Ordering number : ENA1291A

MCH6123

Bipolar Transistor
−50V, −3A, Low V_{CE}(sat), PNP Single MCPH6

ON Semiconductor®
http://onsemi.com

Applications

- DC-DC converter, relay drivers, lamp drivers, motor drivers

Features

- Adoption of MBIT process
- Low collector-to-emitter saturation voltage
- Large current capacity
- High speed switching
- Ultrasmall-sized package permitting applied sets to be made small and slim (0.85mm)
- High allowable power dissipation

Specifications

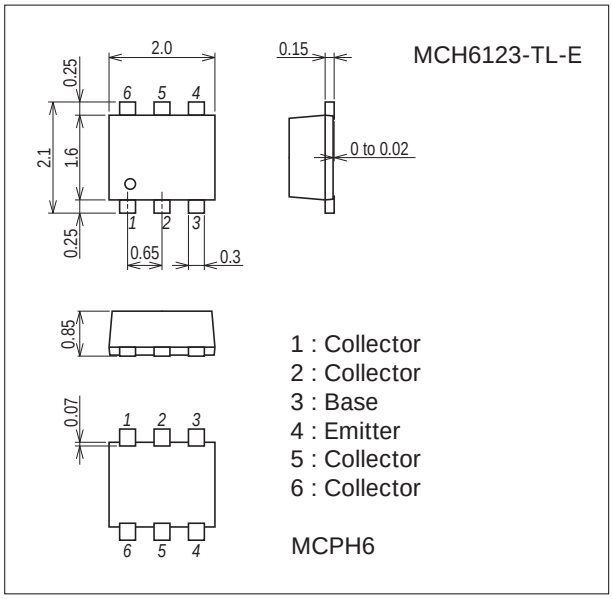
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		-50	V
Collector-to-Emitter Voltage	V_{CES}		-50	V
Collector-to-Emitter Voltage	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)	1	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.

Package Dimensions

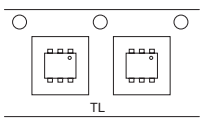
unit : mm (typ)
7022A-007



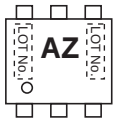
Product & Package Information

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

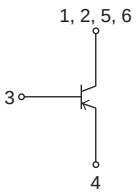
Packing Type : TL



Marking



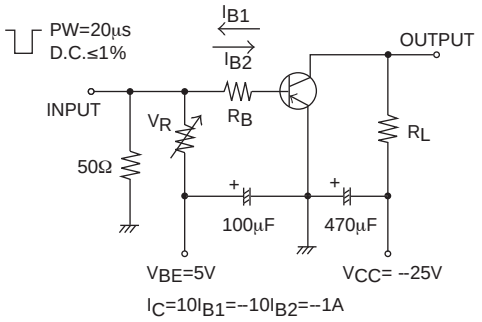
Electrical Connection



Electrical Characteristics at Ta=25°C

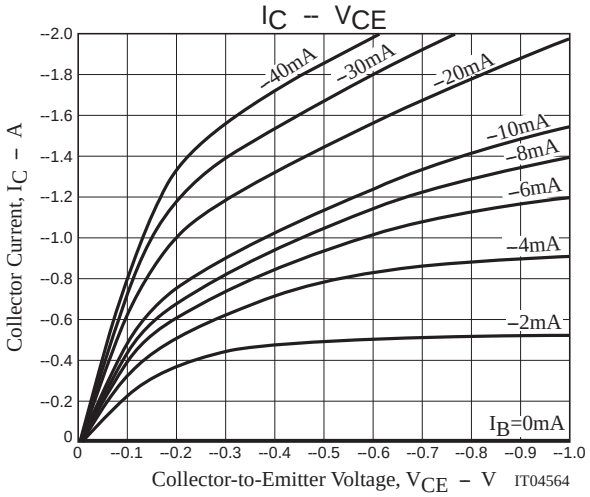
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}= -40V, I_E=0A			-1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}= -4V, I_C=0A			-1	μA
DC Current Gain	h_{FE}	V_{CE}= -2V, I_C= -100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}= -10V, I_C= -500mA		390		MHz
Output Capacitance	Cob	V_{CB}= -10V, f=1MHz		24		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)1	I_C= -1A, I_B= -50mA		-115	-230	mV
	V_{CE}(sat)2	I_C= -2A, I_B= -100mA		-240	-650	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			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C= -100μA, R_{BE}=0Ω	-50			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	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		ns
Storage Time	t_{stg}			230		ns
Fall Time	t_f			18		ns

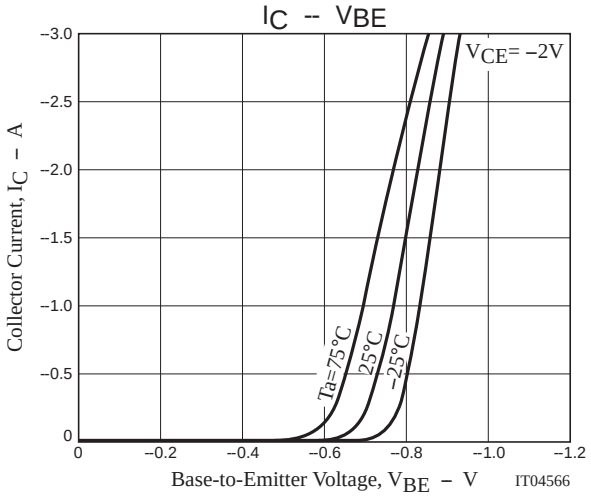
Switching Time Test Circuit

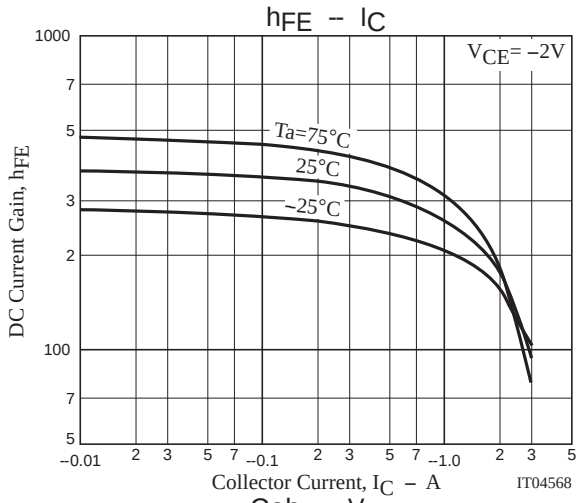


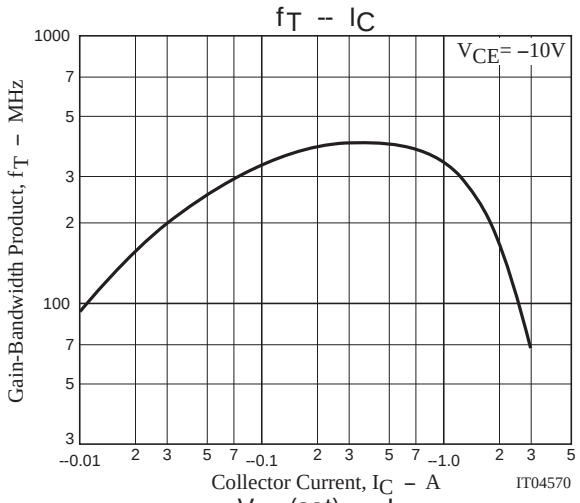
Ordering Information

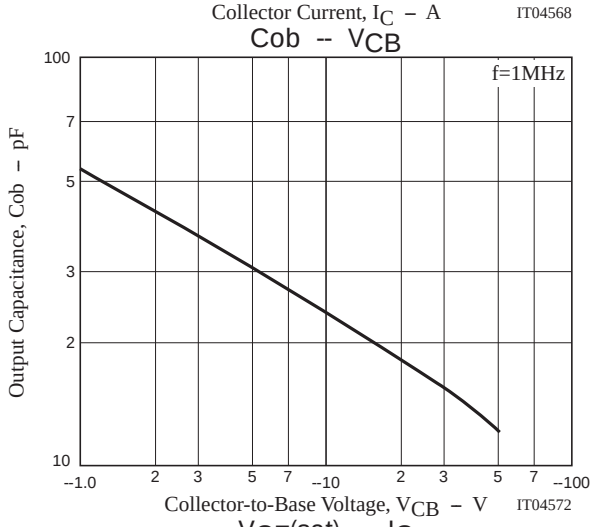
Device	Package	Shipping	memo
MCH6123-TL-E	MCPH6	3,000pcs./reel	Pb Free

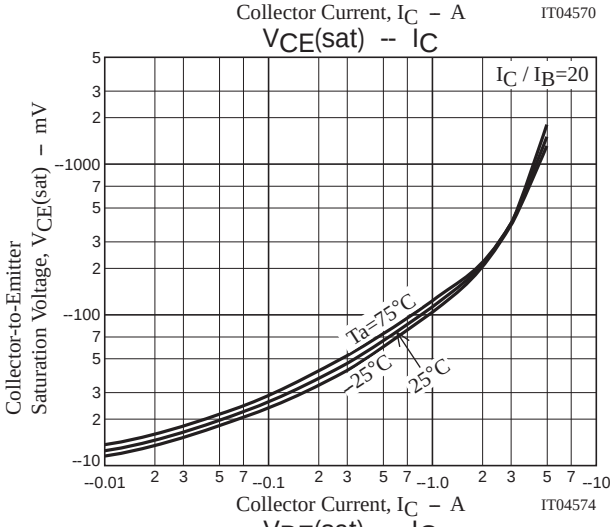


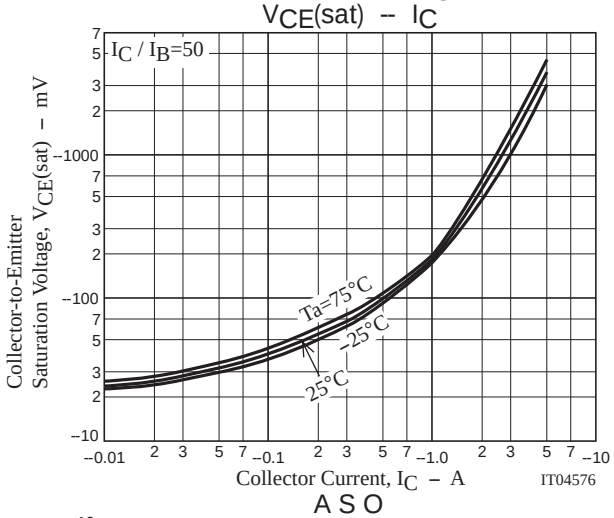


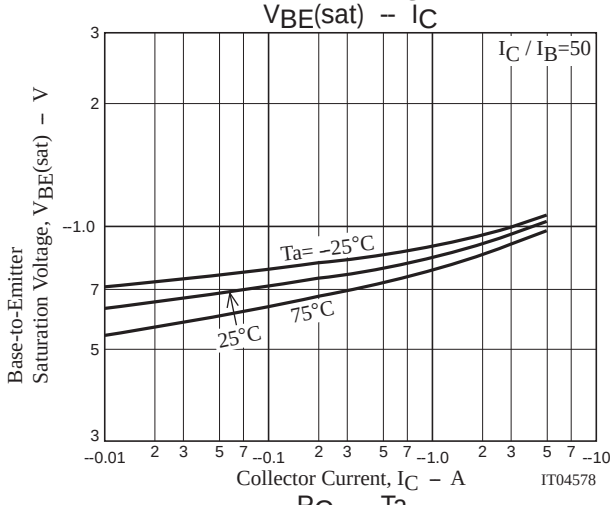

hFE -- IC
VCE= −2V
Ta=75°C
25°C
−25°C
DC Current Gain, hFE
Collector Current, IC − A
IT04568

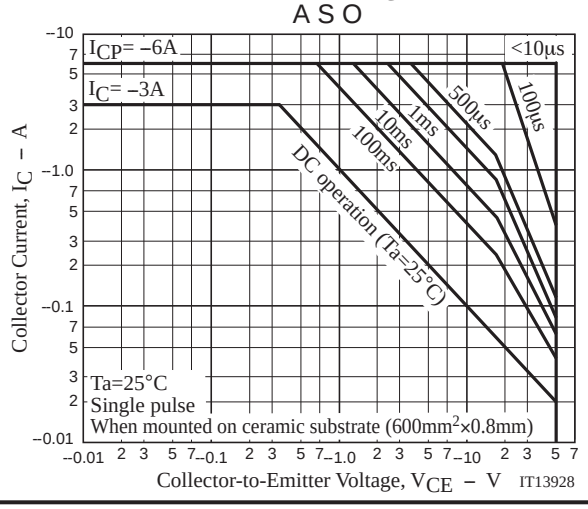

fT -- IC
VCE= −10V
Gain-Bandwidth Product, fT − MHz
Collector Current, IC − A
IT04570

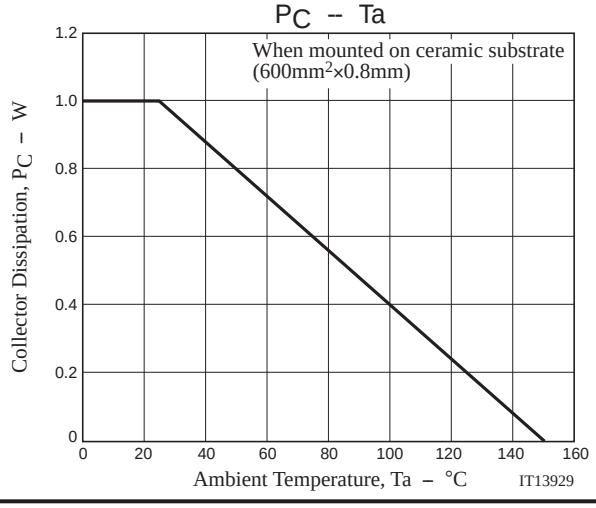

Cob -- VCB
f=1MHz
Output Capacitance, Cob − pF
Collector-to-Base Voltage, VCB − V
IT04572


VCE(sat) -- IC
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) − mV
Ta=75°C
−25°C
25°C
Collector Current, IC − A
IT04574


VCE(sat) -- IC
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) − mV
Ta=75°C
−25°C
25°C
Collector Current, IC − A
IT04576


VBE(sat) -- IC
IC / IB=50
Base-to-Emitter Saturation Voltage, VBE(sat) − V
Ta= −25°C
75°C
25°C
Collector Current, IC − A
IT04578


A S O
ICP= −6A
<10μs
IC= −3A
100μs
500μs
1ms
10ms
100ms
DC operation (Ta=25°C)
Ta=25°C
Single pulse
When mounted on ceramic substrate (600mm2×0.8mm)
Collector Current, IC − A
Collector-to-Emitter Voltage, VCE − V
IT13928


PC -- Ta
When mounted on ceramic substrate
(600mm2×0.8mm)
Collector Dissipation, PC − W
Ambient Temperature, Ta − °C
IT13929

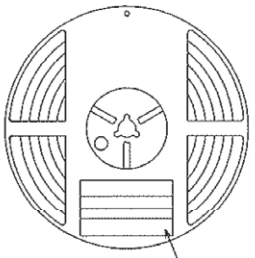
Embossed Taping Specification

MCH6123-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

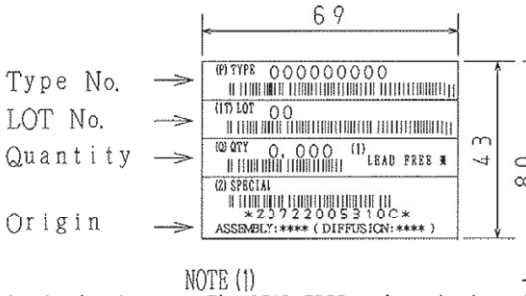
Packing method



Reel label

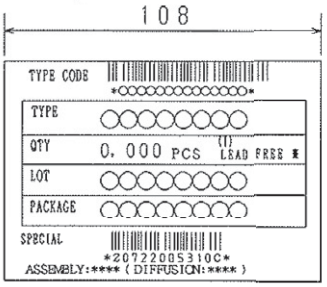
Reel label, Inner box label

(unit:mm)



Outer box label

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



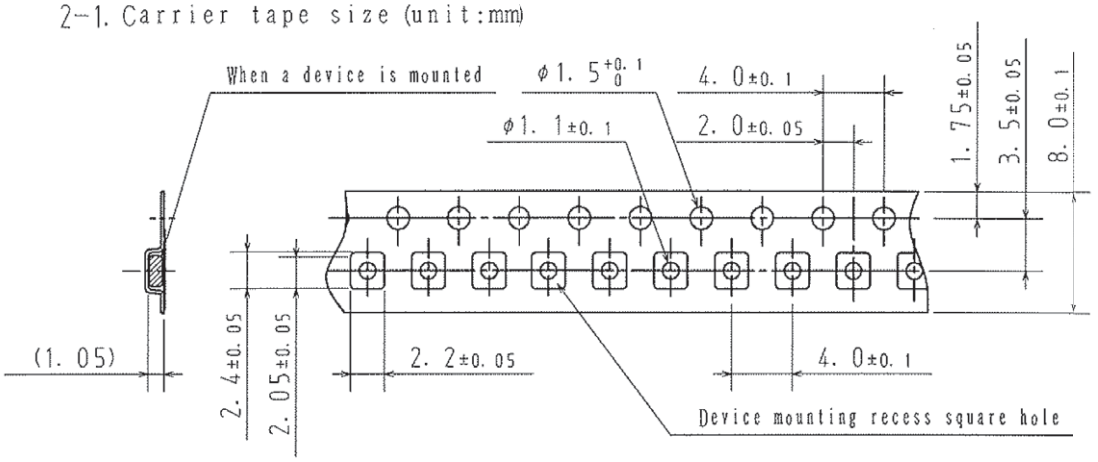
NOTE (1)

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

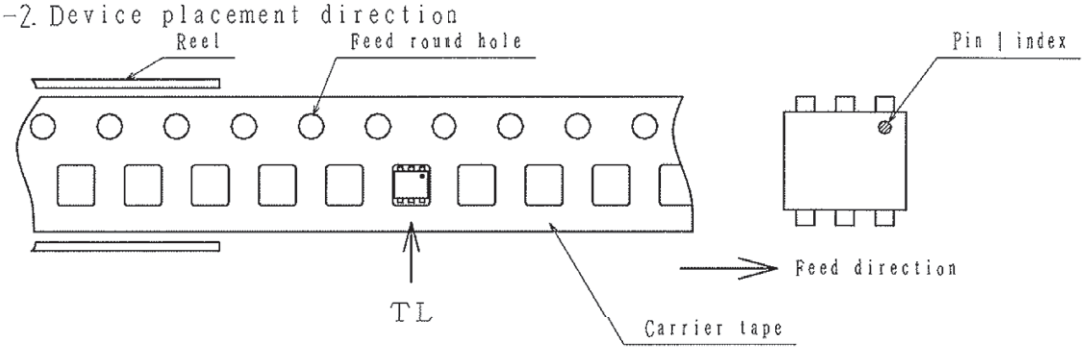
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



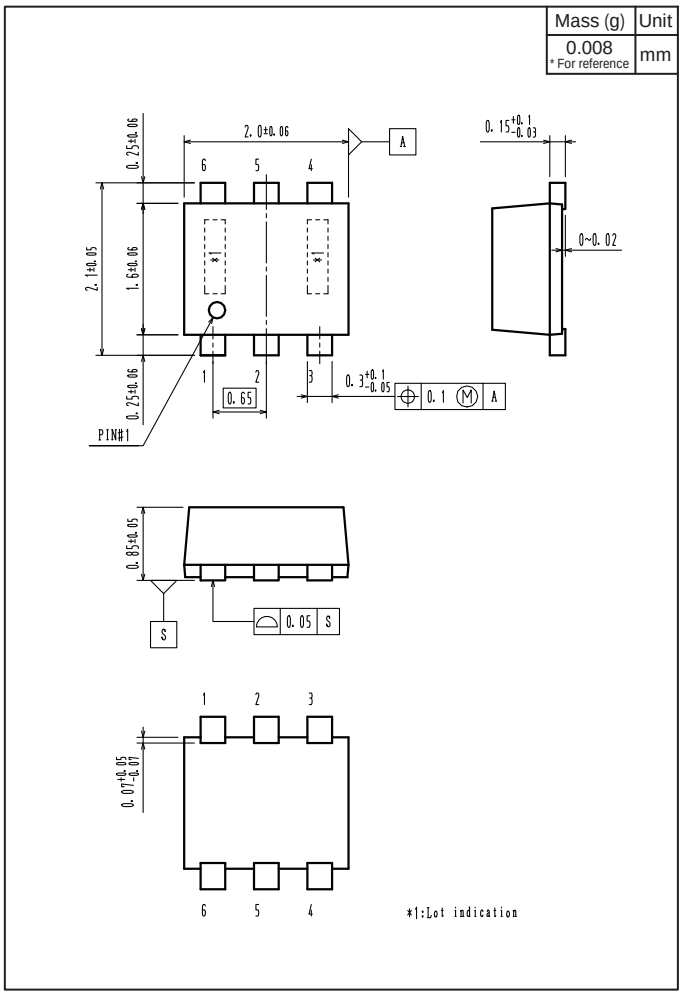
2-2. Device placement direction



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

Outline Drawing

MCH6123-TL-E



Land Pattern Example