



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

PNP / NPN Epitaxial Planar Silicon Transistors

MCH3105/MCH3205 — High-Current Switching Applications

Applications

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

Features

- Adoption of FBET, 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 () : MCH3105

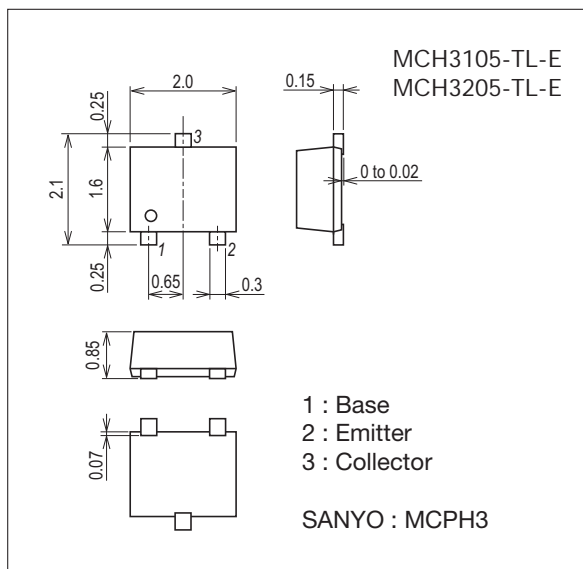
Absolute Maximum Ratings at Ta=25°C

| 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 | T _J | | 150 | °C |
| Storage Temperature | T _{stg} | | -55 to +150 | °C |

Package Dimensions

unit : mm (typ)

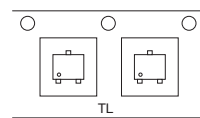
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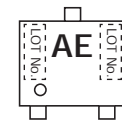
Product & Package Information

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

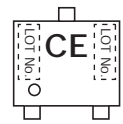
Packing Type : TL



Marking

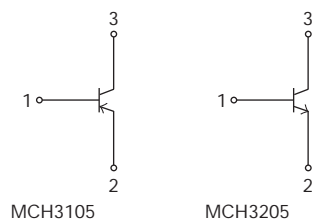


MCH3105



MCH3205

Electrical Connection

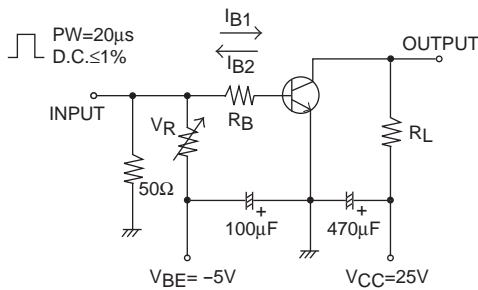


MCH3105/MCH3205

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 | C_{ob} | $V_{CB}=(-)10V, f=1MHz$ | | (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 | $V_{(BR)CBO}$ | $I_C=(-)10\mu A, I_E=0A$ | (-) 50 | 80 | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CES}$ | $I_C=(-)100\mu A, R_{BE}=0\Omega$ | (-) 50 | 80 | | V |
| | $V_{(BR)CEO}$ | $I_C=(-)1mA, R_{BE}=\infty$ | (-) 50 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=(-)10\mu A, I_C=0A$ | (-) 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 |

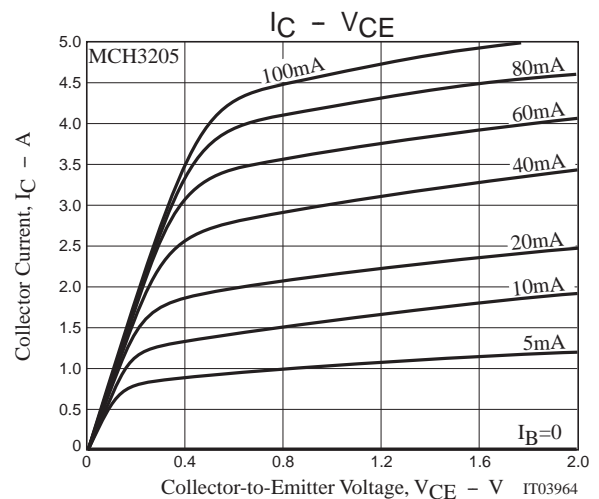
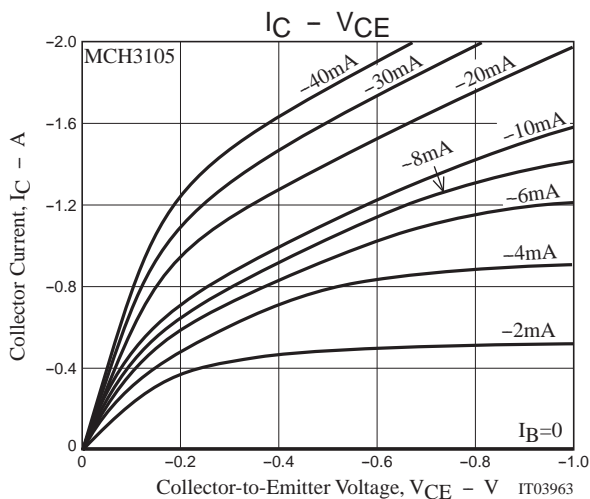
Switching Time Test Circuit



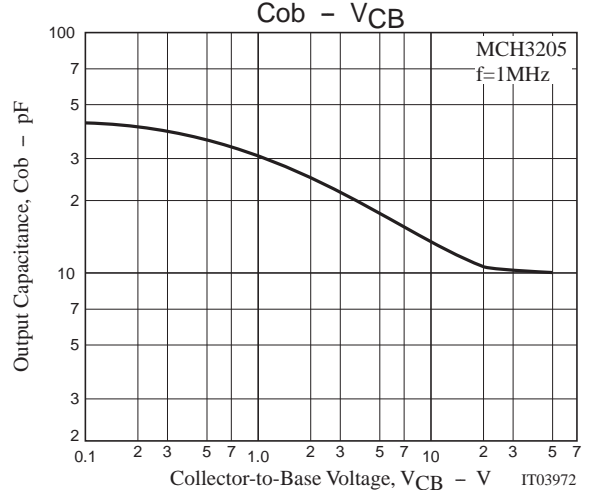
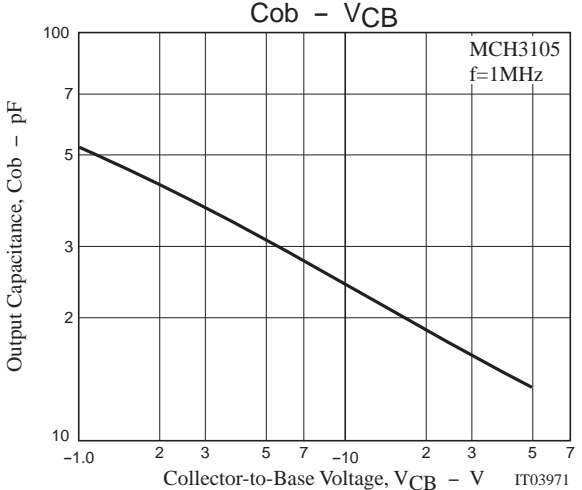
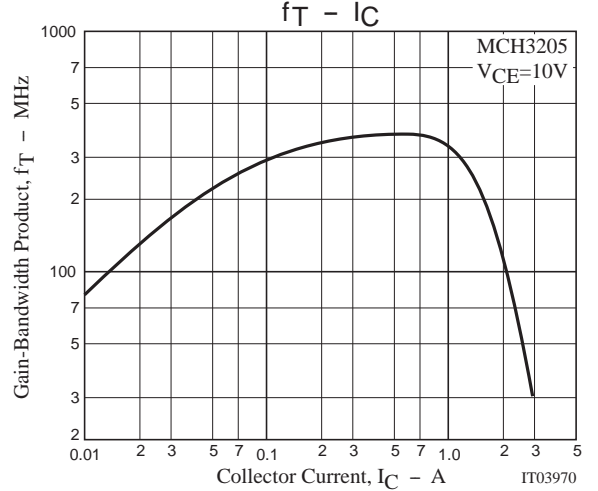
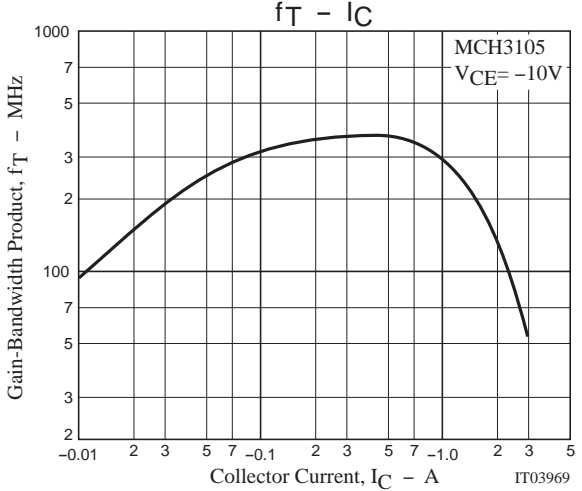
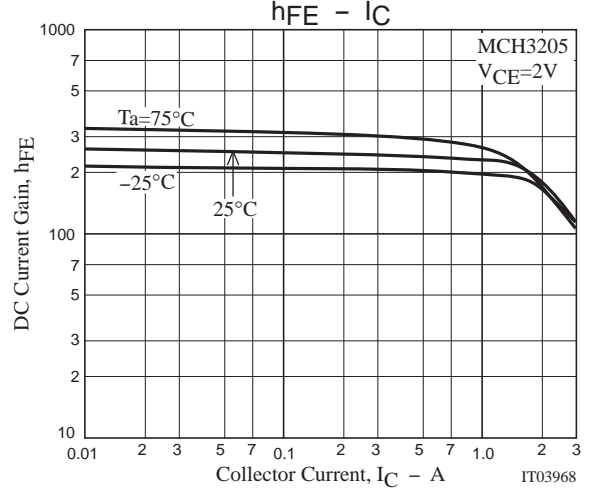
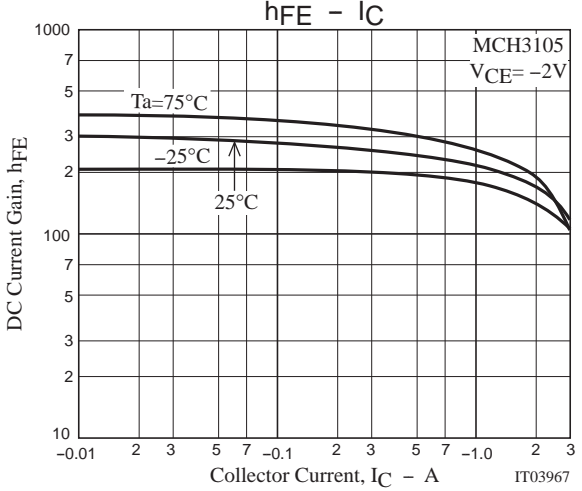
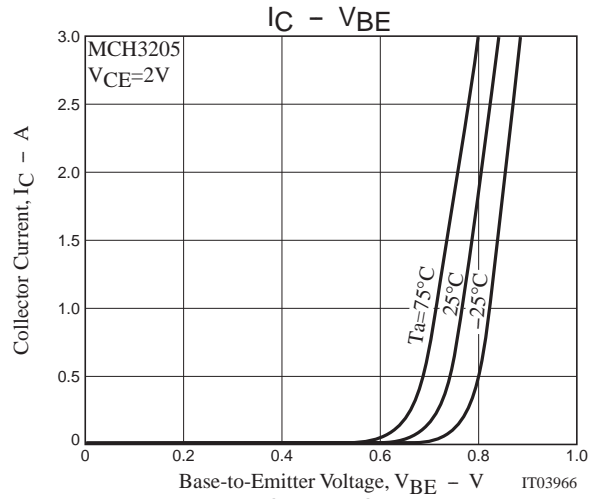
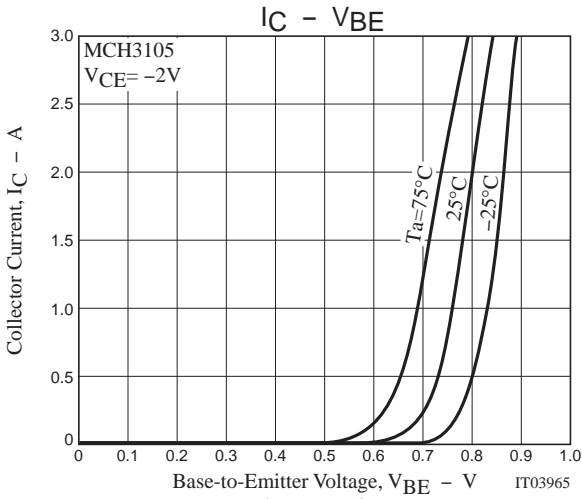
$I_C=10I_{B1}=-10I_{B2}=1A$
 (For PNP, the polarity is reversed.)

Ordering Information

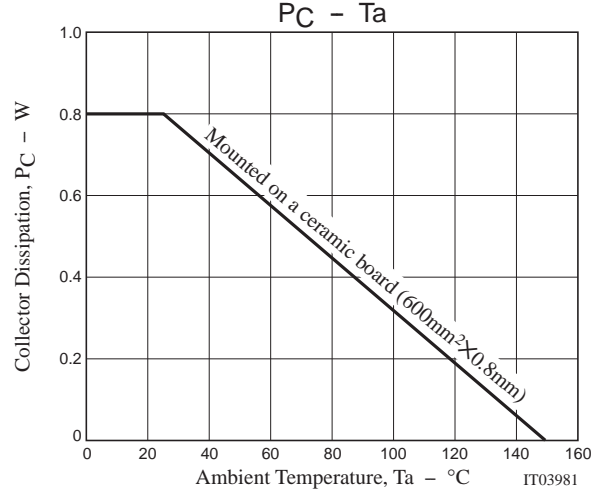
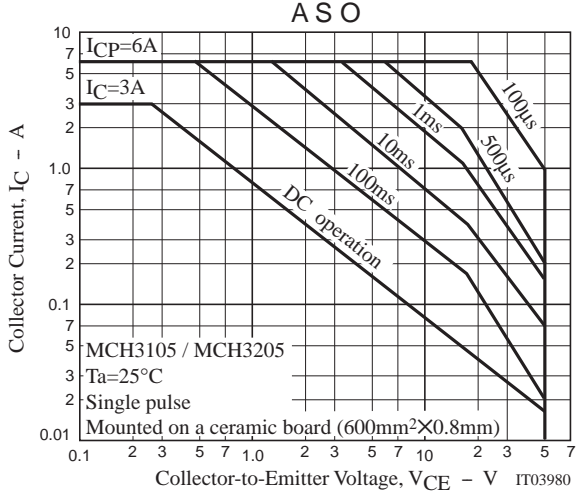
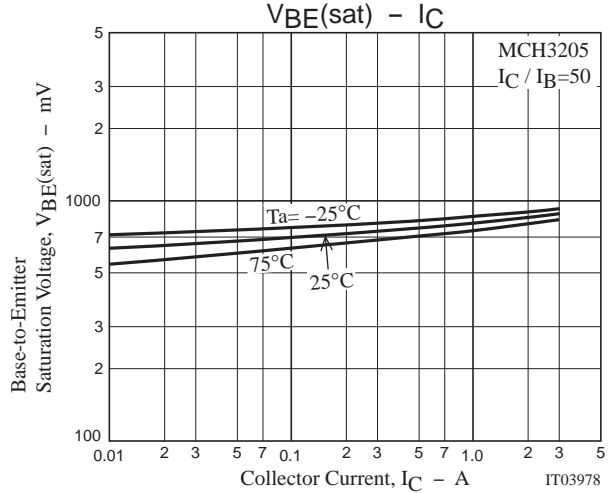
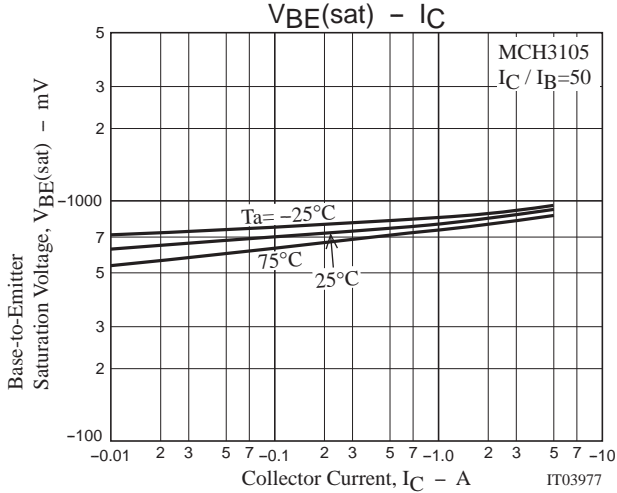
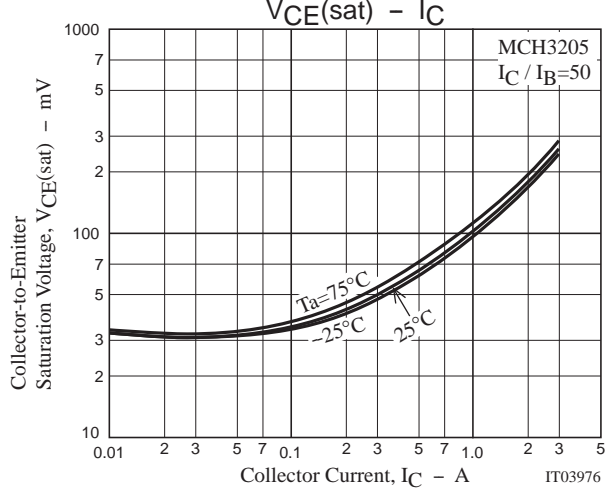
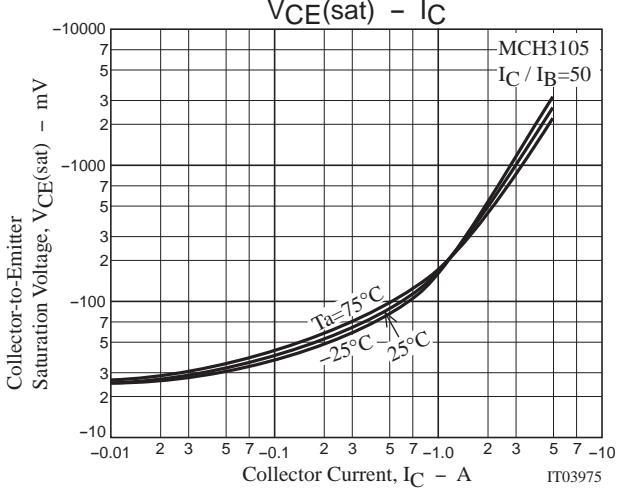
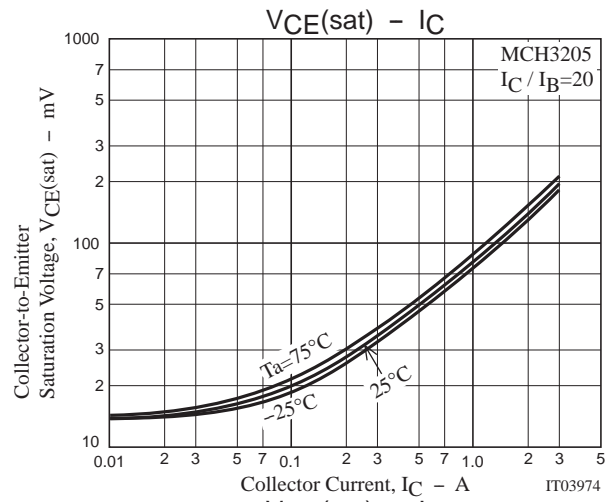
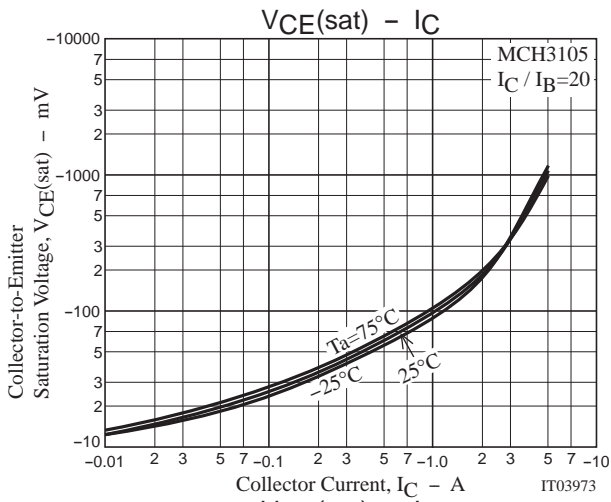
| Device | Package | Shipping | memo |
|--------------|---------|----------------|---------|
| MCH3105-TL-E | MCPH3 | 3,000pcs./reel | Pb Free |
| MCH3205-TL-E | MCPH3 | 3,000pcs./reel | |



MCH3105/MCH3205



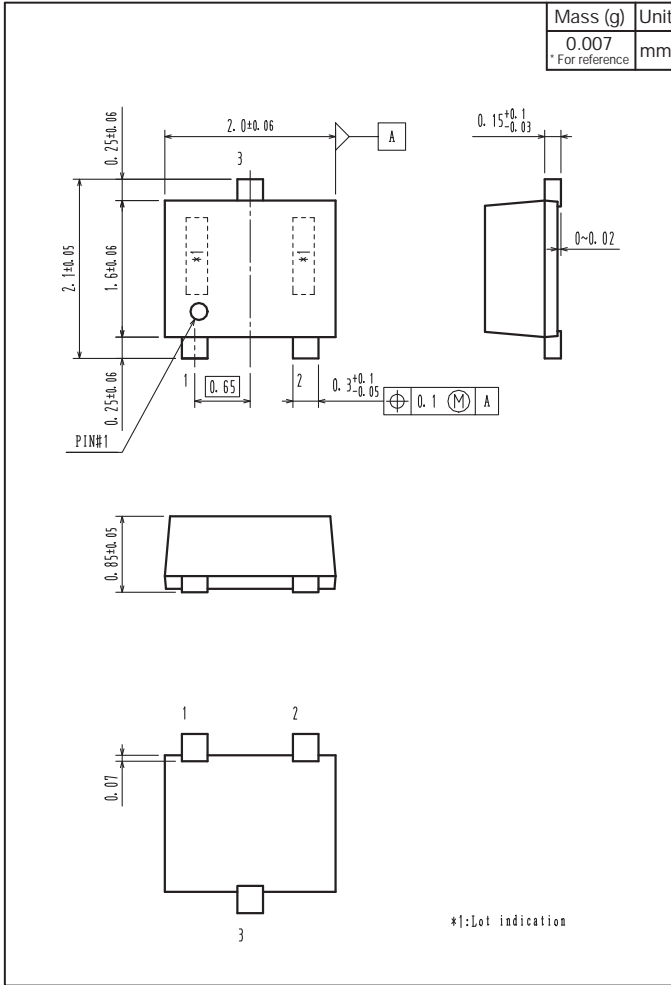
MCH3105/MCH3205



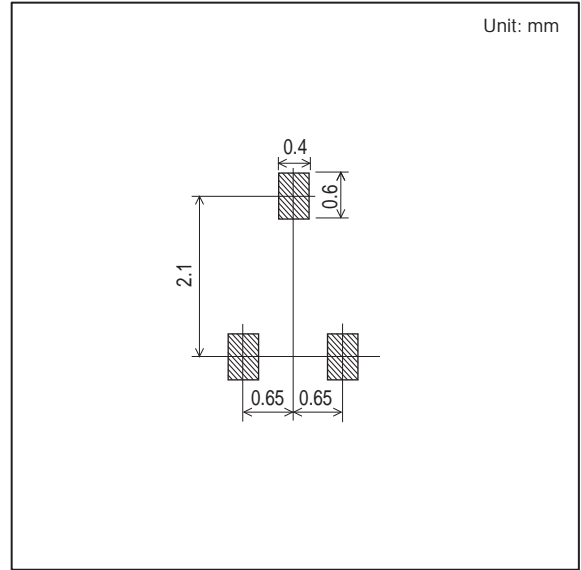
MCH3105/MCH3205

Outline Drawing

MCH3105-TL-E, MCH3205-TL-E



Land Pattern Example



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