



# MCH6535

 — PNP / NPN Epitaxial Planar Silicon Transistor  

## Push-Pull Circuit Applications

### Applications

- MOSFET gate drivers, low-frequency power amplifier, high-speed switching, motor drivers, muting.

### 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.
- Small ON-resistance (Ron).

### Specifications ( ) : PNP

#### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		(-15)20	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		(-12)15	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		(-)5	V
Collector Current	I <sub>C</sub>		(-1)	A
Collector Current (Pulse)	I <sub>CP</sub>		(-2)	A
Collector Dissipation	P <sub>C</sub>	Mounted on a ceramic board (600mm <sup>2</sup> X0.8m)	0.5	W
Total Power Dissipation	P <sub>T</sub>	Mounted on a ceramic board (600mm <sup>2</sup> X0.8m)	0.55	W
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

#### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> =(-)12V, I <sub>E</sub> =0			(-100)	nA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0			(-100)	nA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =(-)2V, I <sub>C</sub> =(-)50mA	300		(700)800	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =(-)2V, I <sub>C</sub> =(-)50mA		(450)440		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =(-)10V, f=1MHz		(6)4		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =(-)400mA, I <sub>B</sub> =(-)20mA		(-120)140	(-240)280	mV
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =(-)400mA, I <sub>B</sub> =(-)20mA		(-0.9)0.8	(-1)1.2	V
Collector-to-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =(-)10μA, I <sub>E</sub> =0	(-15)20			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =(-)1mA, R <sub>BE</sub> =∞	(-12)15			V
Emitter-to-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =(-)10μA, I <sub>C</sub> =0	(-5)			V

Marking : EH

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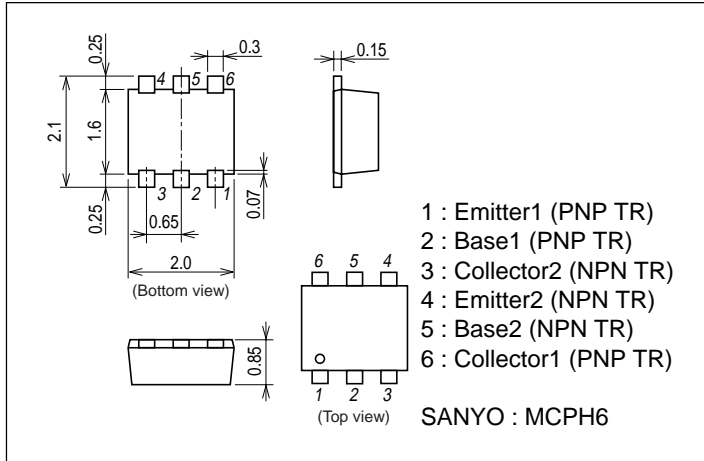
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Time	$t_{on}$	See specified Test Circuit.		30		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		(75)165		ns
Fall Time	$t_f$	See specified Test Circuit		(15)25		ns

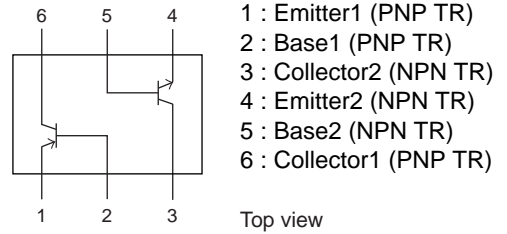
## Package Dimensions

unit : mm

2225

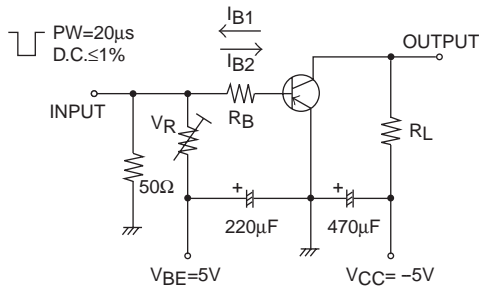


## Electrical Connection



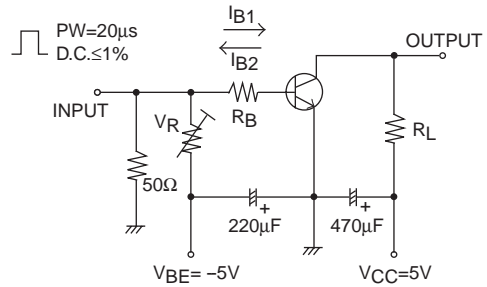
## Switching Time Test Circuit

[PNP]

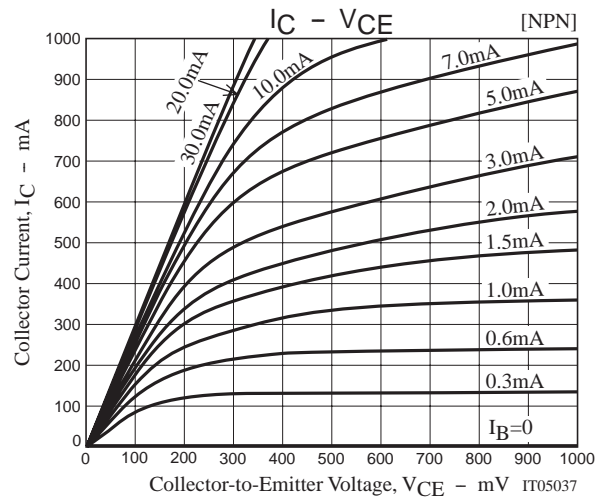
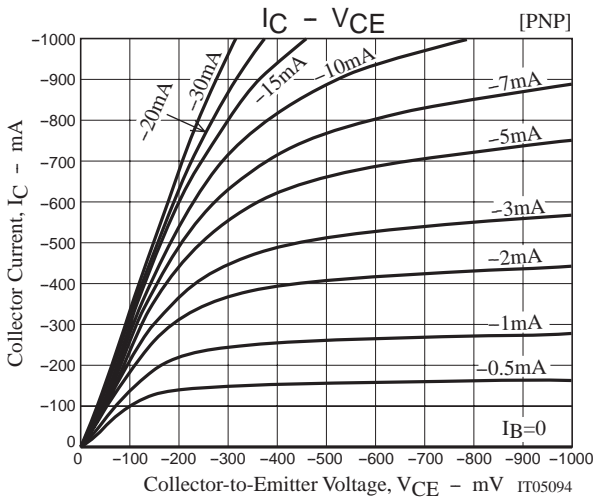


$$I_C=20I_{B1}=-20I_{B2}=-400mA$$

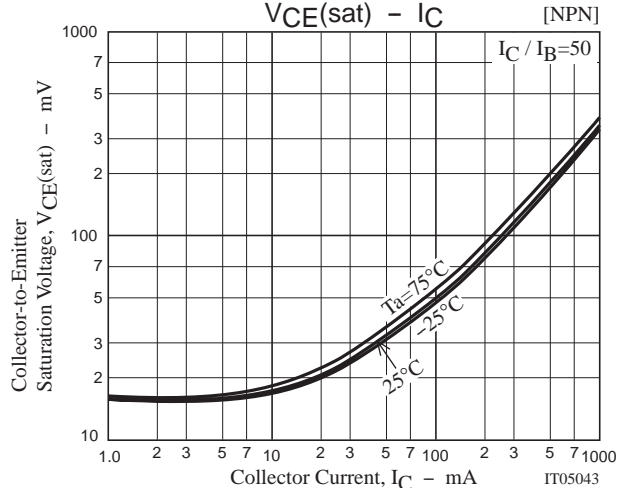
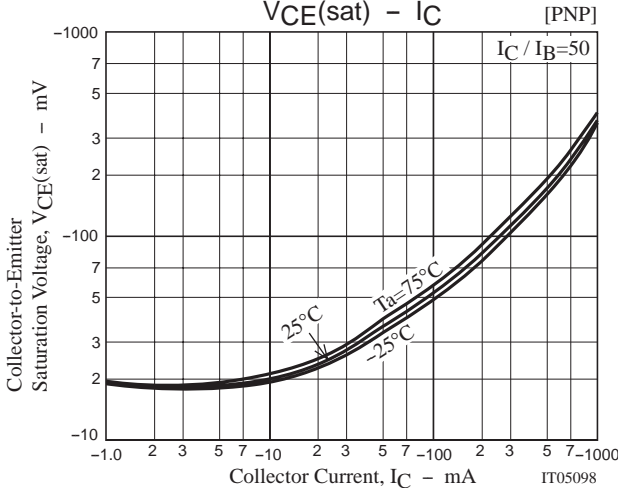
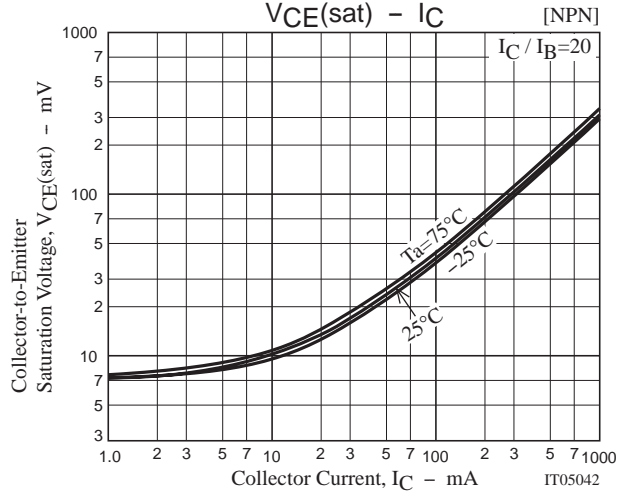
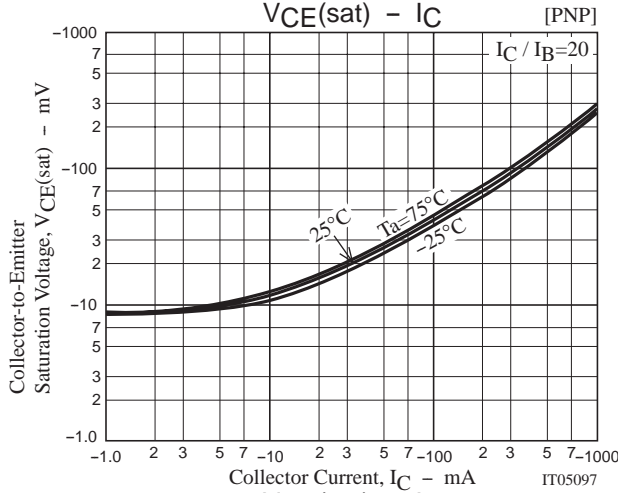
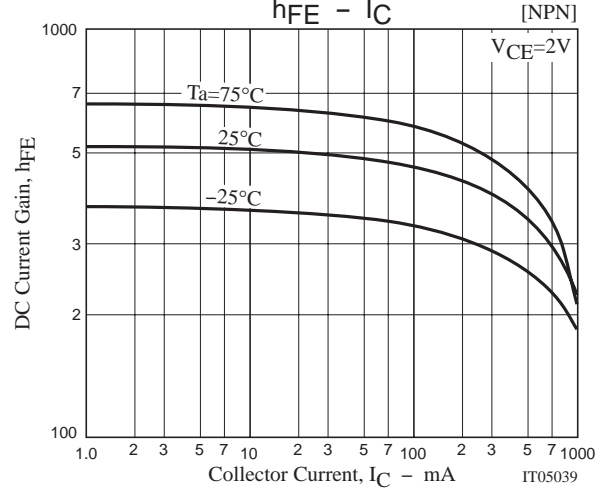
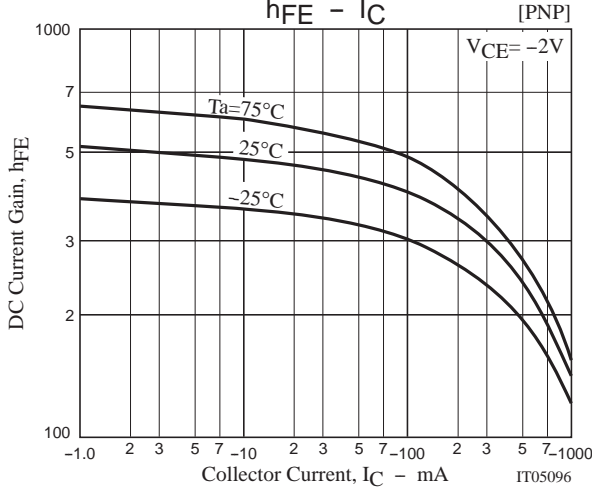
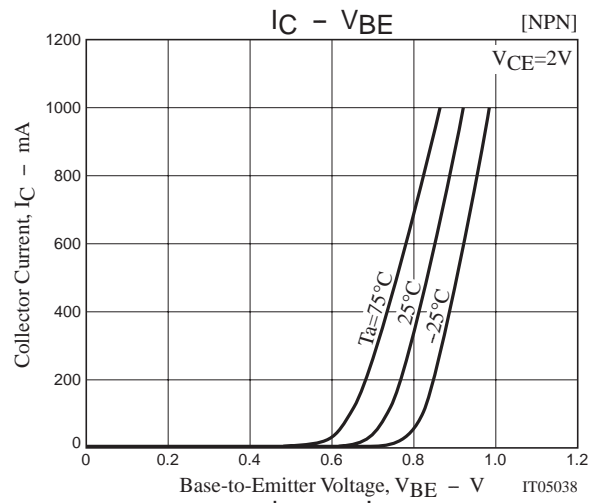
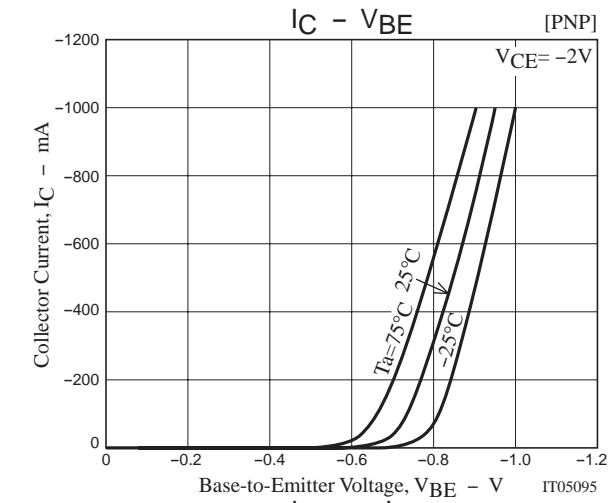
[NPN]



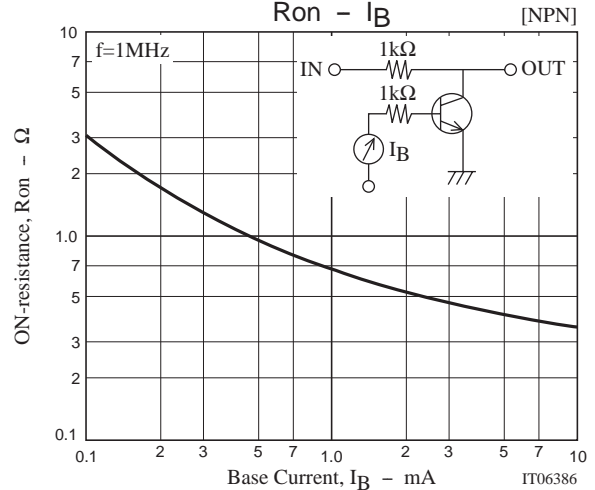
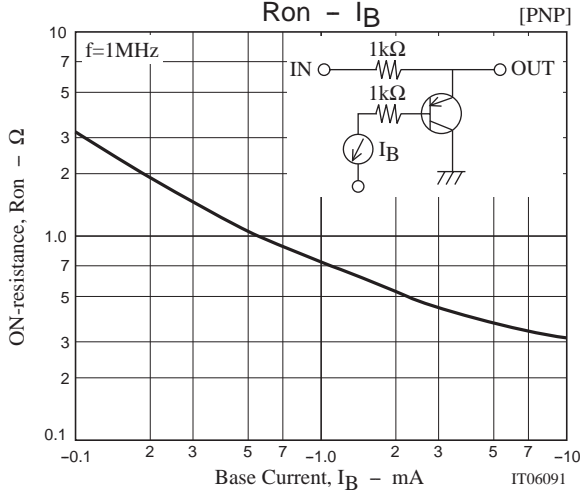
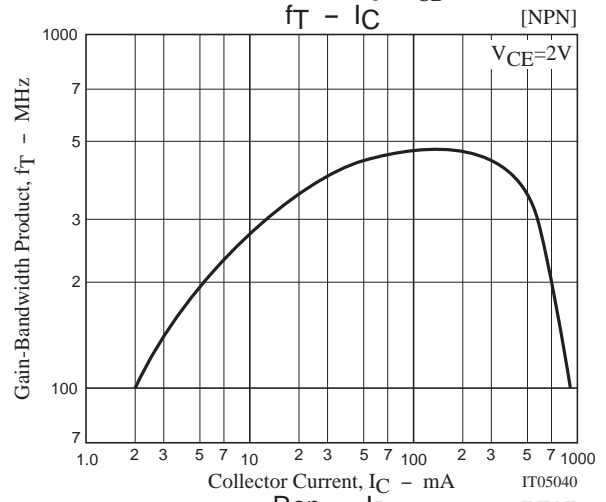
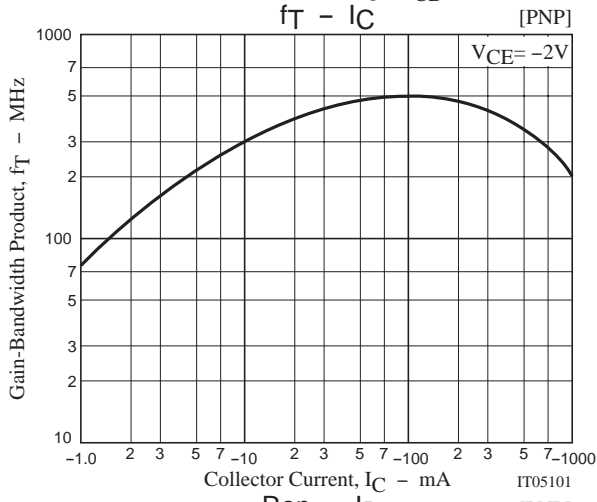
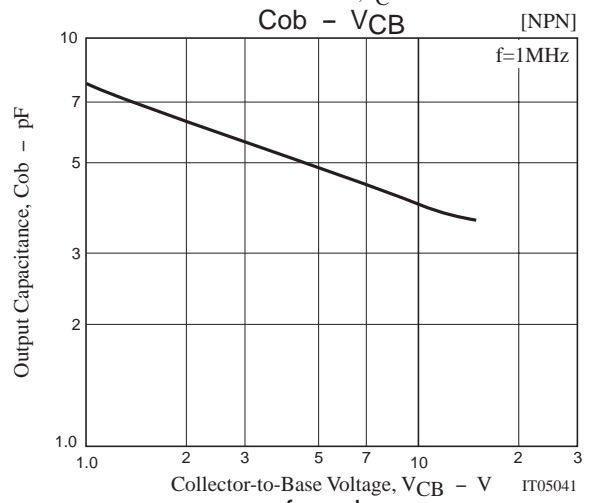
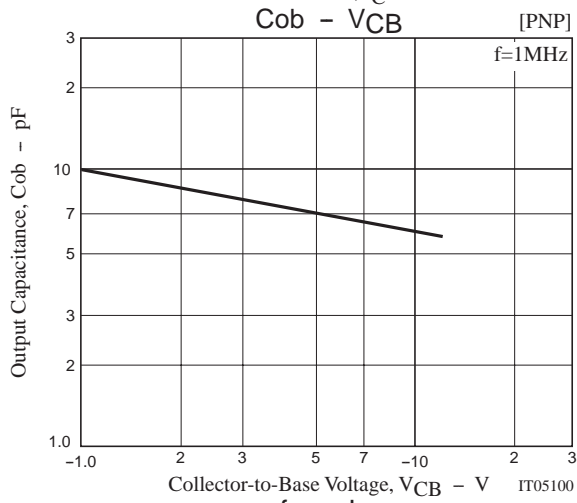
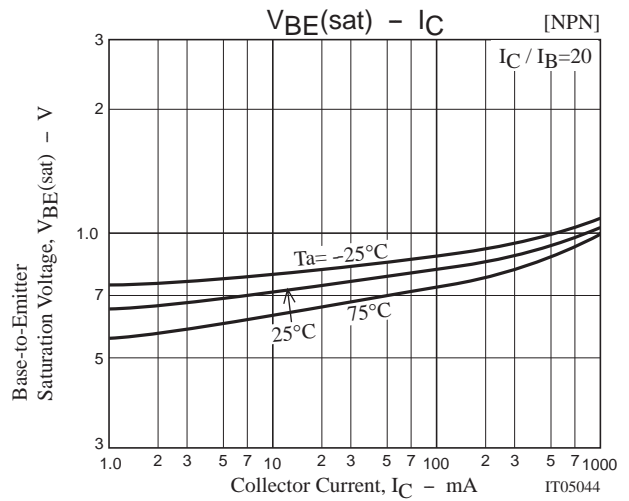
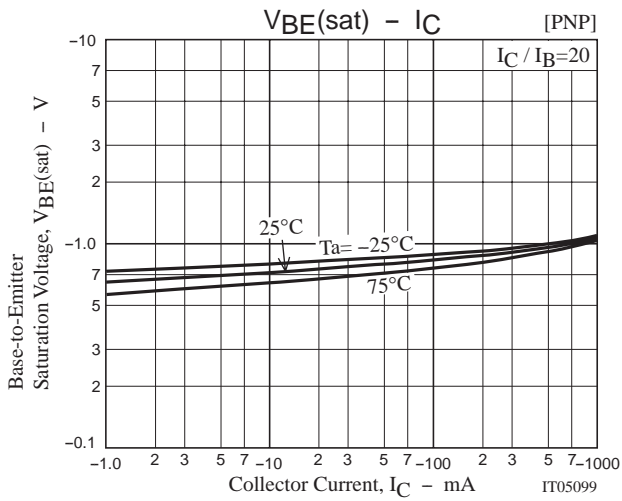
$$I_C=20I_{B1}=-20I_{B2}=400mA$$

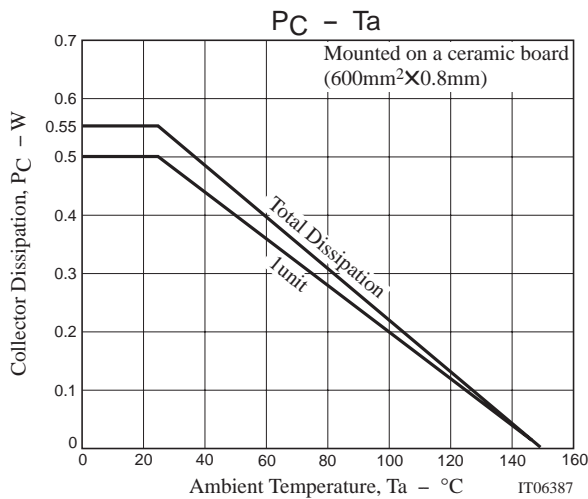


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