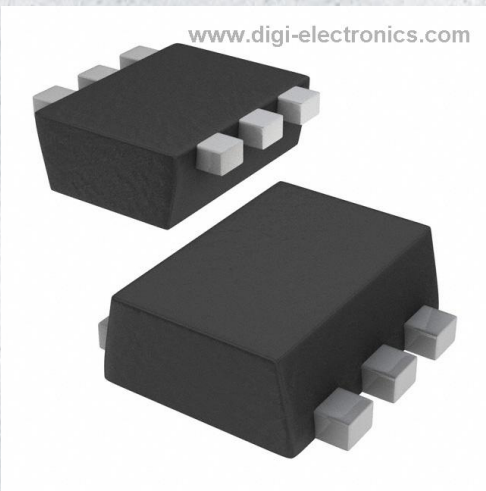
MCH6203-TL-E Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	MCH6203-TL-E-DG
Manufacturer	onsemi
Manufacturer Product Number	MCH6203-TL-E
Description	TRANS NPN 50V 1A 6MCPH
Detailed Description	Bipolar (BJT) Transistor NPN 50 V 1 A 420MHz 1 W Surface Mount 6-MCPH

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
MCH6203-TL-E	onsemi
Series:	Product Status:
-	Active
Transistor Type:	Current - Collector (Ic) (Max):
NPN	1 A
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
50 V	430mV @ 10mA, 500mA
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
100nA (ICBO)	200 @ 100mA, 2V
Power - Max:	Frequency - Transition:
1 W	420MHz
Operating Temperature:	Mounting Type:
150°C (TJ)	Surface Mount
Package / Case:	Supplier Device Package:
6-SMD, Flat Leads	6-MCPH
Base Product Number:	
MCH6203	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0095	

Ordering number : EN6611B

MCH6103/MCH6203

Bipolar Transistor
(−)50V, (−)1A, Low V_{CE}(sat), (PNP)NPN Single MCPH6

ON Semiconductor®
http://onsemi.com

Applicaitons
- Relay drivers, lamp drivers, motor drivers, flash

Features
- Adoption of 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

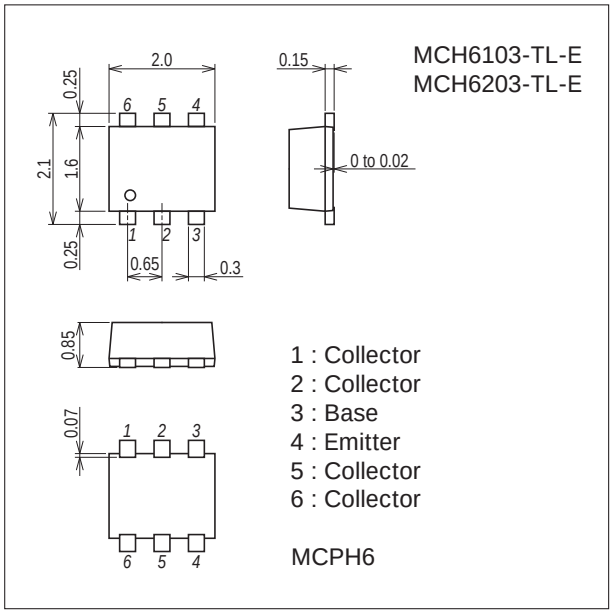
Specifications ( ) : MCH6103

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}		(−)5	V

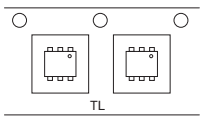
Continued on next page.

Package Dimensions
unit : mm (typ)
7022A-007

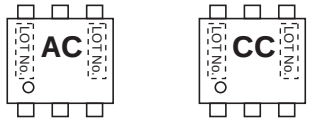


Product & Package Information
- Package : MCPH6
- JEITA, JEDEC : SC-88, SC-70-6, SOT-363
- Minimum Packing Quantity : 3,000 pcs./reel

Packing Type: TL

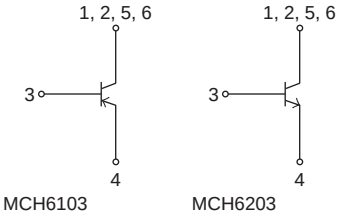


Marking



MCH6103 MCH6203

Electrical Connection



MCH6103 MCH6203

Continued from preceding page.

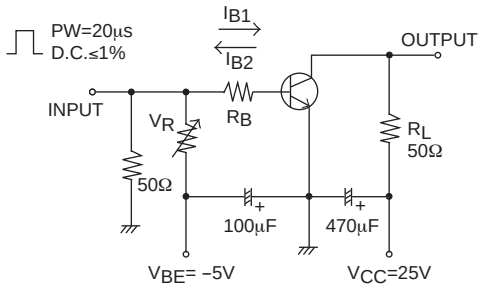
Parameter	Symbol	Conditions	Ratings	Unit
Collector Current	I_C		(–)1.0	A
Collector Current (Pulse)	I_{CP}		(–)3	A
Base Current	I_B		200	mA
Collector Dissipation	P_C	When mounted on ceramic substrate (600mm^2×0.8mm)	1.0	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		–55 to +150	°C

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 Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)40V, I_E=0A			(–)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0A			(–)0.1	μA
DC Current Gain	h_{FE}	V_{CE}=(–)2V, I_C=(–)100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)300mA		420		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(9)6		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)1	I_C=(–)500mA, I_B=(–)10mA		(–280)130	(–430)190	mV
	V_{CE}(sat)2	I_C=(–)300mA, I_B=(–)6mA		(–145)90	(–220)135	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(–)500mA, I_B=(–)10mA		(–)0.81	(–)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	(–)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

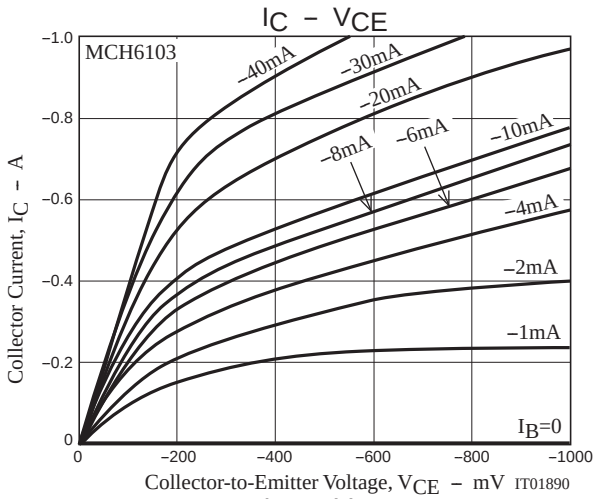


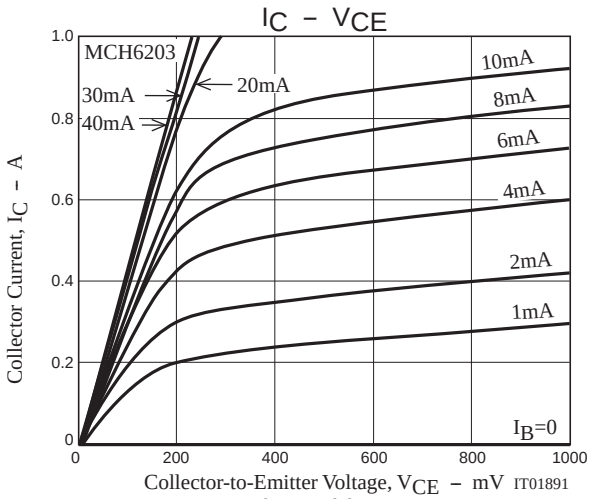
I_C=20I_{B1}= –20I_{B2}=500mA

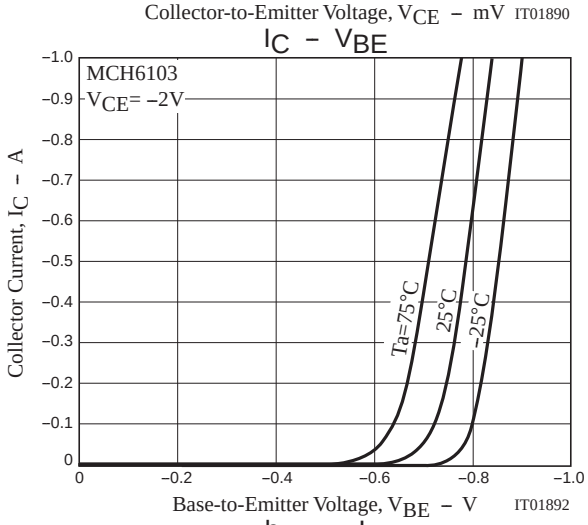
For PNP, the polarity is reversed.

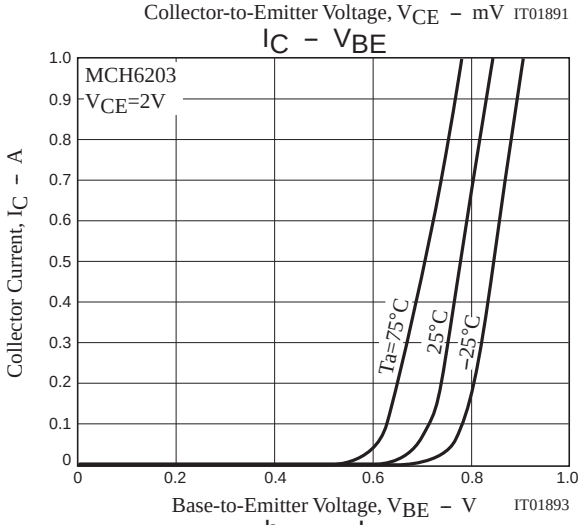
Ordering Information

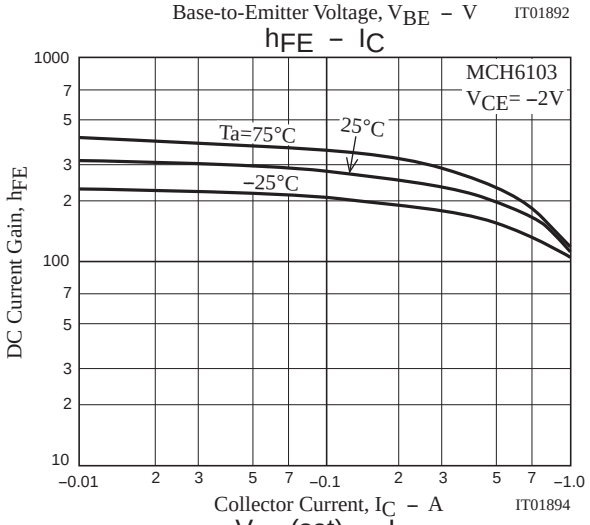
Device	Package	Shipping	memo
MCH6103-TL-E	MCPH6	3,000pcs./reel	Pb Free
MCH6203-TL-E	MCPH6	3,000pcs./reel	

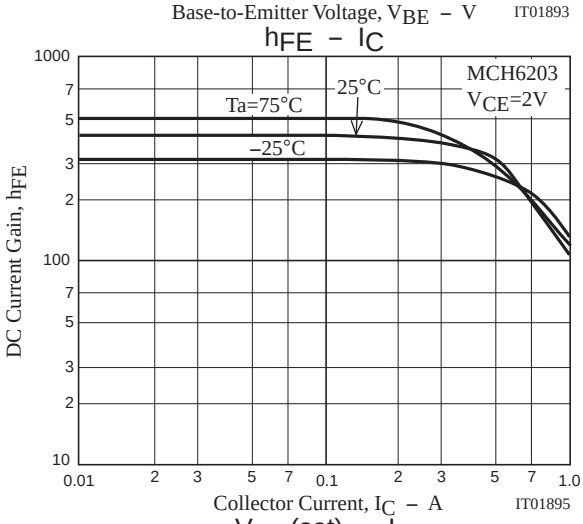

IC – VCE
MCH6103
–40mA
–30mA
–20mA
–8mA
–6mA
–10mA
–4mA
–2mA
–1mA
IB=0
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – mV
IT01890

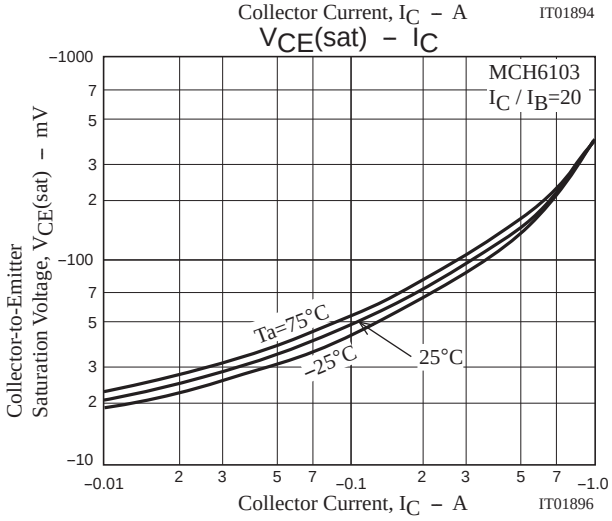

IC – VCE
MCH6203
30mA
40mA
20mA
10mA
8mA
6mA
4mA
2mA
1mA
IB=0
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – mV
IT01891

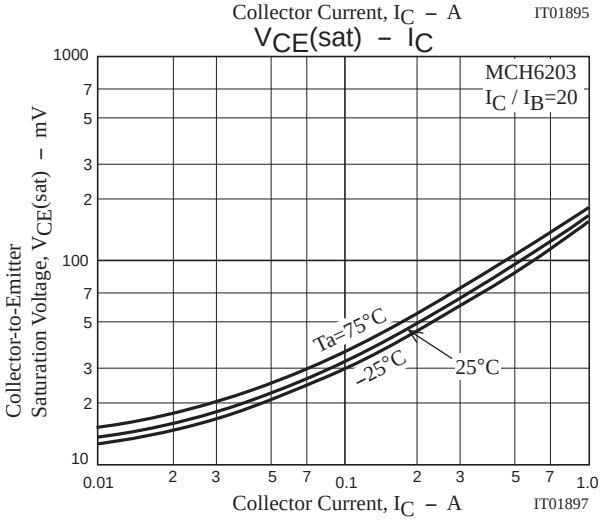

IC – VBE
MCH6103
VCE= –2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT01892


IC – VBE
MCH6203
VCE=2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT01893

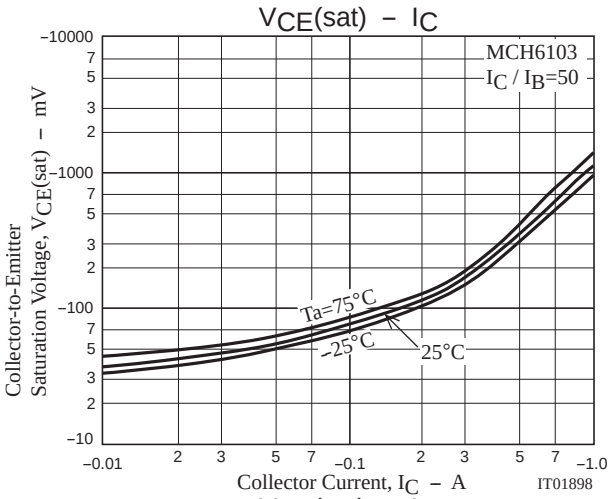

hFE – IC
MCH6103
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT01894

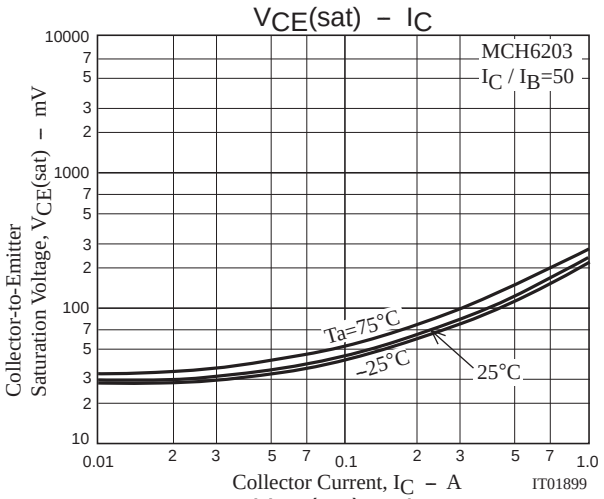

hFE – IC
MCH6203
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT01895

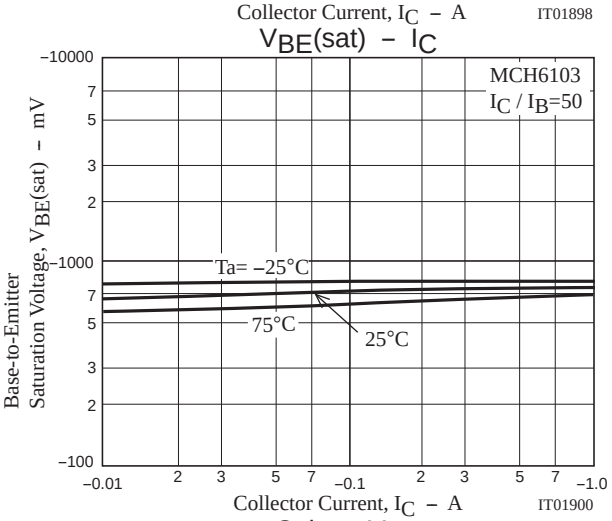

VCE(sat) – IC
MCH6103
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT01896

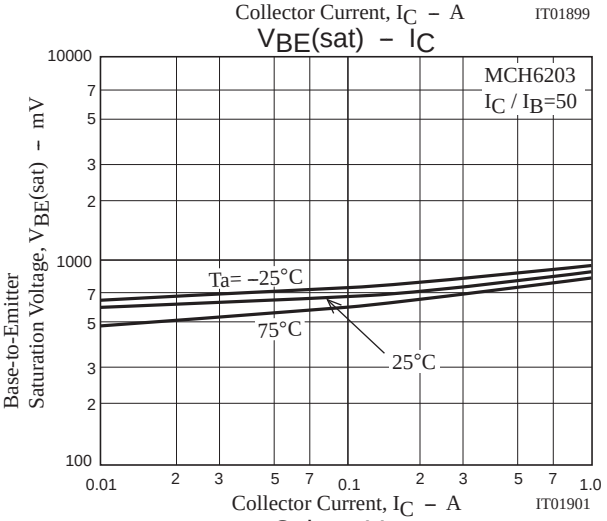

VCE(sat) – IC
MCH6203
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT01897

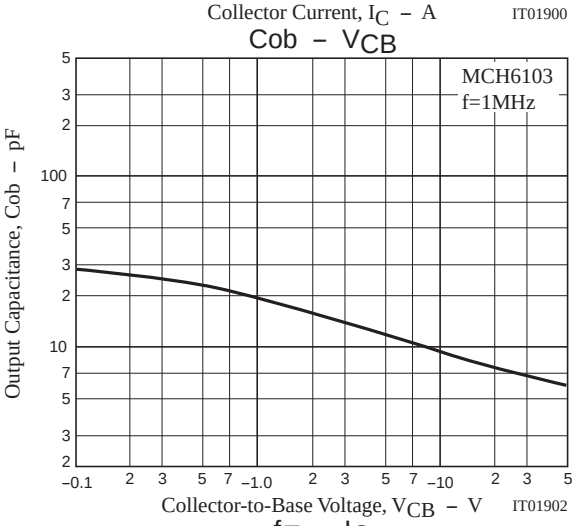
MCH6103/MCH6203

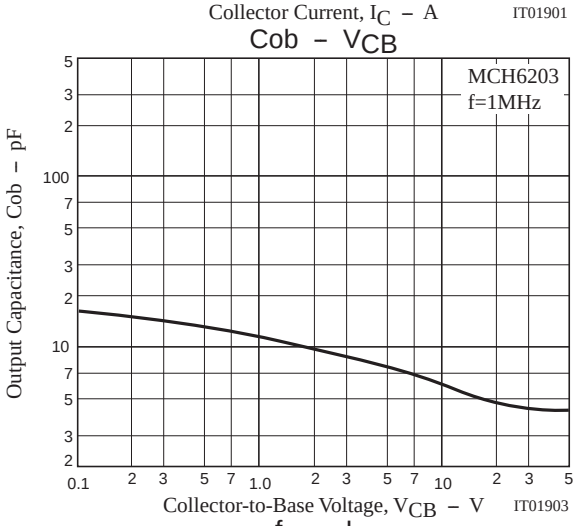


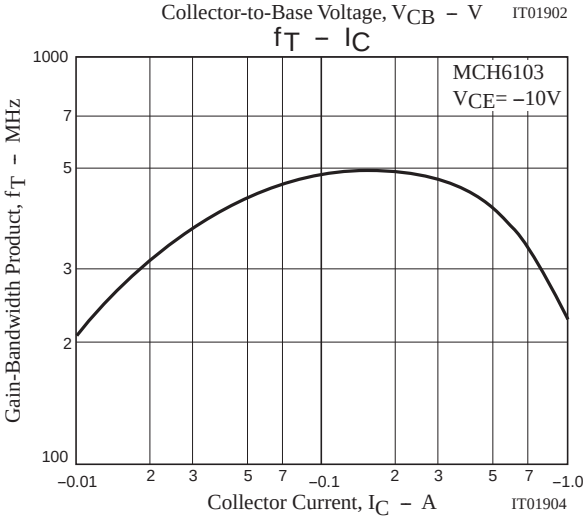


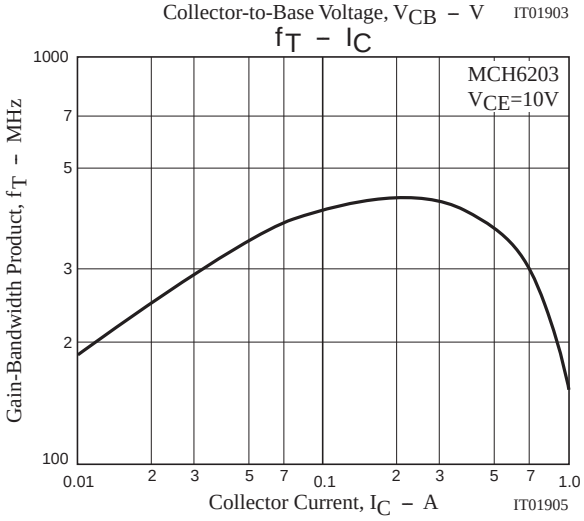




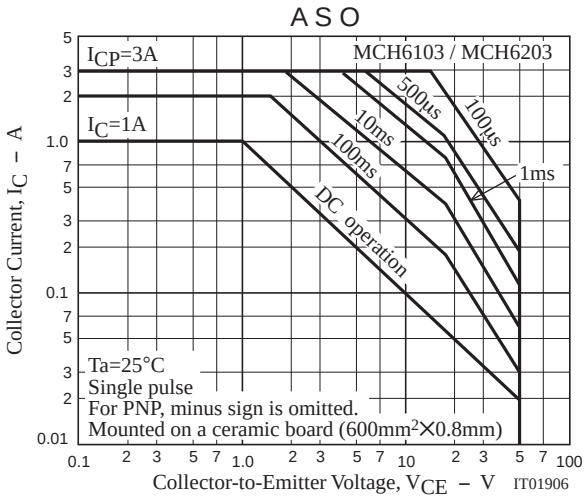


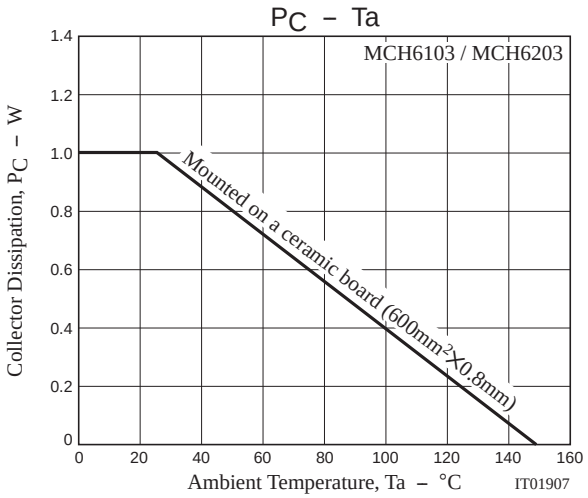






MCH6103/MCH6203





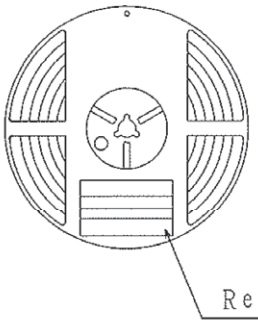
Embossed Taping Specification

MCH6103-TL-E, MCH6203-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)
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

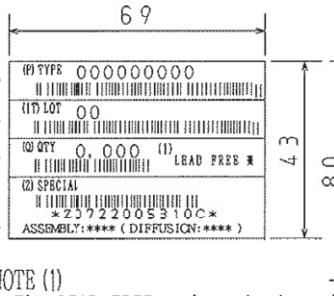
Packing method



Reel label

Reel label, Inner box label

(unit:mm)



Type No.

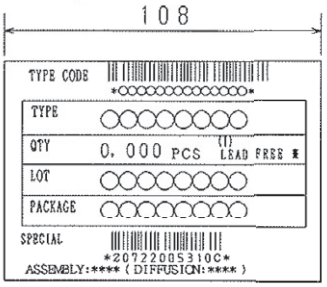
LOT No.

Quantity

Origin

Outer box label

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



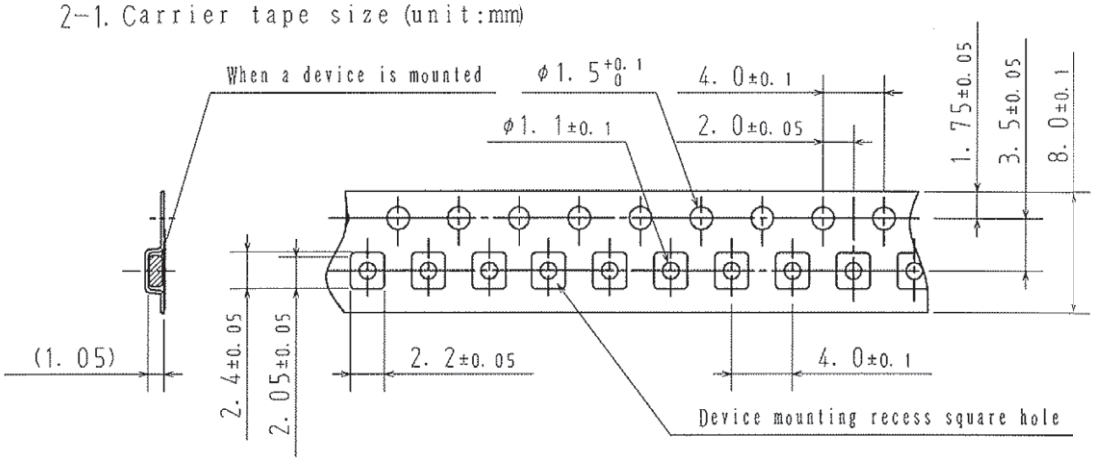
NOTE (1)

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

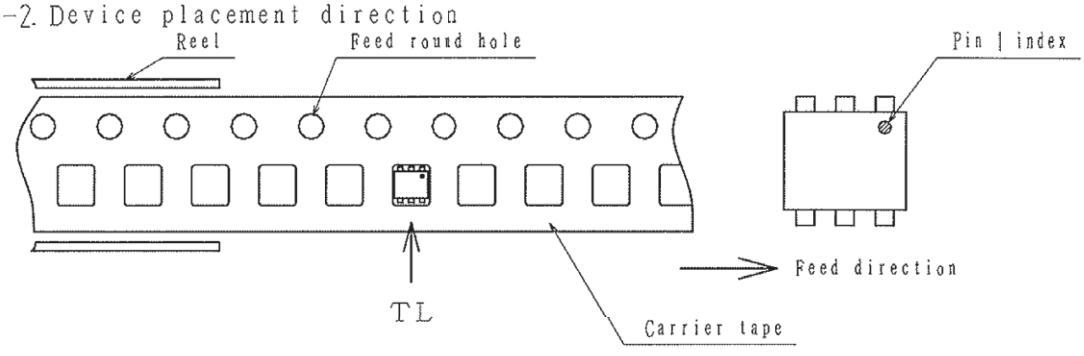
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction

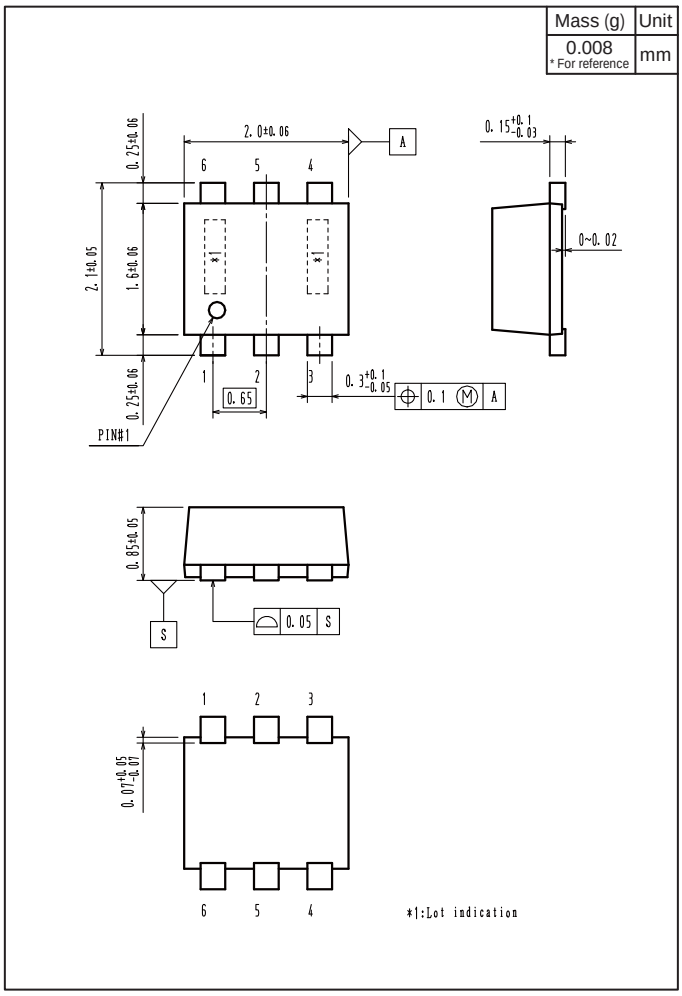


Those with pin 1 index on the feed hole side·····TL

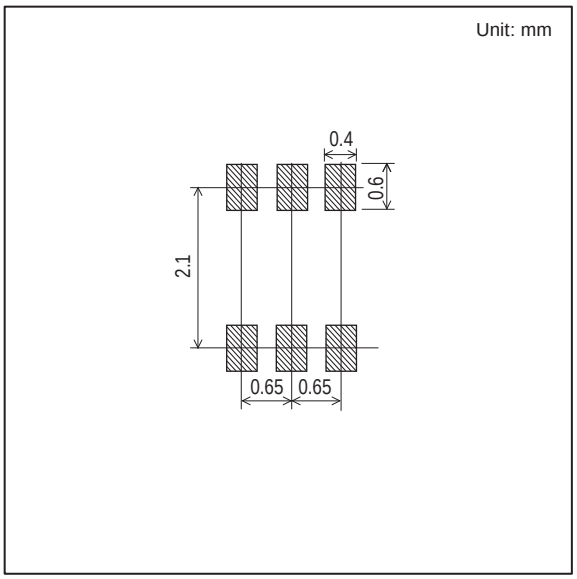
MCH6103/MCH6203

Outline Drawing

MCH6103-TL-E, MCH6203-TL-E



Land Pattern Example



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