Ordering number : EN7128B

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

PNP / NPN Epitaxial Planar Silicon Transistors

MCH3105/MCH3205 — High-Current Switching Applications

Applicaitons

- DC / DC converters, relay drivers, lamp drivers, motor drivers, flash

Features

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

Specifications ( ) : MCH3105

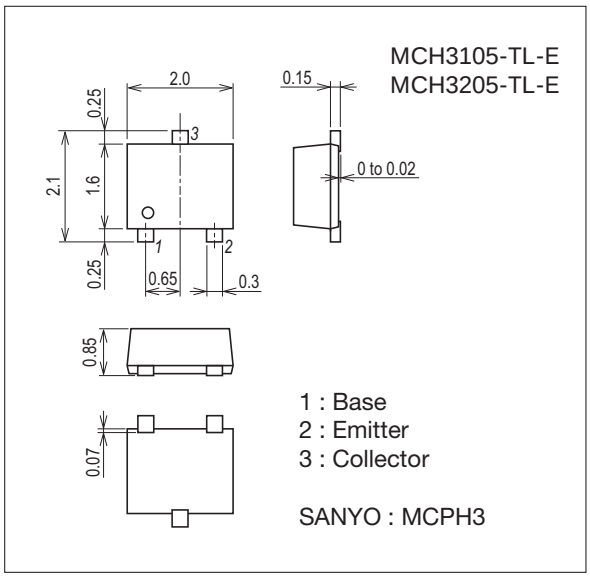
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(−50)80	V
Collector-to-Emitter Voltage	V_{CES}		(−50)80	V
	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
Base Current	I_B		(−)600	mA
Collector Dissipation	P_C	When mounted on ceramic substrate (600mm^2×0.8mm)	0.8	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Package Dimensions

unit : mm (typ)

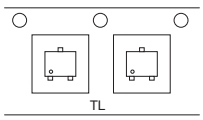
7019A-004



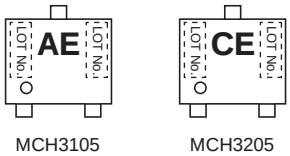
Product & Package Information

- Package : MCPH3
- JEITA, JEDEC : SC-70, SOT-323
- Minimum Packing Quantity : 3,000 pcs./reel

Packing Type : TL

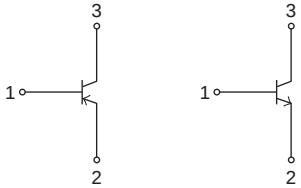


Marking



MCH3105 MCH3205

Electrical Connection

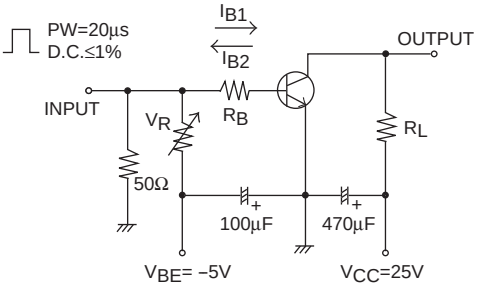


MCH3105 MCH3205

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(−)40V, 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}=(−)2V, I_C=(−)100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=(−)10V, I_C=(−)500mA		(360)380		MHz
Output Capacitance	Cob	V_{CB}=(−)10V, f=1MHz		(24)13		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)1	I_C=(−)1A, I_B=(−)50mA		(−100)80	(−200)120	mV
	V_{CE}(sat)2	I_C=(−)2A, I_B=(−)100mA		(−185)140	(−500)210	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(−)2A, I_B=(−)100mA		(−)0.88	(−)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(−)10μA, I_E=0A	(−50)80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=(−)100μA, R_{BE}=0Ω	(−50)80			V
	$V_{(BR)CEO}$	I_C=(−)1mA, R_{BE}=∞	(−)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(−)10μA, I_C=0A	(−)6			V
Turn-On Time	t_{on}	See specified Test Circuit.		(30)35		ns
Storage Time	t_{stg}			(230)300		ns
Fall Time	t_f			(15)22		ns

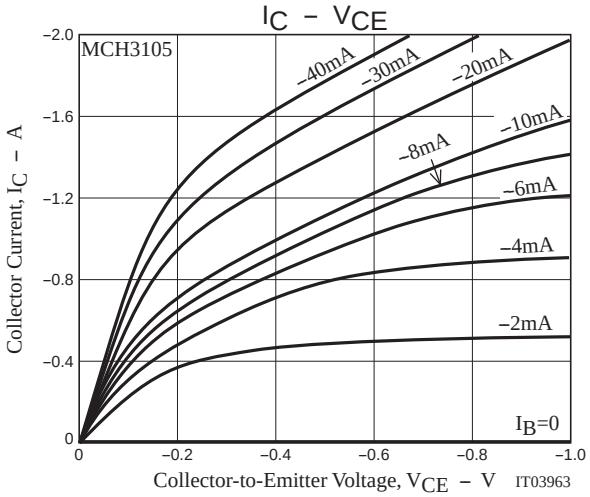
Switching Time Test Circuit

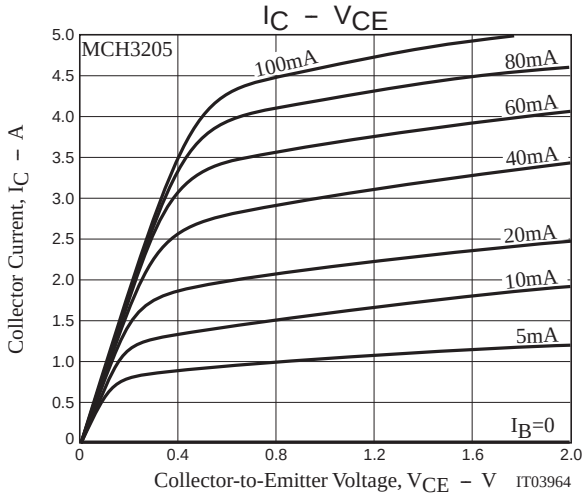


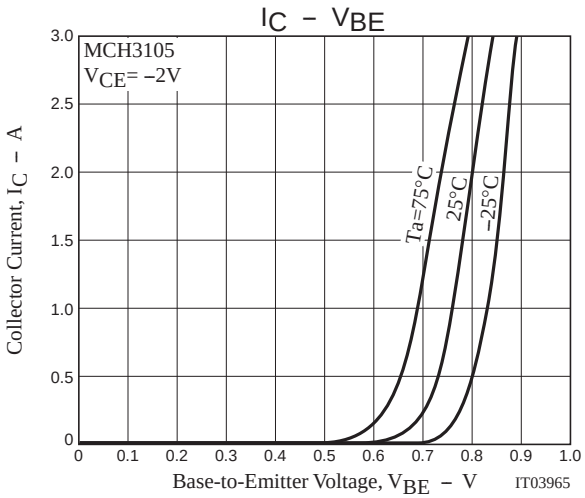
I_C=10I_{B1}= −10I_{B2}=1A
(For PNP, the polarity is reversed.)

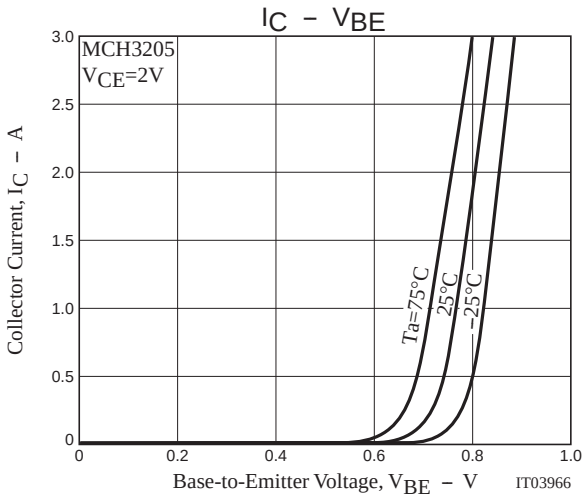
Ordering Information

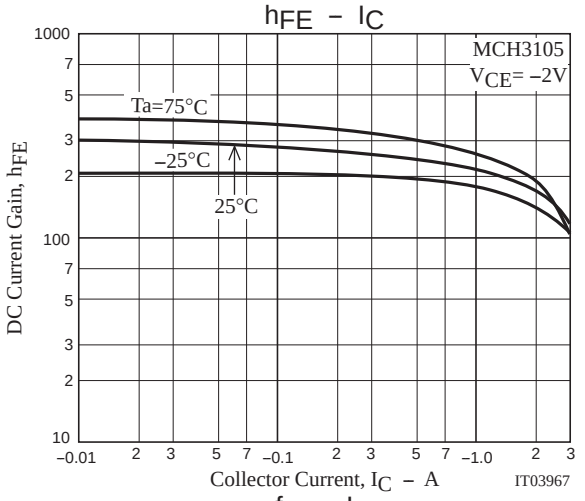
Device	Package	Shipping	memo
MCH3105-TL-E	MCPH3	3,000pcs./reel	Pb Free
MCH3205-TL-E	MCPH3	3,000pcs./reel	

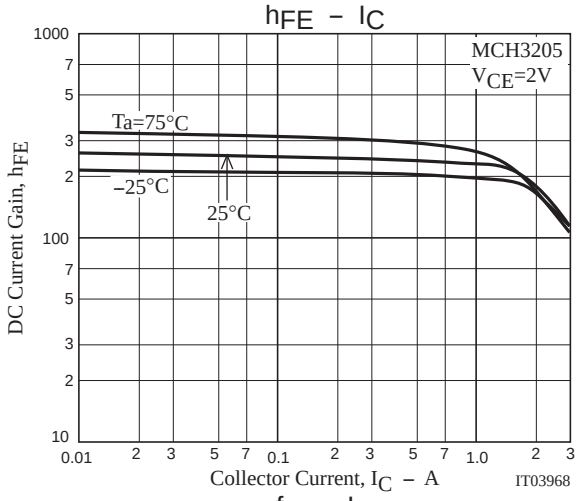


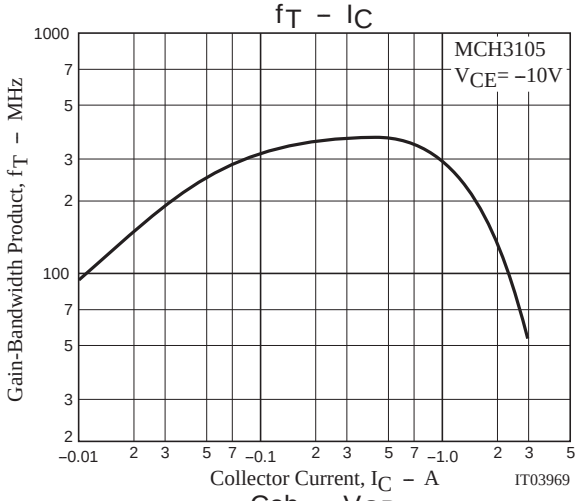


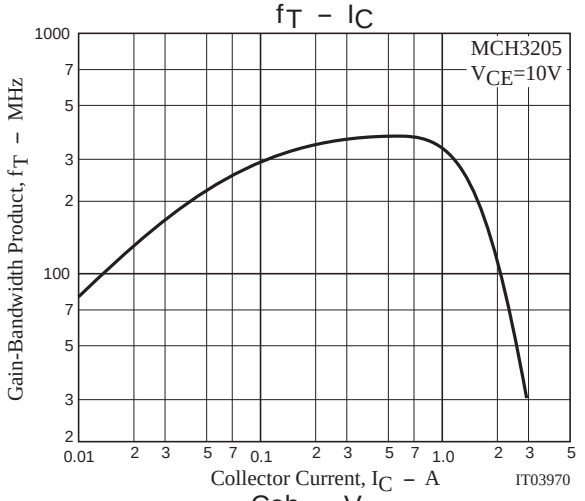

IC – VBE
MCH3105
VCE= –2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT03965

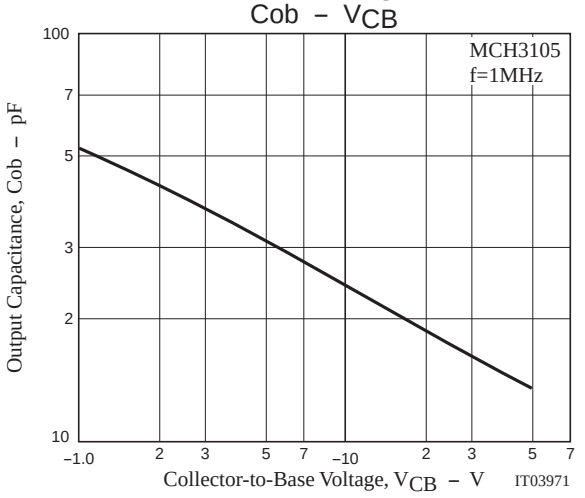

IC – VBE
MCH3205
VCE=2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT03966

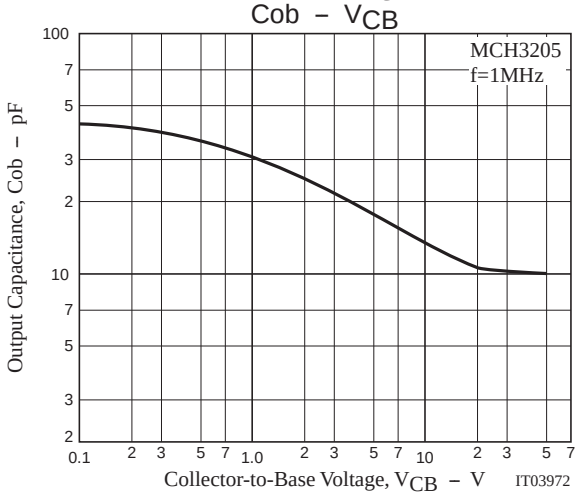

hFE – IC
MCH3105
VCE= –2V
Ta=75°C
–25°C
25°C
DC Current Gain, hFE
Collector Current, IC – A
IT03967

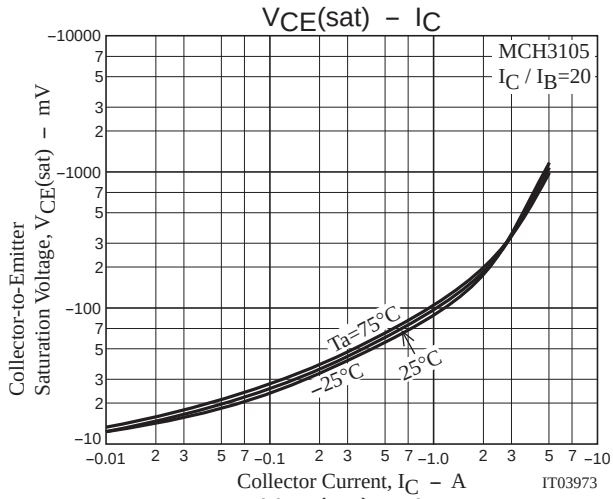

hFE – IC
MCH3205
VCE=2V
Ta=75°C
–25°C
25°C
DC Current Gain, hFE
Collector Current, IC – A
IT03968

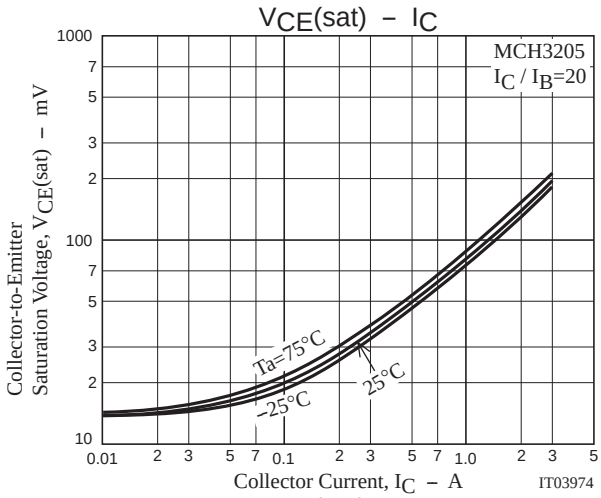

fT – IC
MCH3105
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT03969

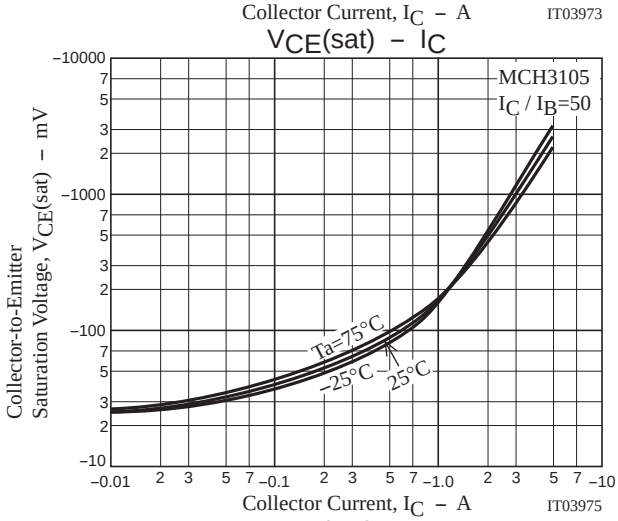

fT – IC
MCH3205
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT03970

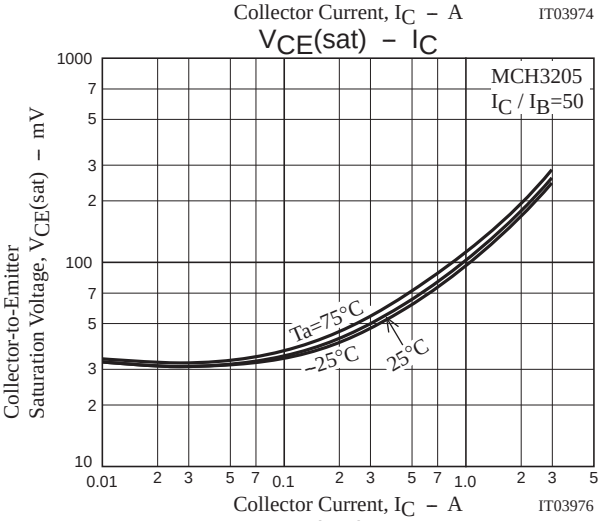

Cob – VCB
MCH3105
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT03971

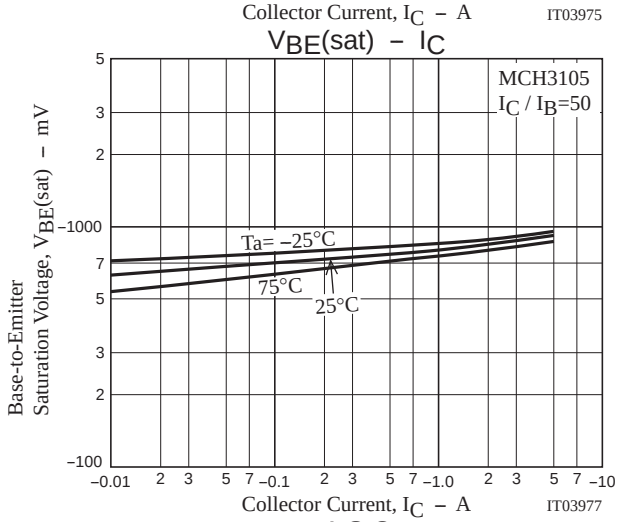

Cob – VCB
MCH3205
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT03972

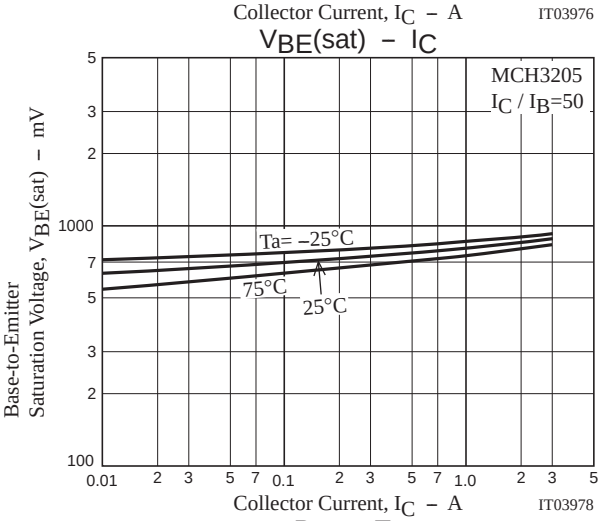

VCE(sat) – IC
MCH3105
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT03973

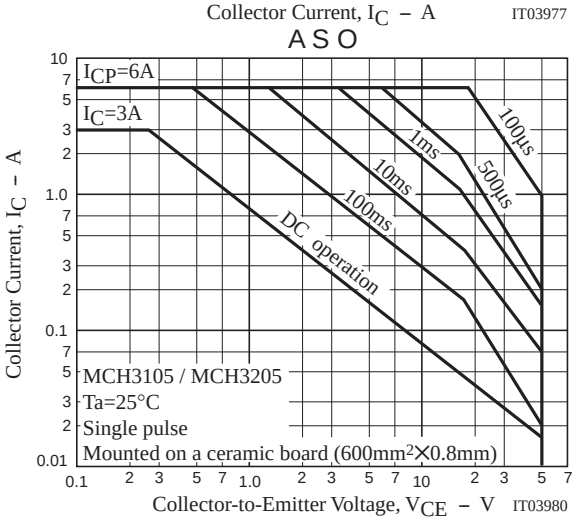

VCE(sat) – IC
MCH3205
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT03974

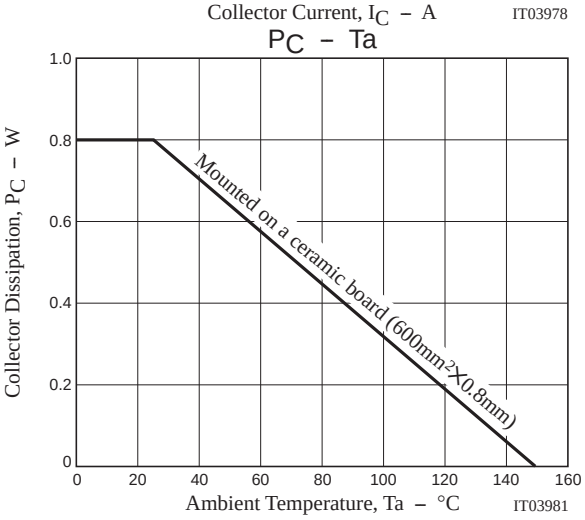

VCE(sat) – IC
MCH3105
IC / IB=50
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT03975


VCE(sat) – IC
MCH3205
IC / IB=50
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT03976


VBE(sat) – IC
MCH3105
IC / IB=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – mV
Collector Current, IC – A
IT03977


VBE(sat) – IC
MCH3205
IC / IB=50
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – mV
Collector Current, IC – A
IT03978


A S O
ICP=6A
IC=3A
100µs
1ms
500µs
10ms
100ms
DC operation
MCH3105 / MCH3205
Ta=25°C
Single pulse
Mounted on a ceramic board (600mm²×0.8mm)
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT03980


PC – Ta
Mounted on a ceramic board (600mm²×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT03981

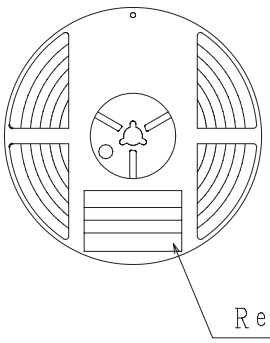
Taping Specification

MCH3105-TL-E, MCH3205-TL-E

1. Packing Format

Package Name	Carrier Tape Type	Maximun Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
MCPH3	MCPH3	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

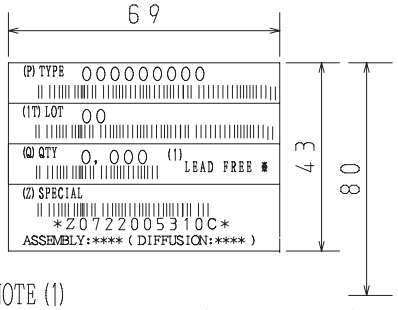
Packing method



Reel label

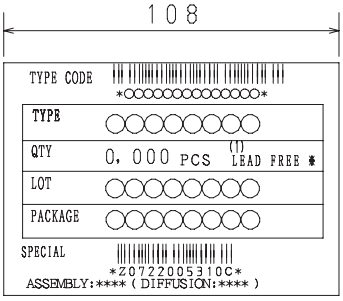
Reel label, Inner box label

(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.

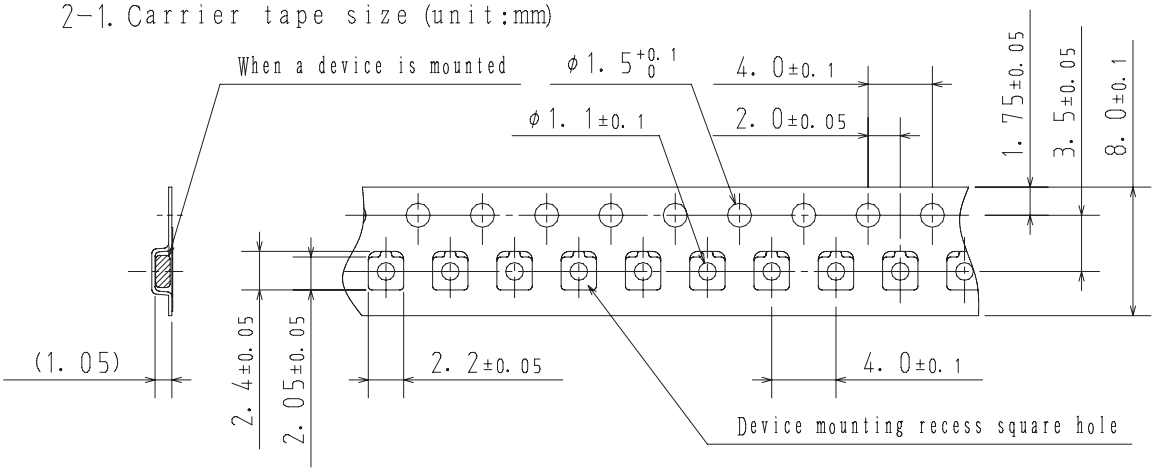


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

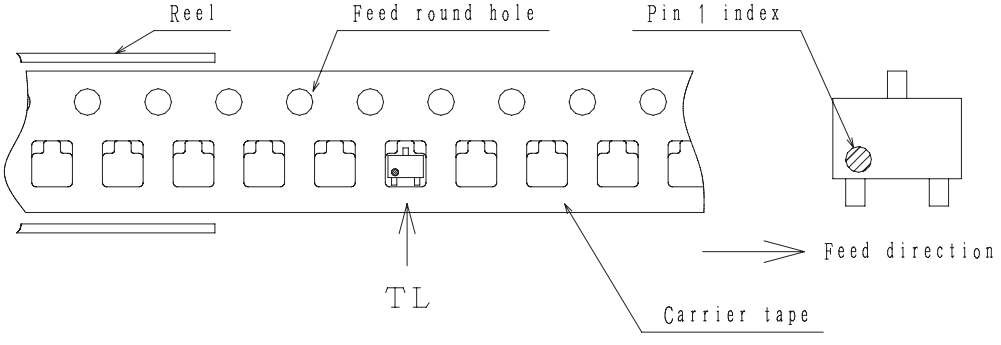
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



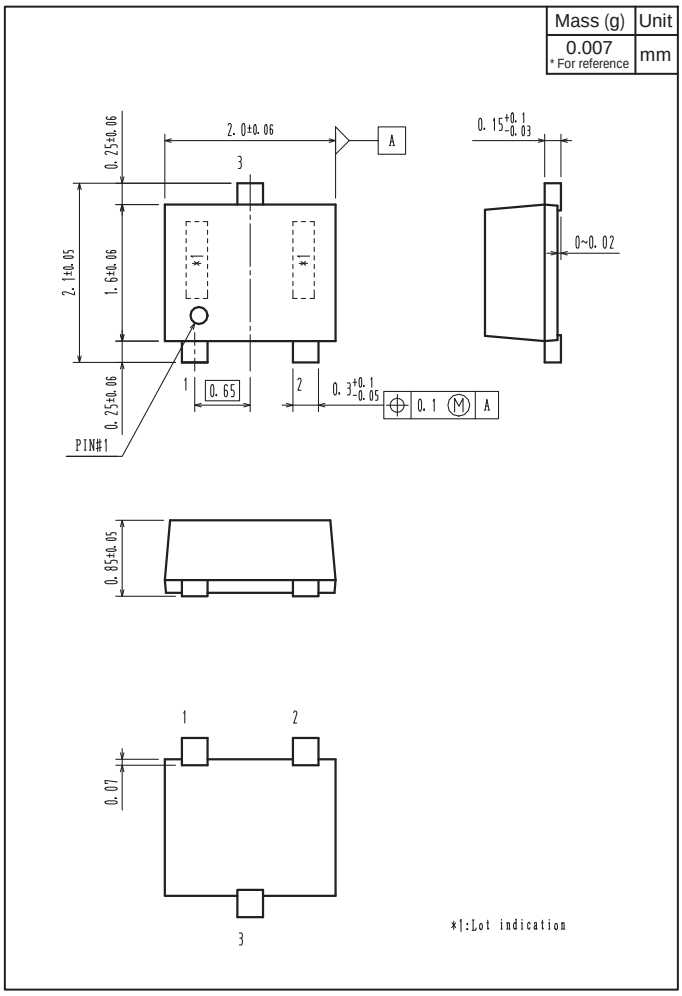
2-2. Device placement direction



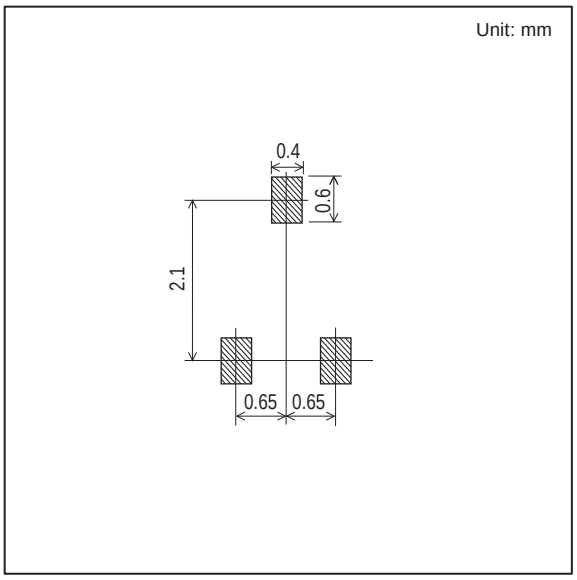
Those with pin 1 index on the feed hole side·····TL

Outline Drawing

MCH3105-TL-E, MCH3205-TL-E



Land Pattern Example



Стандарт Электрон Связь

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Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

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Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

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С нами вы становитесь еще успешнее!

Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

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Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331