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12A02MH

Bipolar Transistor -12V, -1A, Low VCE(sat) PNP Single MCPH3

Applications

- Low-frequency Amplifier, high-speed switching, small motor drive, muting circuit

Features

- Large current capacity
- Low collector-to-emitter saturation voltage (resistance) $R_{CE(sat)}$ typ.=285mΩ [$I_C=1A$, $I_B=50mA$]
- Small ON-resistance (R_{on})

Specifications

Absolute Maximum Ratings at $T_a=25^\circ C$

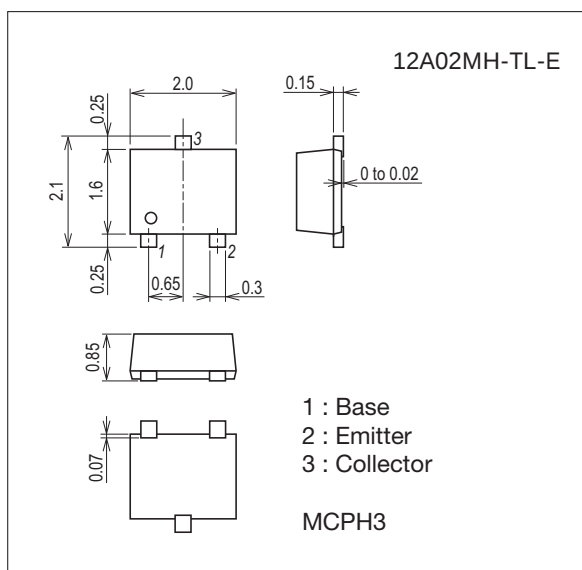
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		-15	V
Collector-to-Emitter Voltage	V_{CEO}		-12	V
Emitter-to-Base Voltage	V_{EBO}		-5	V
Collector Current	I_C		-1	A
Collector Current (Pulse)	I_{CP}		-2	A
Collector Dissipation	P_C	When mounted on ceramic substrate (600mm ² ×0.8mm)	600	mW
Junction Temperature	T_j		150	°C
Storage Temperature	T_{stg}		-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.

Package Dimensions

unit : mm (typ)

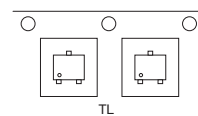
7019A-004



Product & Package Information

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

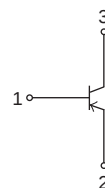
Packing Type : TL



Marking



Electrical Connection

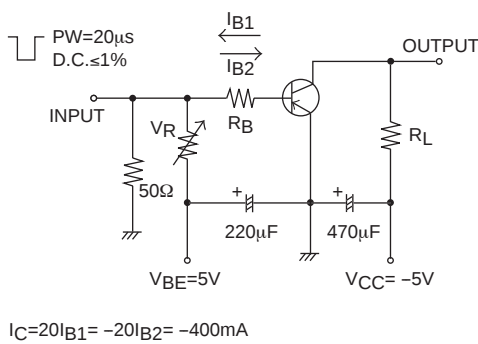


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Electrical Characteristics at Ta=25°C

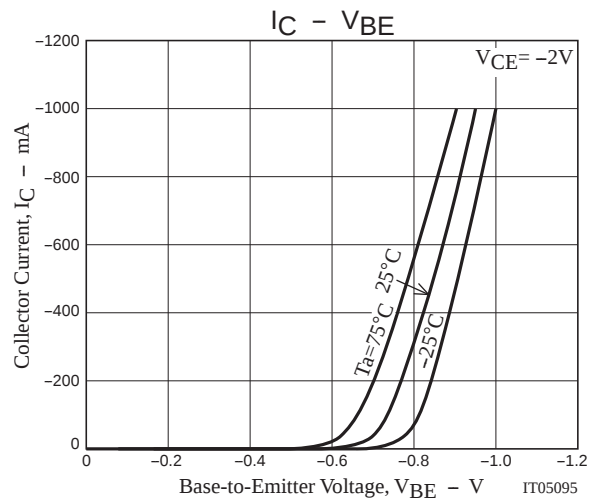
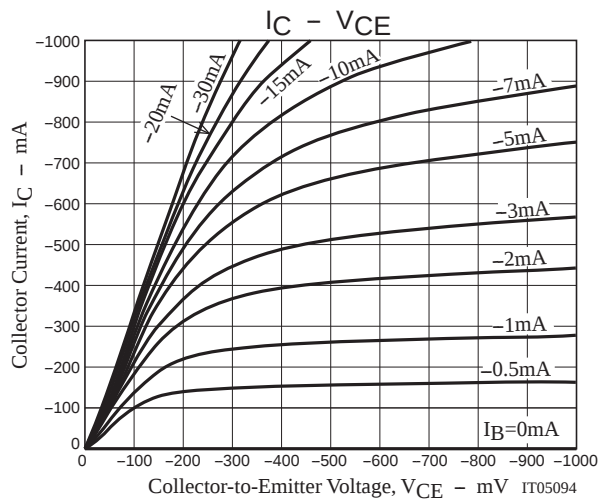
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	VCE= -12V, IE=0A			-100	nA
Emitter Cutoff Current	IEBO	VEB= -4V, IC=0A			-100	nA
DC Current Gain	hFE	VCE= -2V, IC= -10mA	300		700	
Gain-Bandwidth Product	fT	VCE= -2V, IC= -50mA		450		MHz
Output Capacitance	Cob	VCE= -10V, f=1MHz		6		pF
Collector-to-Emitter Saturation Voltage	VCE(sat)	IC= -400mA, IB= -20mA		-120	-240	mV
Base-to-Emitter Saturation Voltage	VBE(sat)	IC= -400mA, IB= -20mA		-0.9	-1.2	V
Collector-to-Base Breakdown Voltage	V(BR)CBO	IC= -10μA, IE=0A	-15			V
Collector-to-Emitter Breakdown Voltage	V(BR)CEO	IC= -1mA, RBE=∞	-12			V
Emitter-to-Base Breakdown Voltage	V(BR)EBO	IE= -10μA, IC=0A	-5			V
Turn-ON Time	ton	See specified Test Circuit.		30		ns
Storage Time	tstg			75		ns
Fall Time	tf			15		ns

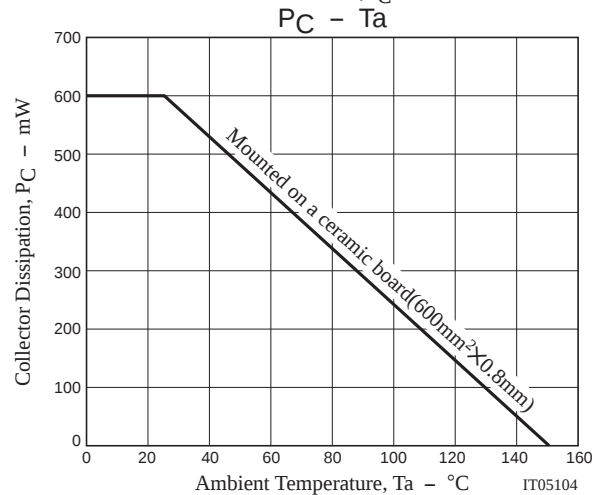
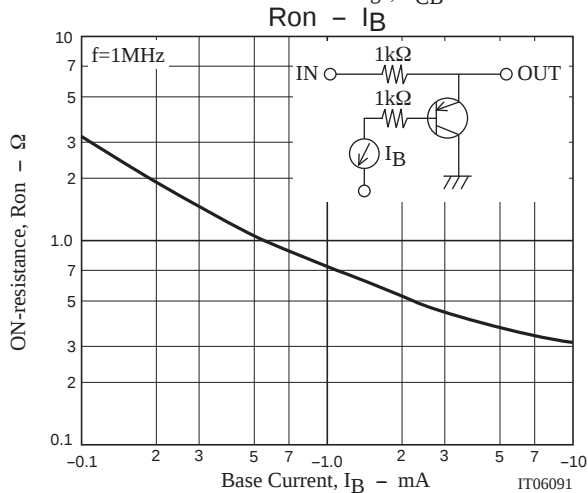
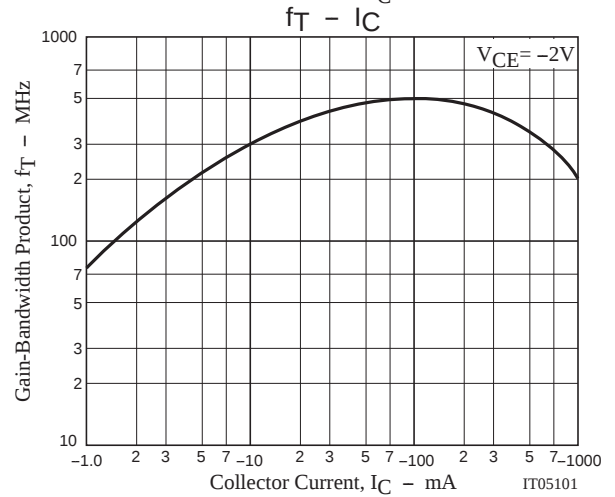
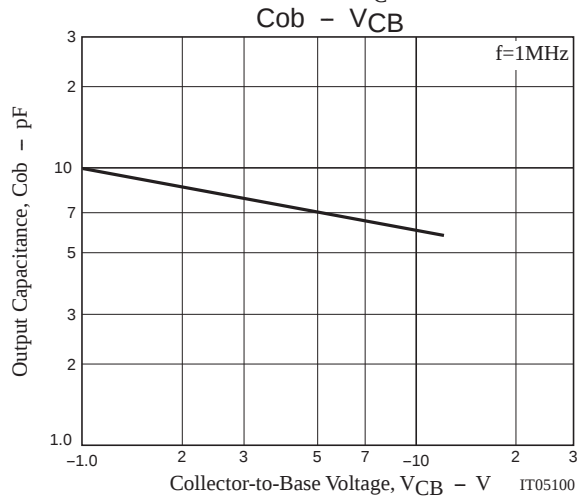
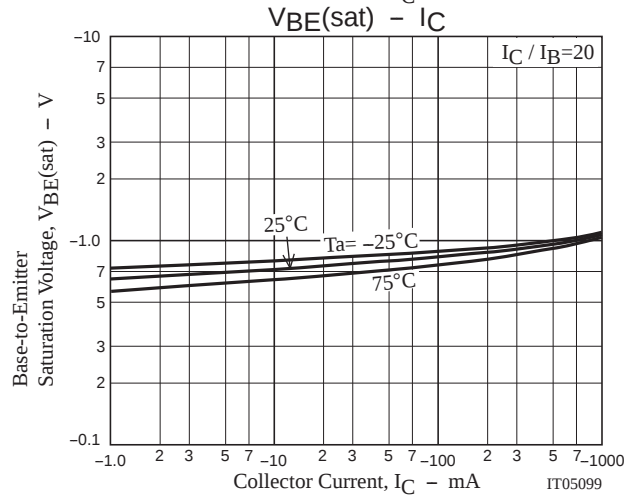
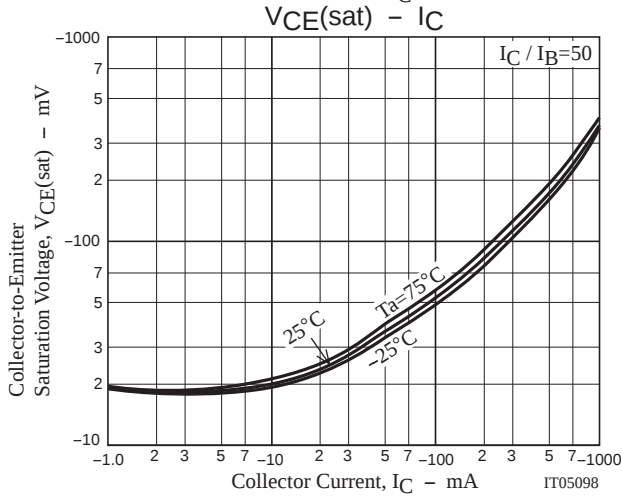
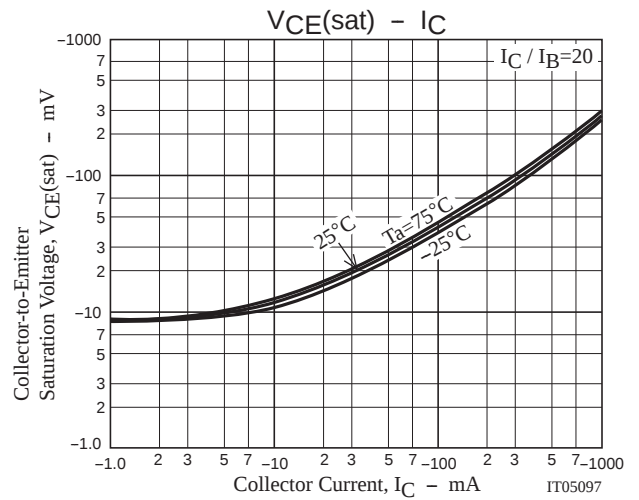
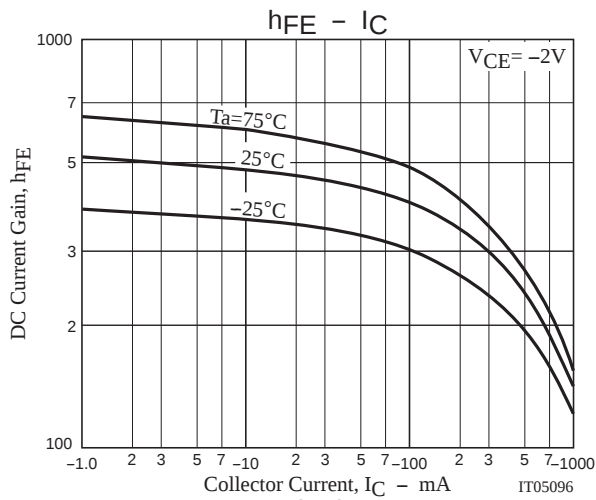
Switching Time Test Circuit



Ordering Information

Device	Package	Shipping	memo
12A02MH-TL-E	MCPH3	3,000pcs./reel	Pb Free





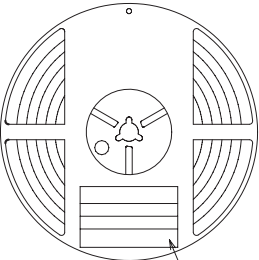
Embossed Taping Specification

12A02MH-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)
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

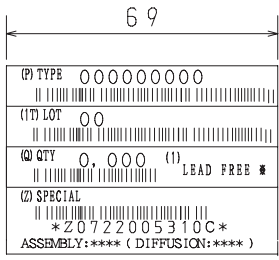
Packing method



Reel label

Reel label, Inner box label
(unit:mm)

Type No. →
LOT No. →
Quantity →
Origin →

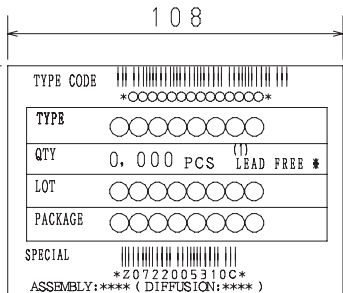


NOTE (1)
The LEAD FREE * description shows that the surface treatment of the terminal is lead free.

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

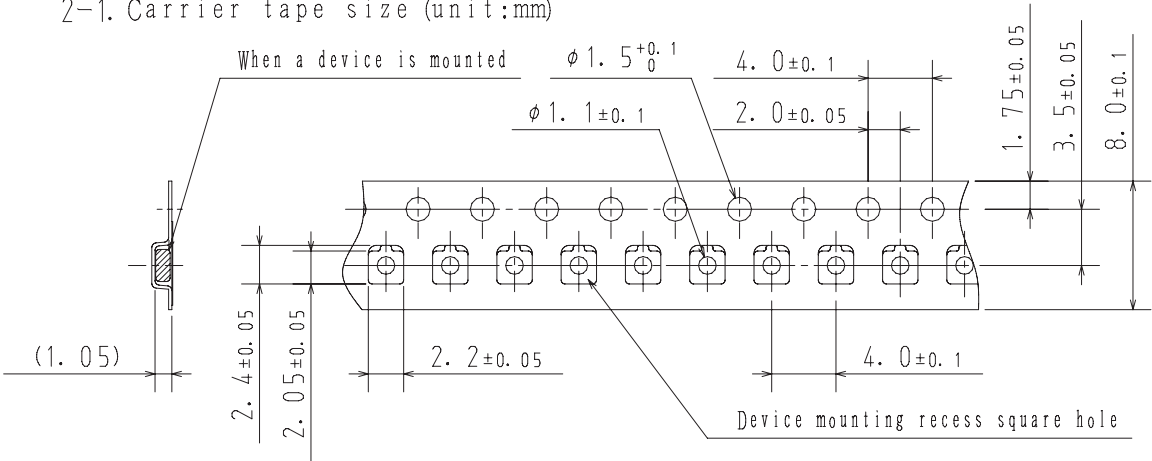
Outer box label

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

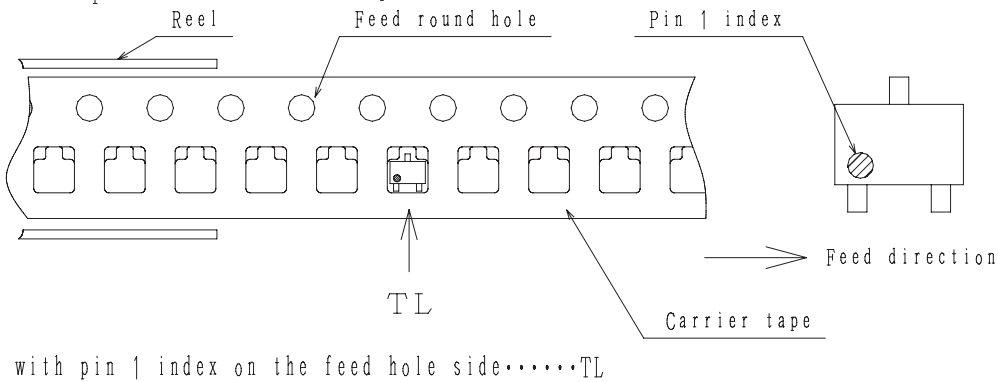


2. Taping configuration

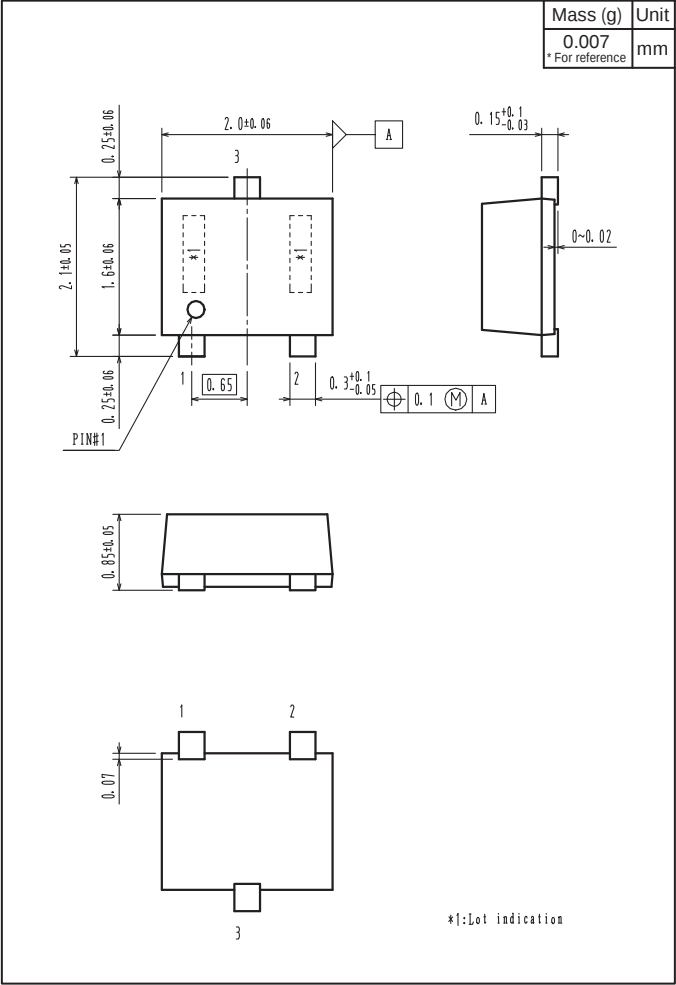
2-1. Carrier tape size (unit:mm)



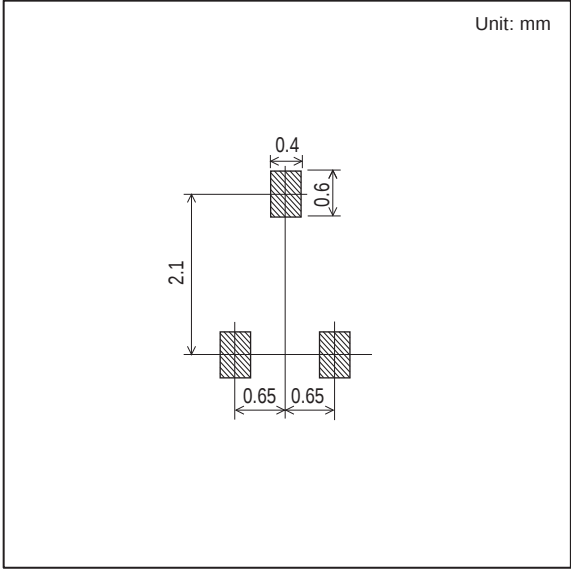
2-2. Device placement direction



Outline Drawing
12A02MH-TL-E



Land Pattern Example



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