



MCH6541

 — PNP / NPN Epitaxial Planar Silicon Transistors

Push-Pull Circuit Applications

Applications

- MOSFET gate drivers, relay drivers, lamp drivers, motor drivers.

Features

- Composite type with a PNP transistor and an NPN transistor contained in one package facilitating high-density mounting.
- Ultrasmall package permitting applied sets to be small and slim.

Specifications () : PNP

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CBO}		(-30)40	V
Collector-to-Emitter Voltage	V _{CEO}		(-)30	V
Emitter-to-Base Voltage	V _{EBO}		(-)5	V
Collector Current	I _C		(-)700	mA
Collector Current (Pulse)	I _{CP}		(-)3	A
Collector Dissipation	P _C	When mounted on ceramic substrate (600mm ² ×0.8mm) 1unit	0.5	W
Total Power Dissipation	P _T	When mounted on ceramic substrate (600mm ² ×0.8mm)	0.55	W
Junction Temperature	T _J		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I _{CBO}	V _{CB} =(-)30V, I _E =0A			(-)100	nA
Emitter Cutoff Current	I _{EBO}	V _{EB} =(-)4V, I _C =0A			(-)100	nA
DC Current Gain	h _{FE}	V _{CE} =(-)2V, I _C =(-)50mA	(200)300		(500)800	
Gain-Bandwidth Product	f _T	V _{CE} =(-)2V, I _C =(-)50mA		(520)540		MHz
Output Capacitance	C _{ob}	V _{CB} =(-)10V, f=1MHz		(4.7)3.3		pF

Marking : EP

Continued on next page.

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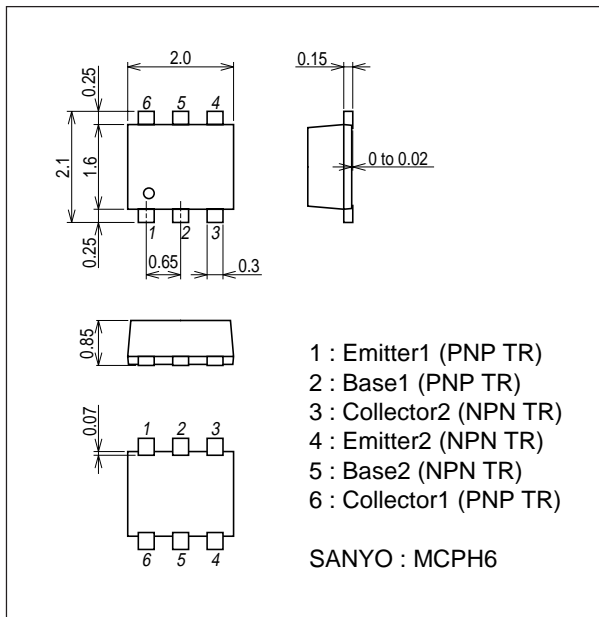
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)200mA, I_B=(-)10mA$		(-110)85	(-220)190	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)200mA, I_B=(-)10mA$		(-0.9)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0A$	(-30)40			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-30)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0A$	(-5)			V
Turn-On Time	t_{on}	See specified Test Circuit.		35		ns
Storage Time	t_{stg}	See specified Test Circuit.		(125)255		ns
Fall Time	t_f	See specified Test Circuit.		(25)40		ns

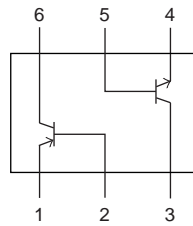
Package Dimensions

unit : mm (typ)

7022A-012



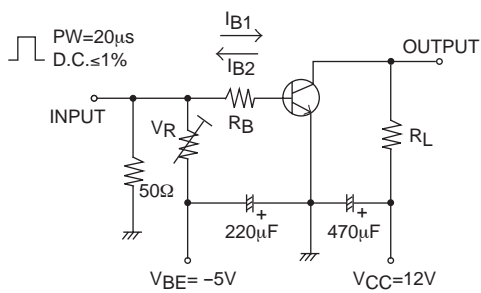
Electrical Connection



- 1 : Emitter1 (PNP TR)
- 2 : Base1 (PNP TR)
- 3 : Collector2 (NPN TR)
- 4 : Emitter2 (NPN TR)
- 5 : Base2 (NPN TR)
- 6 : Collector1 (PNP TR)

Top view

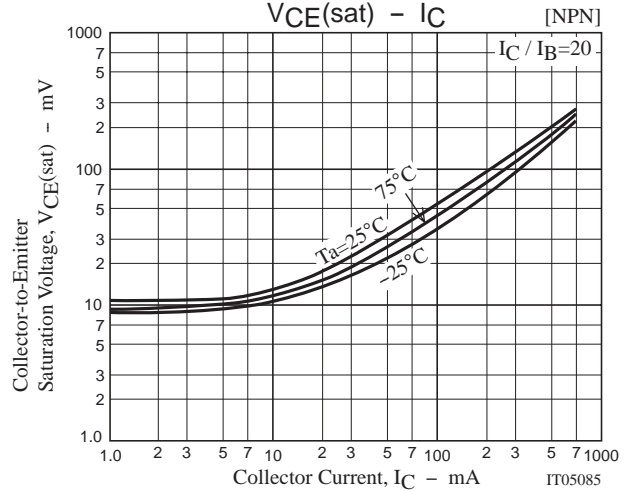
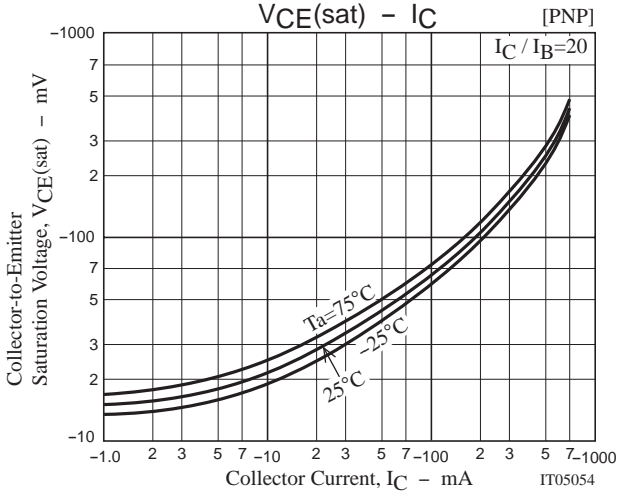
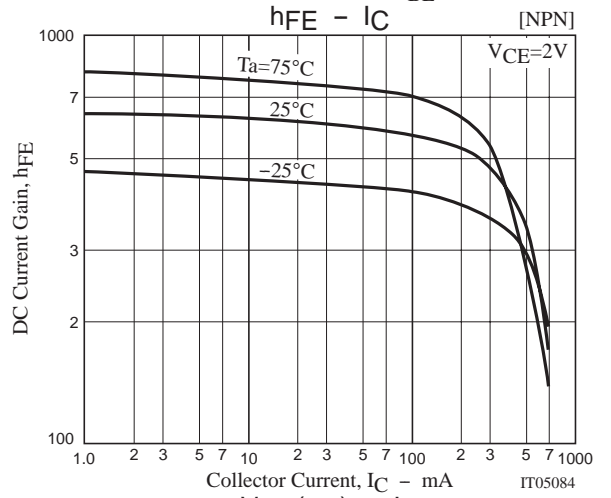
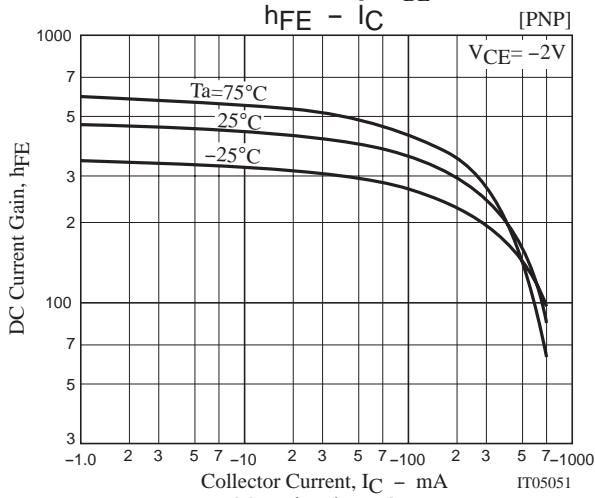
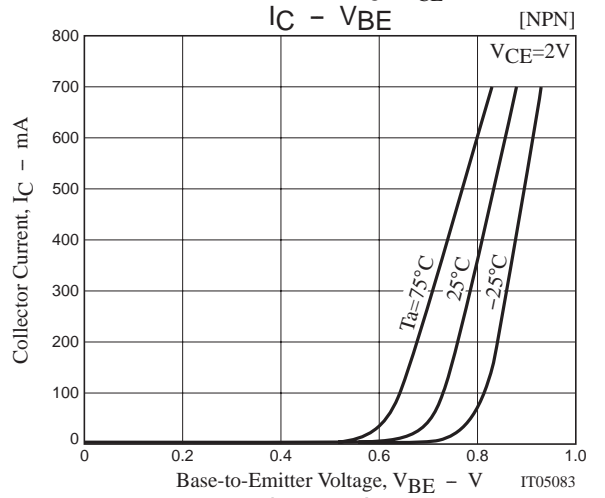
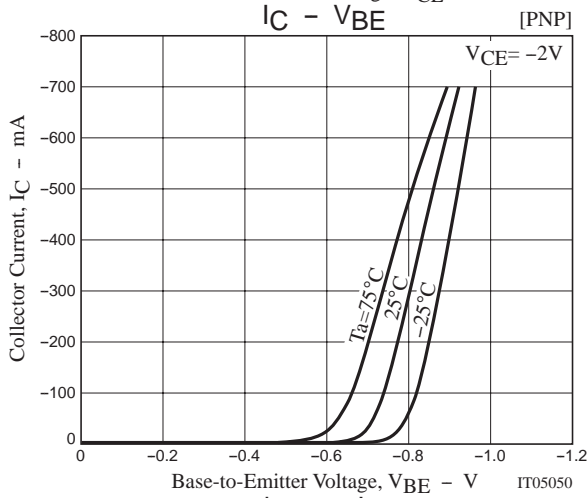
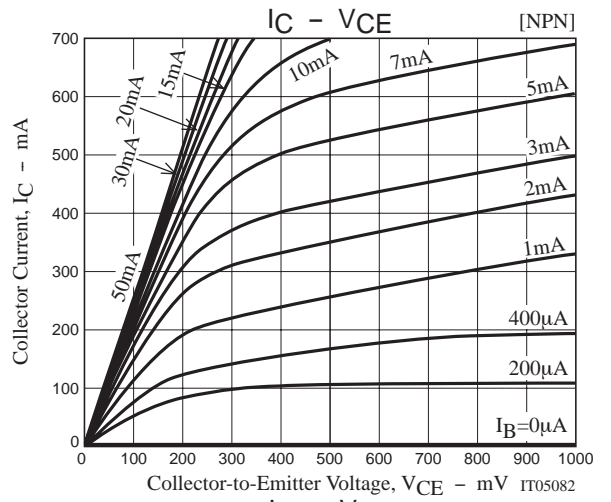
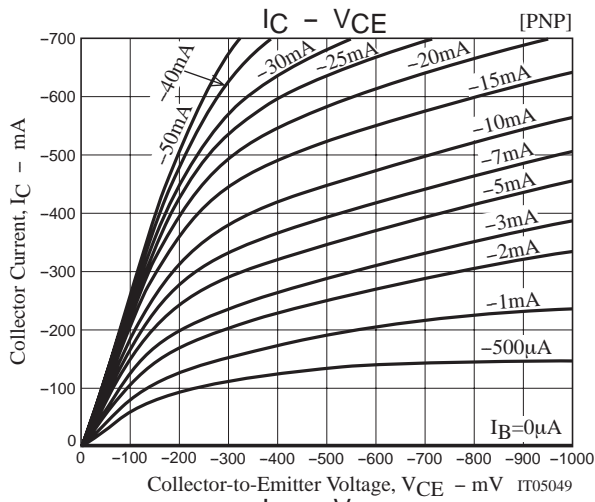
Switching Time Test Circuit



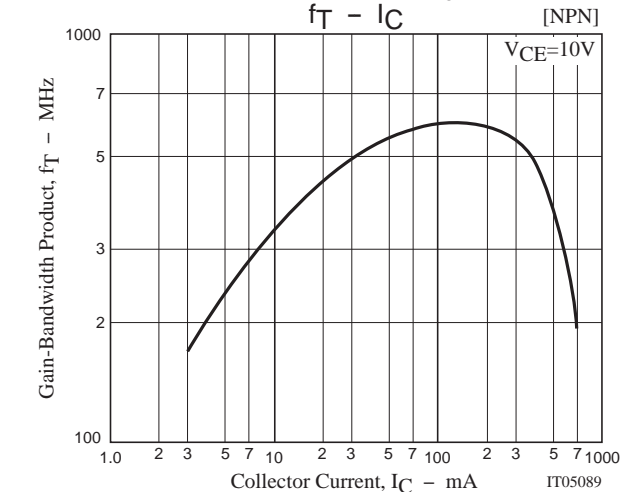
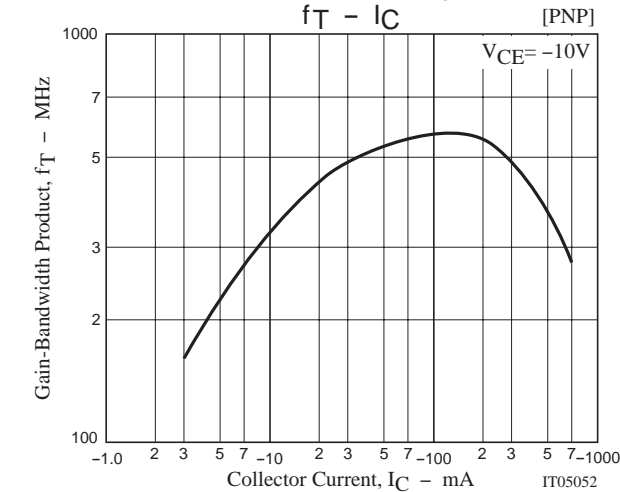
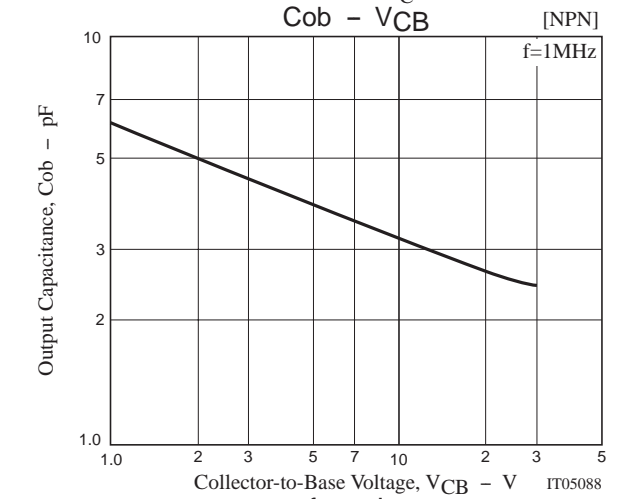
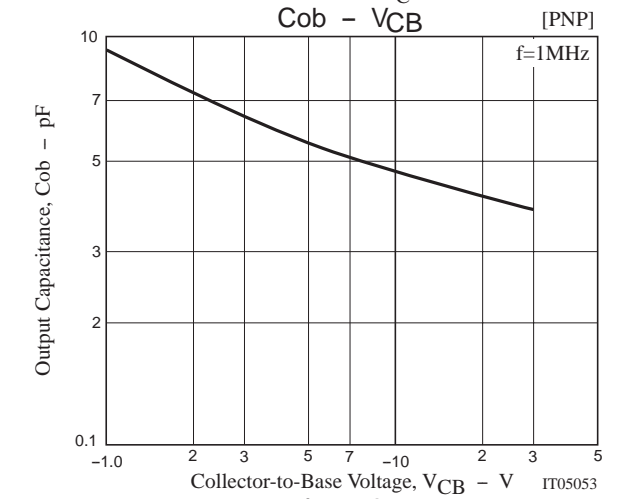
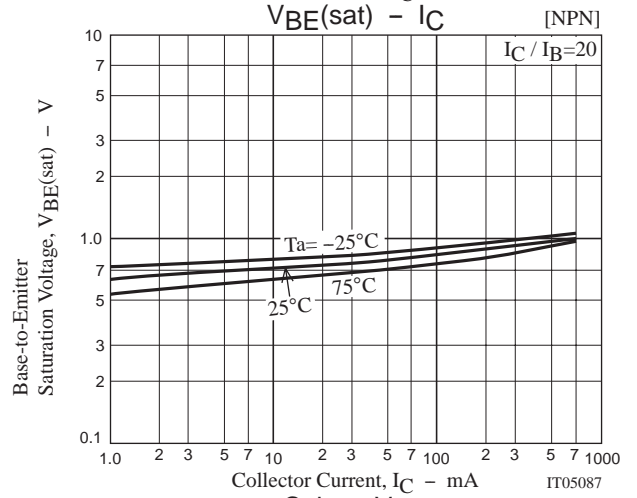
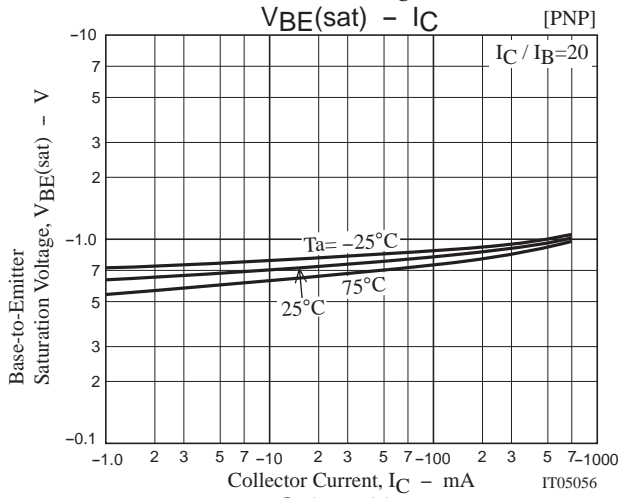
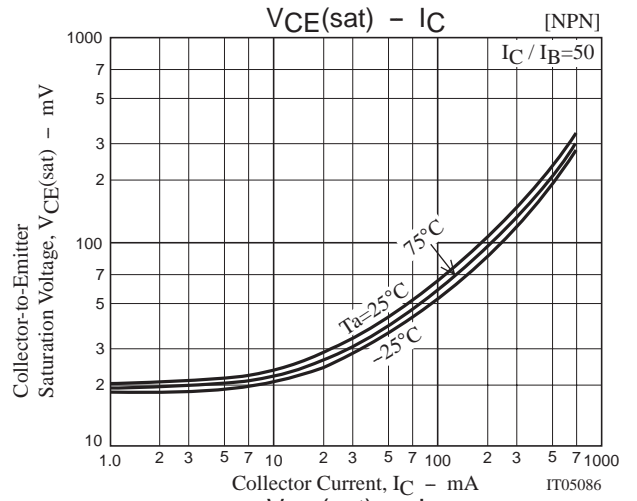
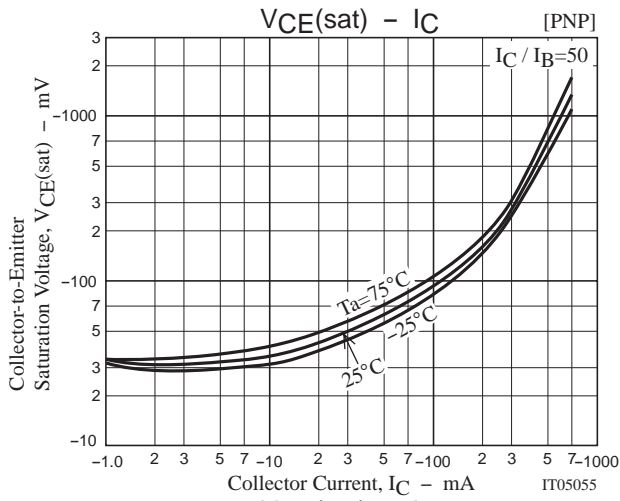
$$I_C = 20I_{B1} = -20I_{B2} = 300mA$$

For PNP, the polarity is reversed.

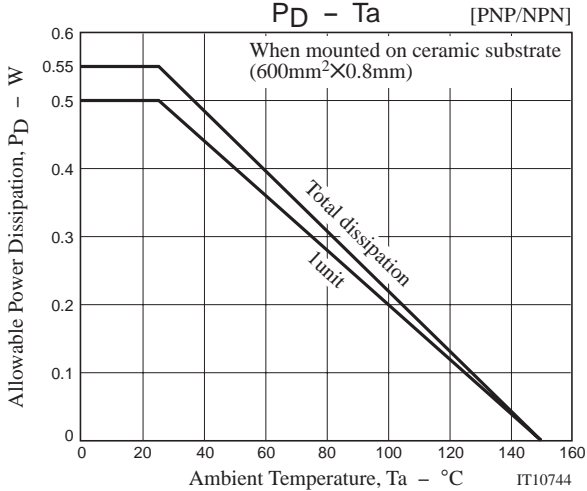
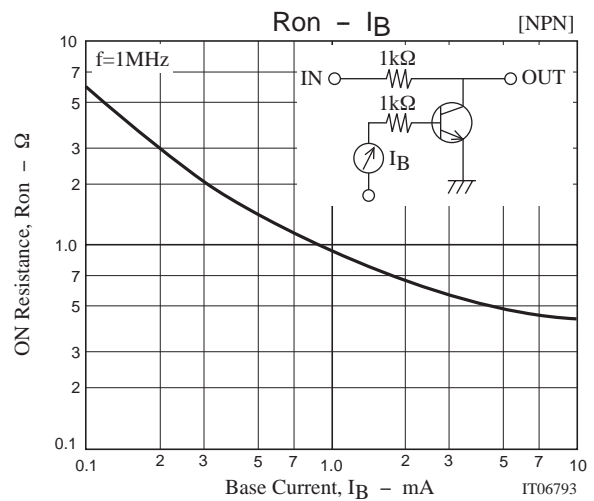
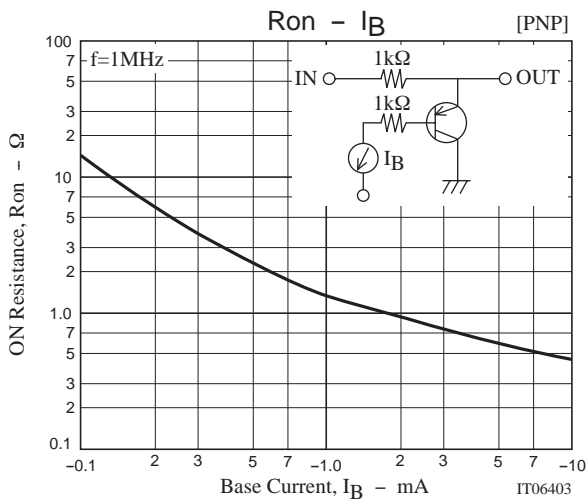
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