



MCH6541 — PNP / NPN Epitaxial Planar Silicon Transistor

Push-Pull Circuit Applications

Applications

- MOSFET gate drivers, relay drivers, lamp drivers, motor drivers

Features

- Composite type with a PNP transistor and an NPN transistor contained in one package facilitating high-density mounting
- Ultrasmall package permitting applied sets to be small and slim

Specifications () : PNP

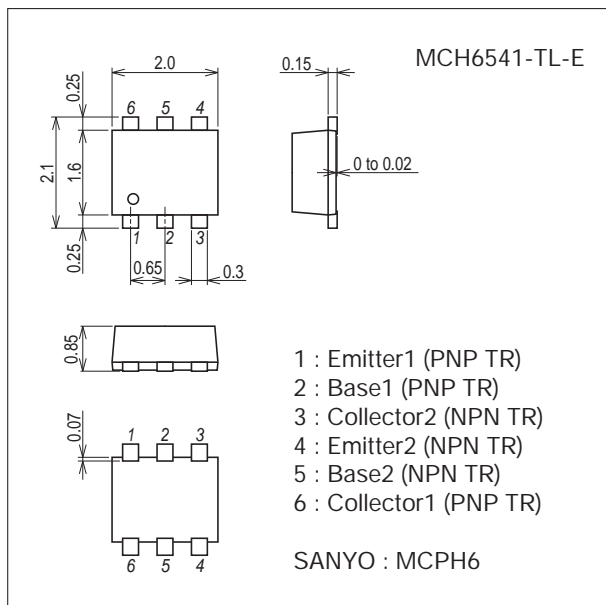
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CB0}		(-30)40	V
Collector-to-Emitter Voltage	V _{CEO}		(-)30	V
Emitter-to-Base Voltage	V _{EB0}		(-)5	V
Collector Current	I _C		(-)700	mA
Collector Current (Pulse)	I _{CP}		(-)3	A
Collector Dissipation	P _C	When mounted on ceramic substrate (600mm ² ×0.8mm) 1unit	0.5	W
Total Power Dissipation	P _T	When mounted on ceramic substrate (600mm ² ×0.8mm)	0.55	W
Junction Temperature	T _j		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

Package Dimensions

unit : mm (typ)

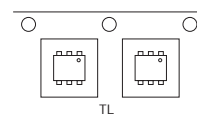
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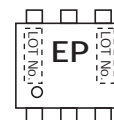
Product & Package Information

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

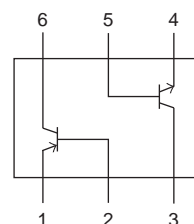
Packing Type : TL



Marking



Electrical Connection

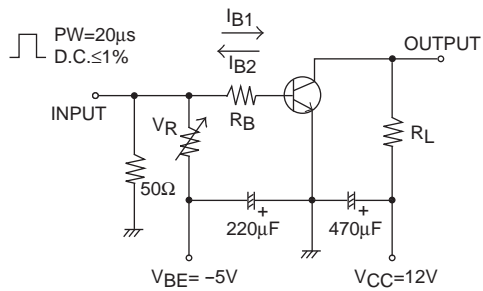


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Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)30\text{V}, I_E=0\text{A}$			(-) 100	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4\text{V}, I_C=0\text{A}$			(-) 100	nA
DC Current Gain	h_{FE}	$V_{CE}=(-)2\text{V}, I_C=(-)50\text{mA}$	(200)300		(500)800	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)2\text{V}, I_C=(-)50\text{mA}$		(520)540		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10\text{V}, f=1\text{MHz}$		(4.7)3.3		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)200\text{mA}, I_B=(-)10\text{mA}$		(-110)85	(-220)190	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)200\text{mA}, I_B=(-)10\text{mA}$		(-) 0.9	(-) 1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu\text{A}, I_E=0\text{A}$	(-30)40			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1\text{mA}, R_{BE}=\infty$	(-) 30			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.		35		ns
Storage Time	t_{stg}			(125)255		ns
Fall Time	t_f			(25)40		ns

Switching Time Test Circuit



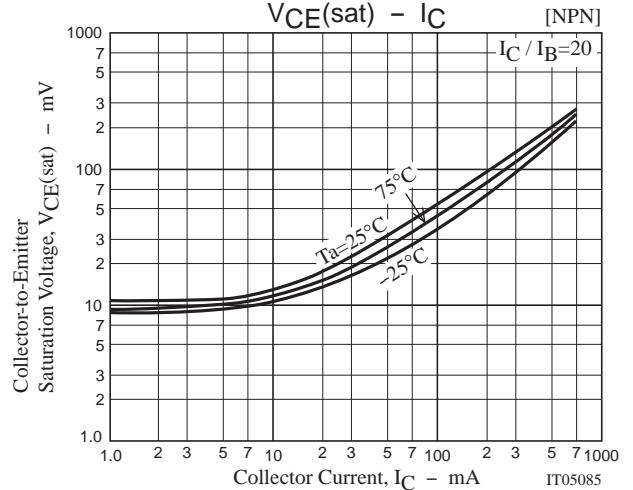
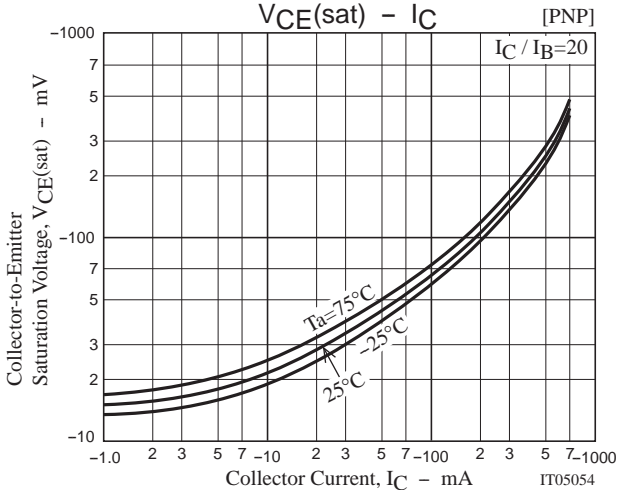
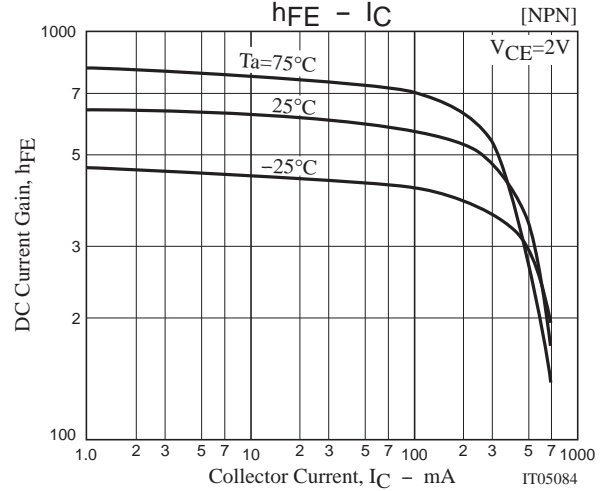
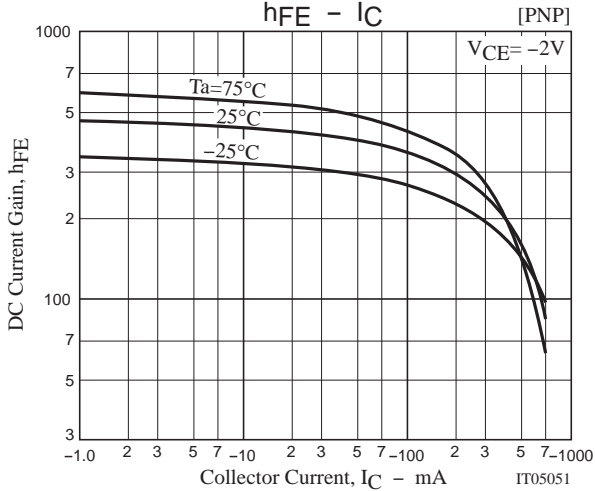
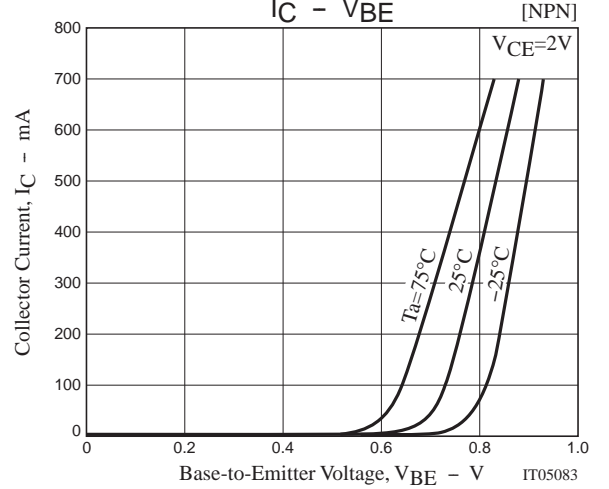
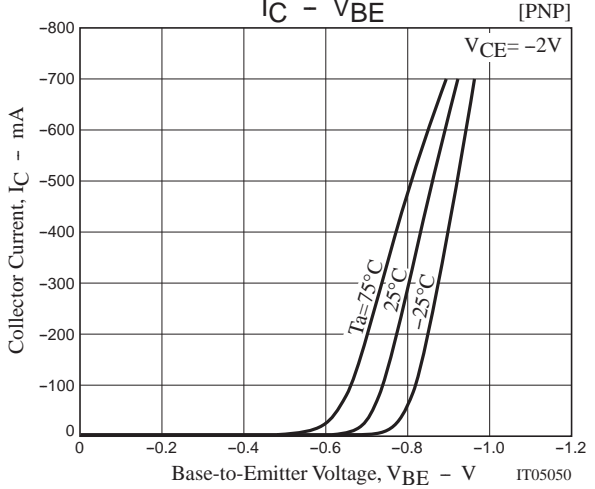
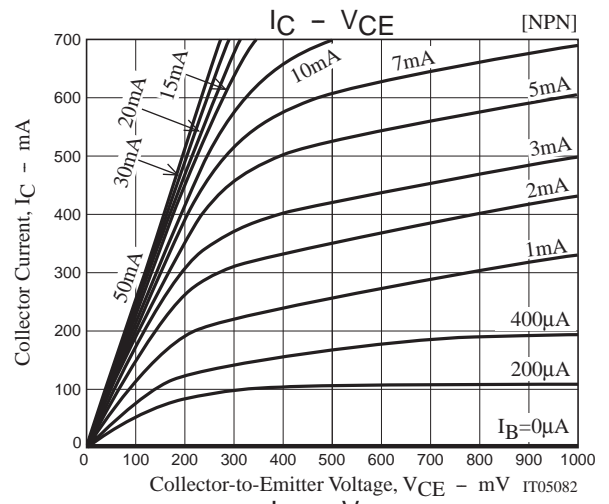
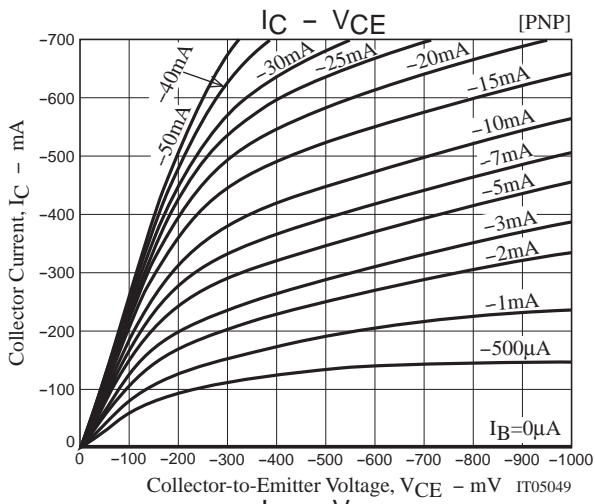
$$I_C=20I_{B1} = -20I_{B2}=300\text{mA}$$

For PNP, the polarity is reversed.

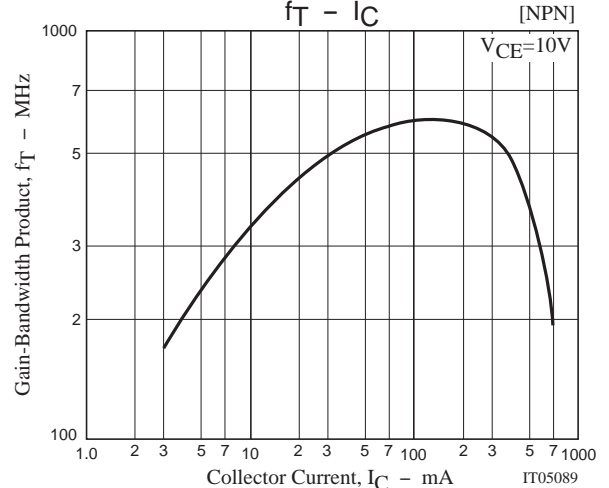
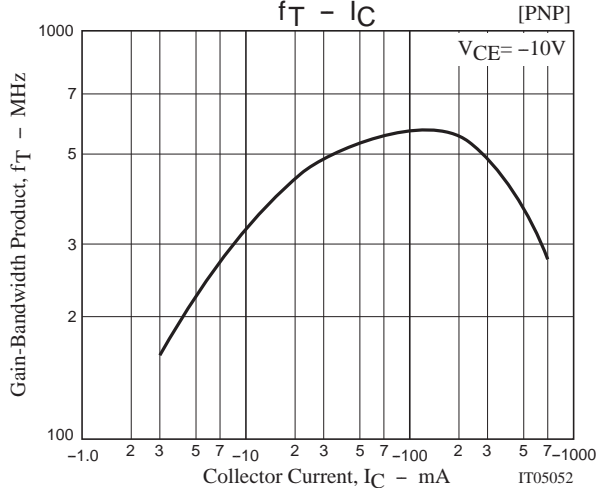
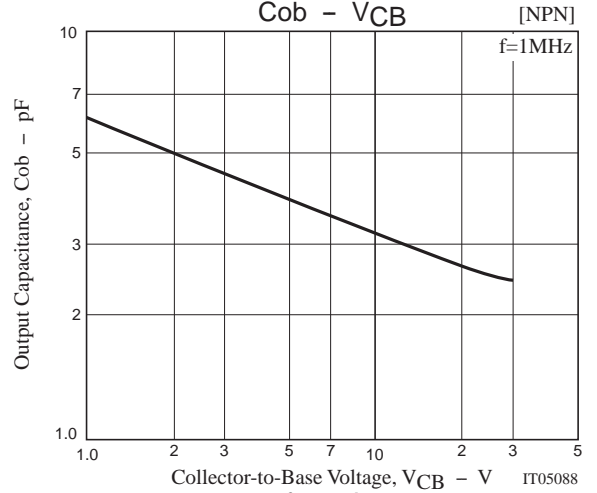
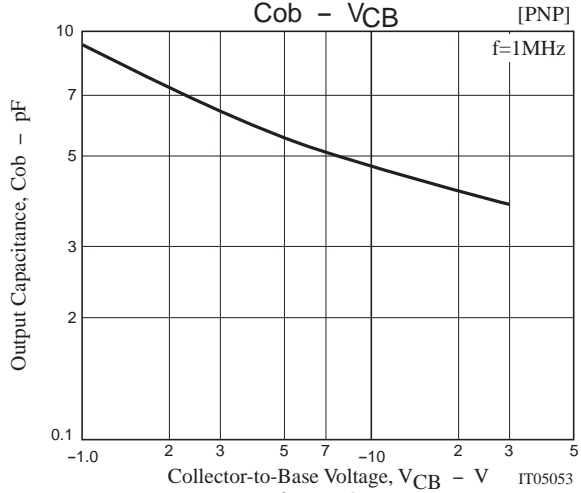
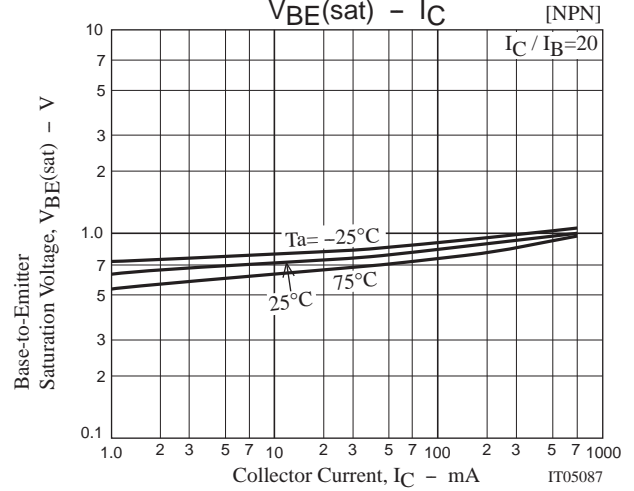
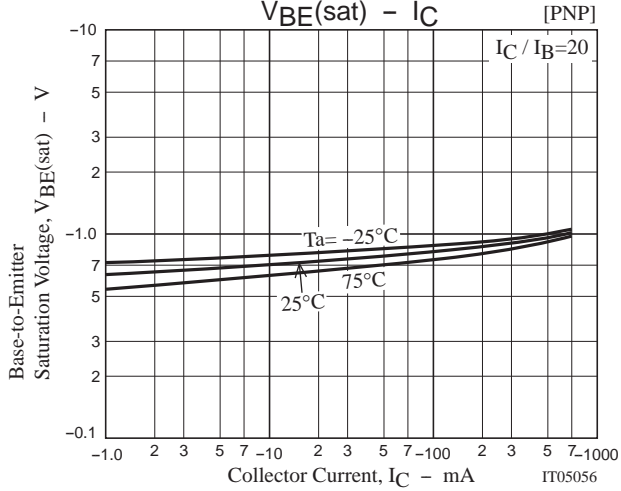
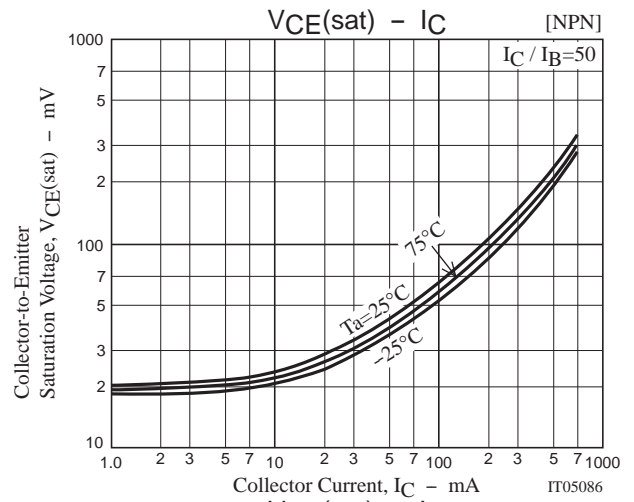
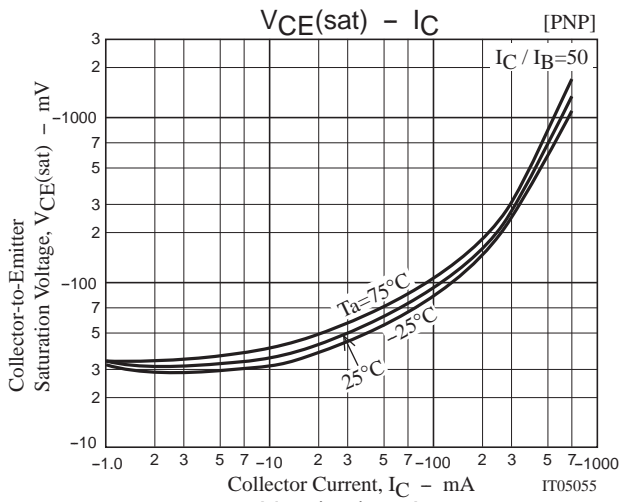
Ordering Information

Device	Package	Shipping	memo
MCH6541-TL-E	MCPH6	3,000pcs./reel	Pb Free

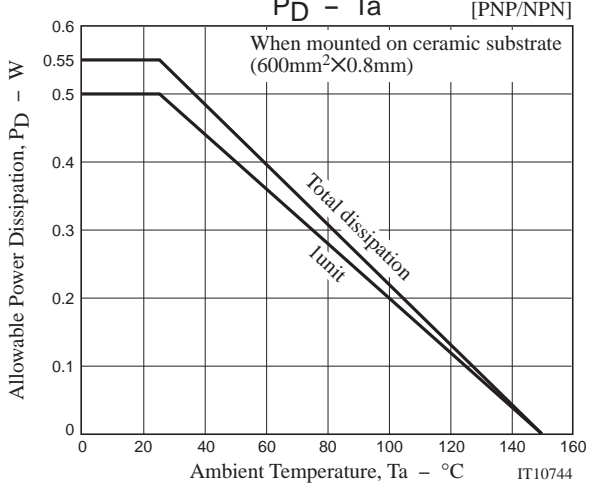
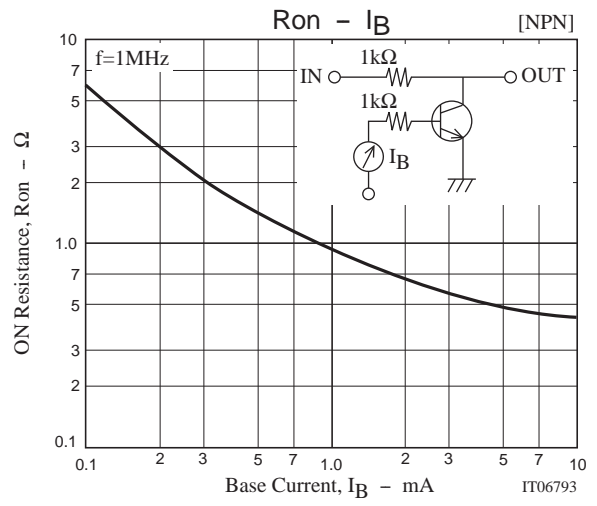
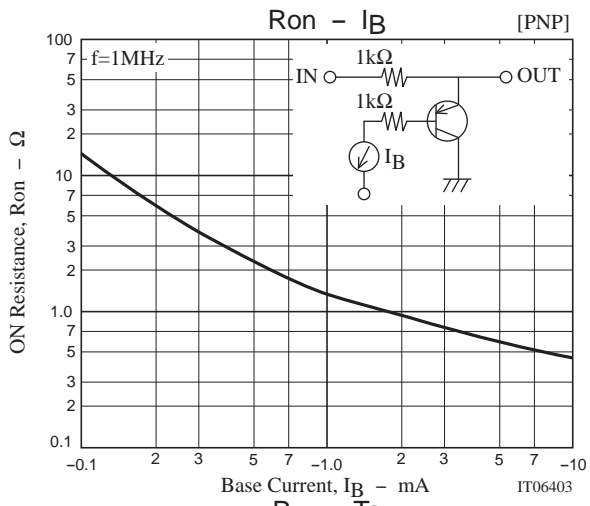
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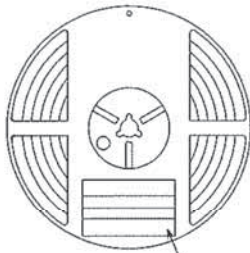
Embossed Taping Specification

MCH6541-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

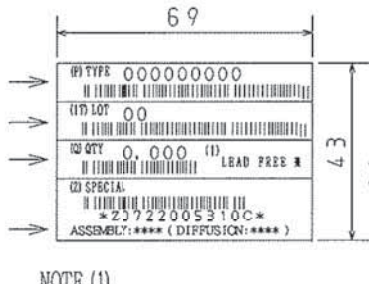
Packing method



Reel label

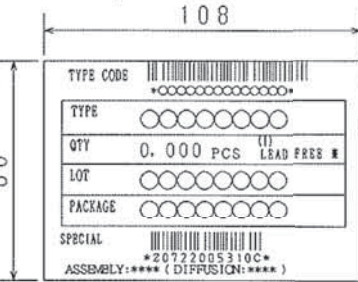
Type No.
LOT No.
Quantity
Origin

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.)



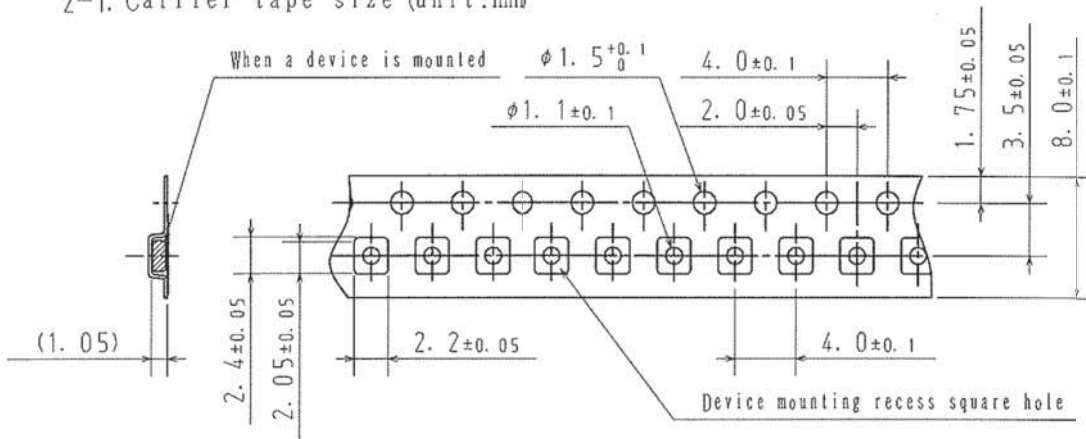
NOTE (1)

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

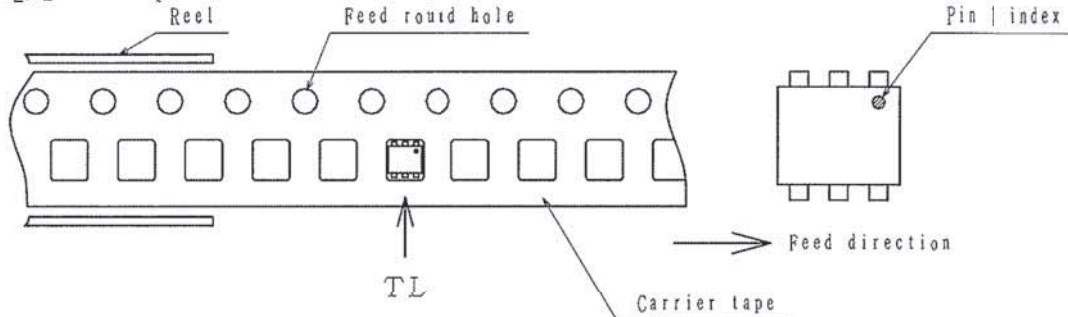
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



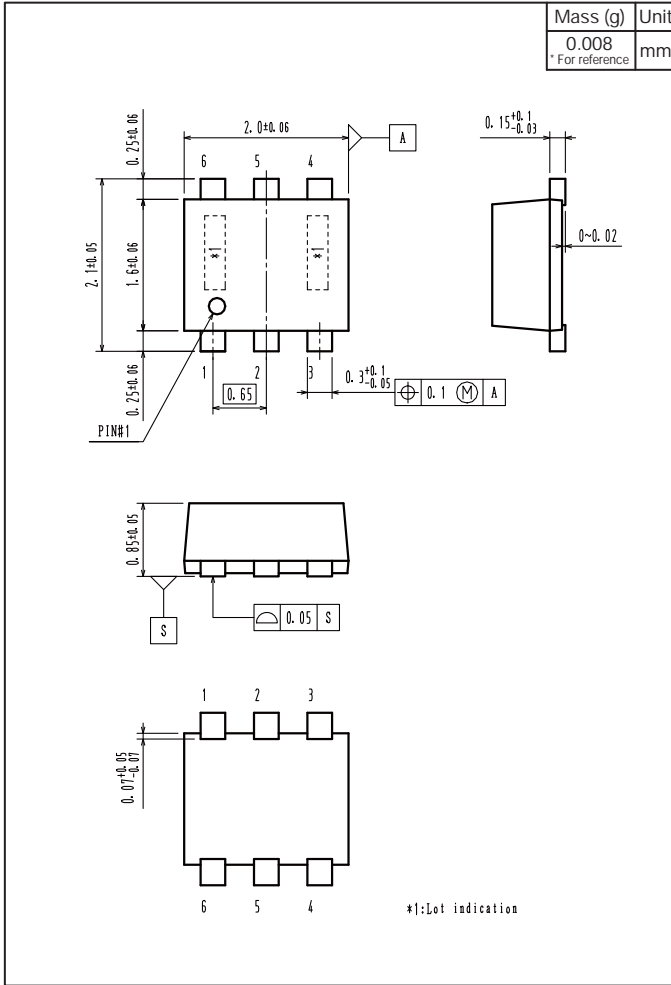
2-2. Device placement direction



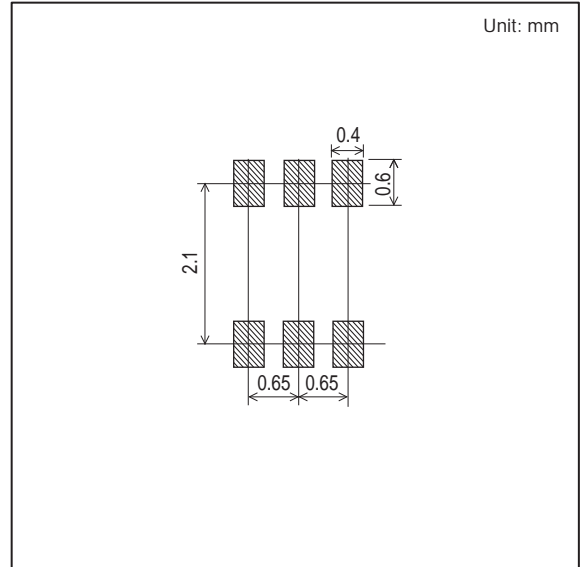
Those with pin | index on the feed hole side.....TL

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Outline Drawing MCH6541-TL-E



Land Pattern Example



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