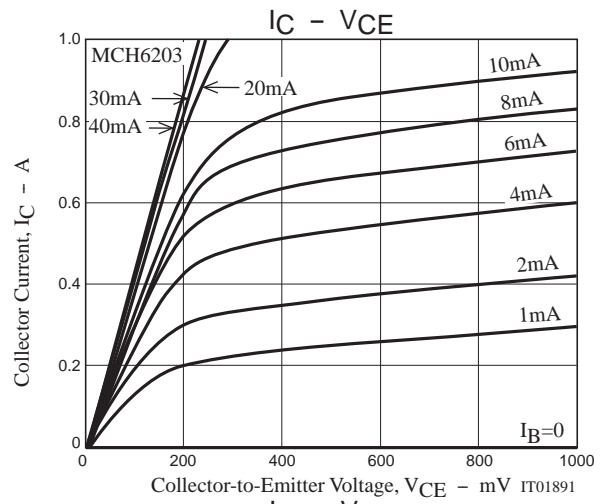
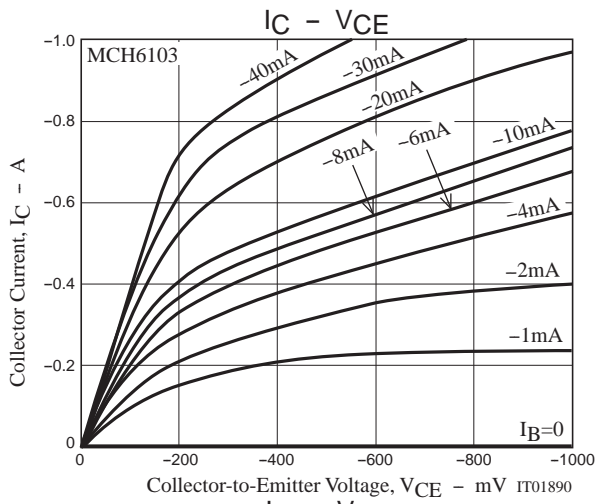
$$I_C=20I_{B1}=-20I_{B2}=500\text{mA}$$

For PNP, the polarity is reversed.

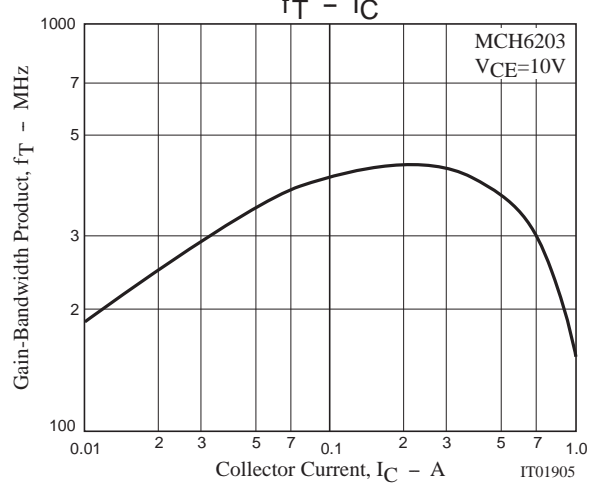
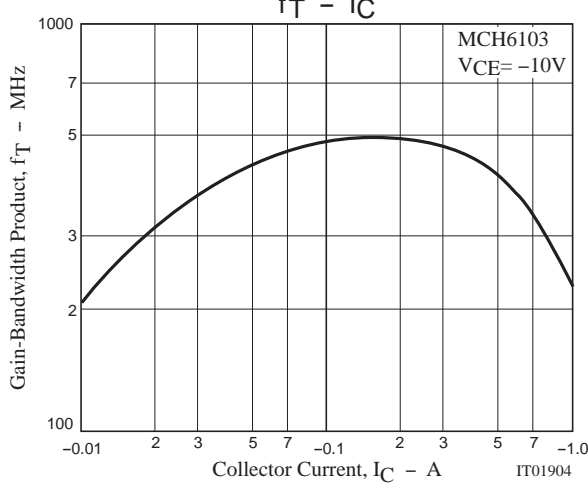
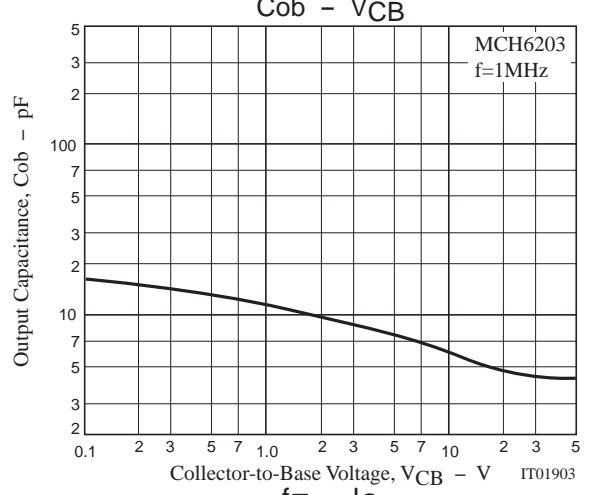
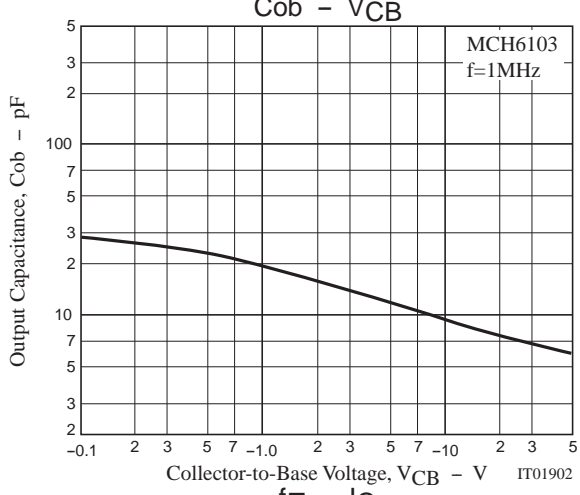
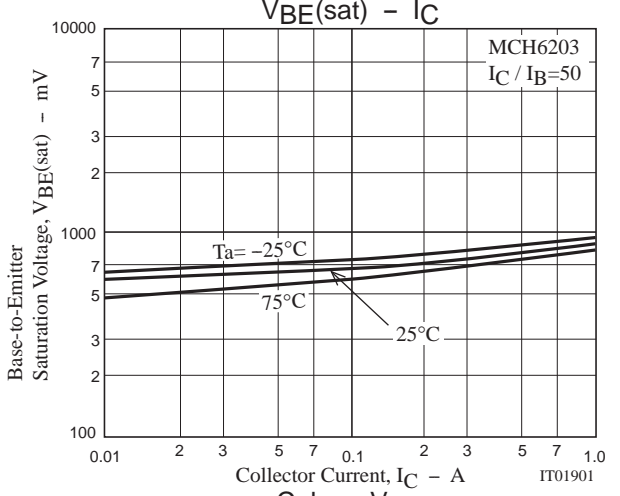
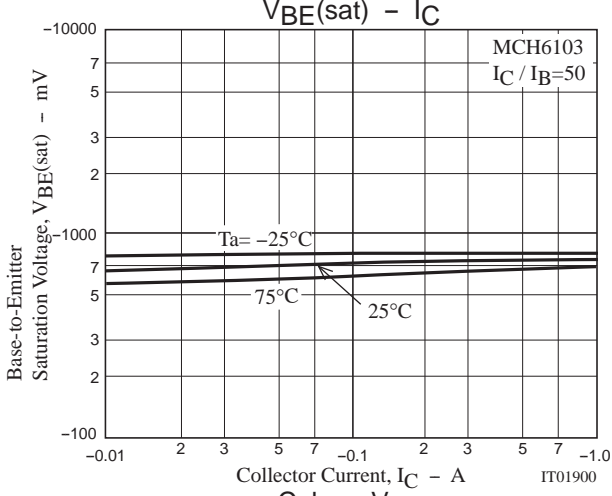
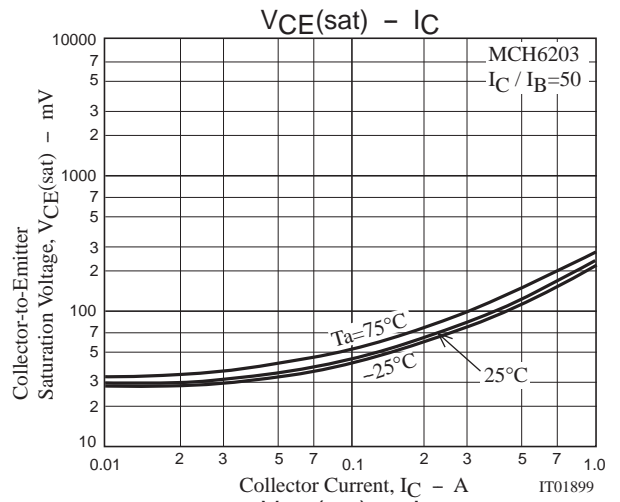
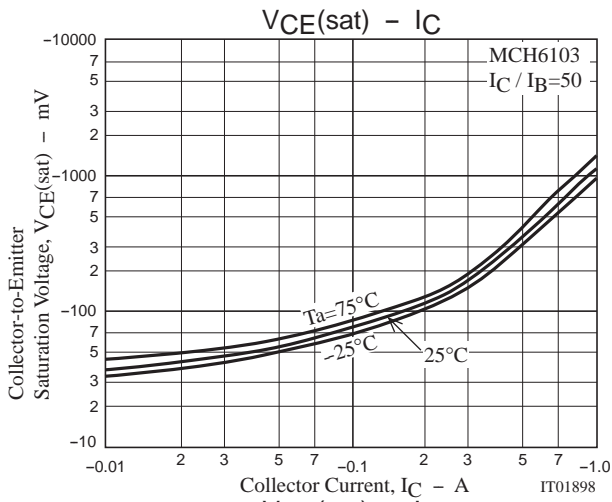
Ordering Information

Device	Package	Shipping	memo
MCH6103-TL-E	MCPH6	3,000pcs./reel	Pb Free
MCH6203-TL-E	MCPH6	3,000pcs./reel	

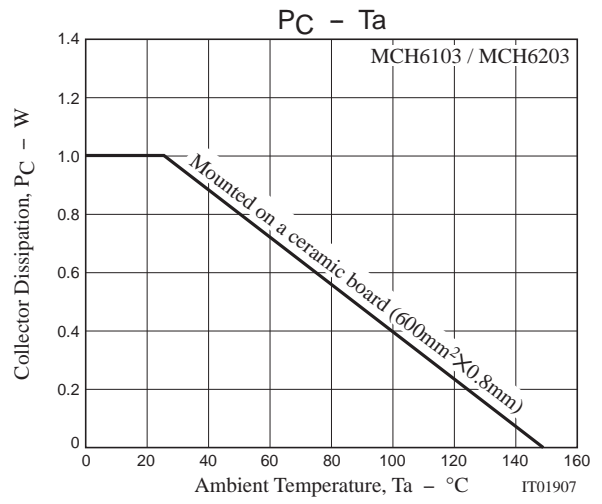
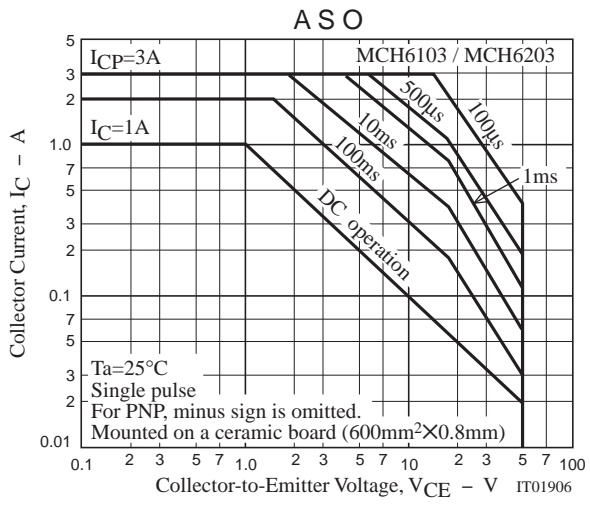
MCH6103 / MCH6203



MCH6103 / MCH6203



MCH6103 / MCH6203



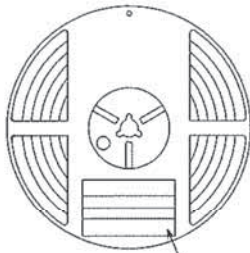
Embossed Taping Specification

MCH6103-TL-E, MCH6203-TL-E

1. 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)
MCPH6	MCP4	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

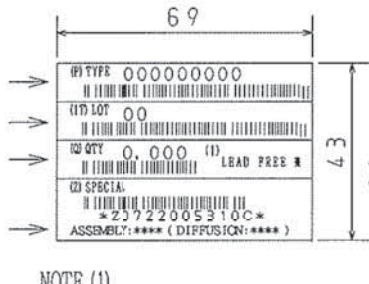
Packing method



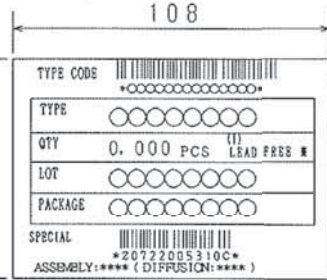
Type No.
LOT No.
Quantity
Origin

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.)



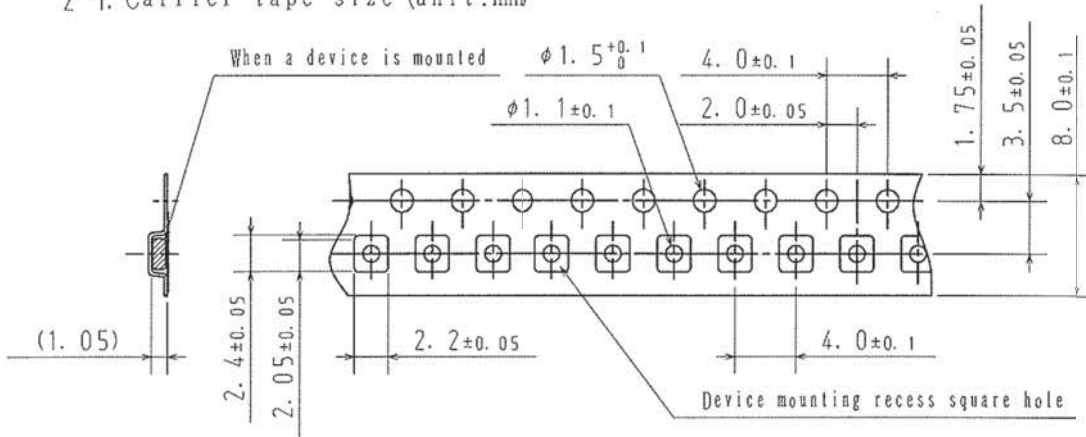
NOTE (1)

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

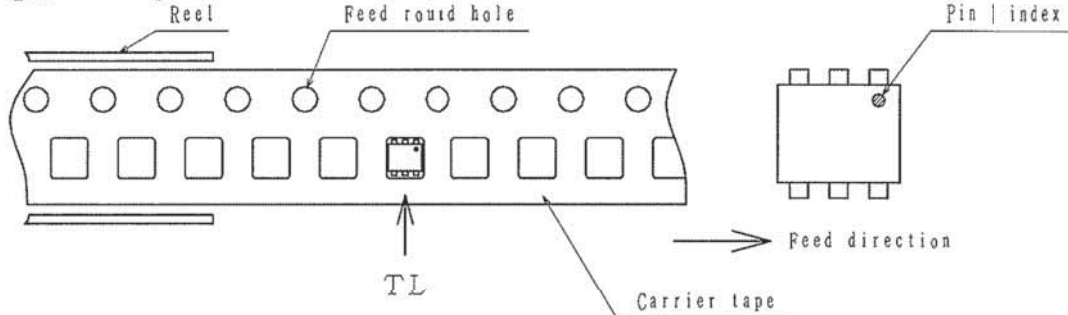
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)



2-2. Device placement direction

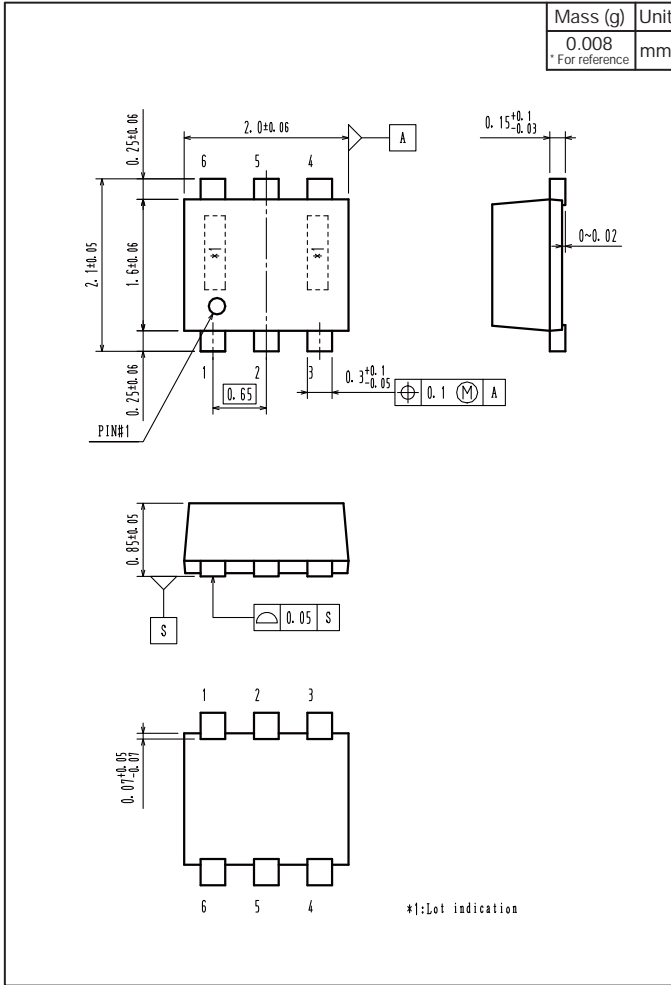


Those with pin | index on the feed hole side.....TL

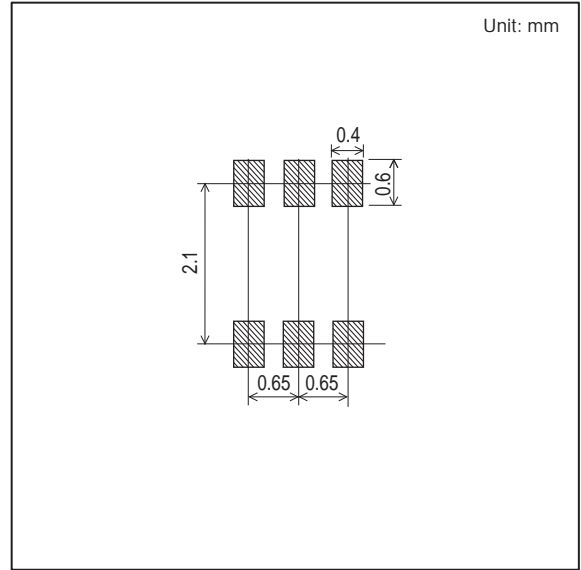
MCH6103 / MCH6203

Outline Drawing

MCH6103-TL-E, MCH6203-TL-E



Land Pattern Example



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