

MCH5541 — PNP / NPN Epitaxial Planar Silicon Transistor

Push-Pull Circuit Applications

Applications

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

Features

- Composite type with a PNP / 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 _{CB0} | | (-30)40 | V |
| Collector-to-Emitter Voltage | V _{CEO} | | (-30)30 | V |
| Emitter-to-Base Voltage | V _{EBO} | | (-)5 | V |
| Collector Current | I _C | | (-)700 | mA |
| Collector Current (Pulse) | I _{CP} | PW≤10μs | (-)3 | A |
| Collector Dissipation | P _C | Mounted on a ceramic board (600mm²X0.8m) | 0.5 | 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 _{CB0} | V _{CB} =(-)30V, I _E =0 | | | (-)100 | nA |
| Emitter Cutoff Current | I _{EBO} | V _{EB} =(-)4V, I _C =0 | | | (-)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 |
| 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 =(-)10μA, I _E =0 | (-30)40 | | | V |
| Collector-to-Emitter Breakdown Voltage | V _{(BR)CEO} | I _C =(-)1mA, R _{BE} =∞ | (-)30 | | | V |
| Emitter-to-Base Breakdown Voltage | V _{(BR)EBO} | I _E =(-)10μA, I _C =0 | (-)5 | | | V |

Marking : E1

Continued on next page.

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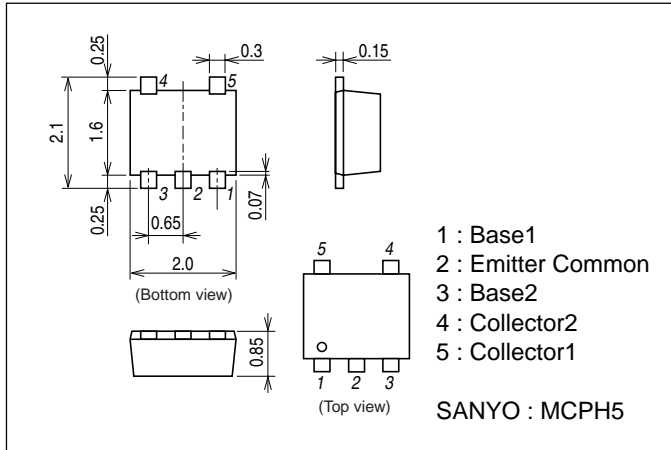
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--------------|-----------|-----------------------------|---------|----------|-----|------|
| | | | min | typ | max | |
| Turn-ON Time | t_{on} | See specified Test Circuit. | | 35 | | ns |
| Storage Time | t_{stg} | See specified Test Circuit. | | (125)255 | | ns |
| Fall Time | t_f | See specified Test Circuit | | (25)40 | | ns |

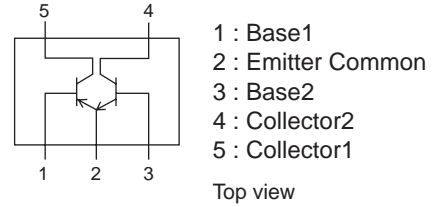
Package Dimensions

unit : mm

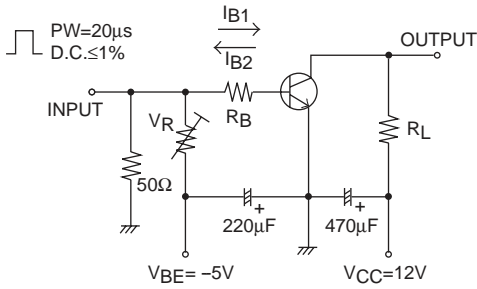
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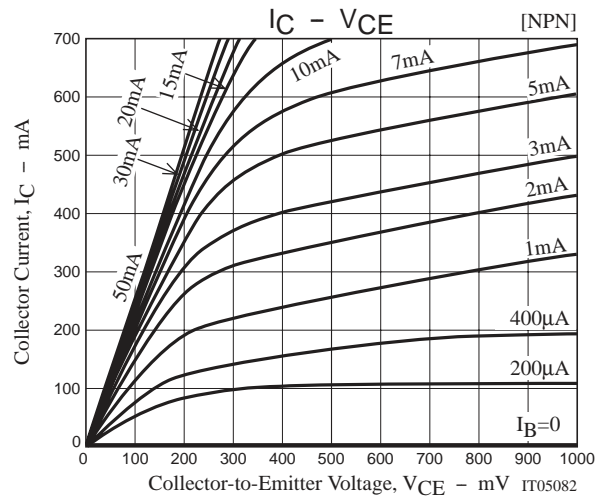
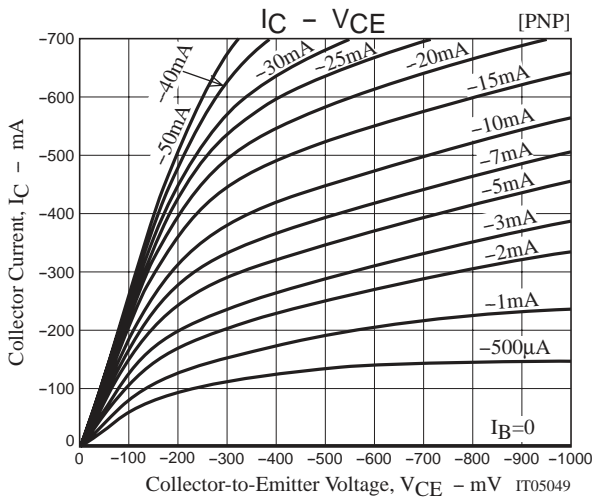
Electrical Connection



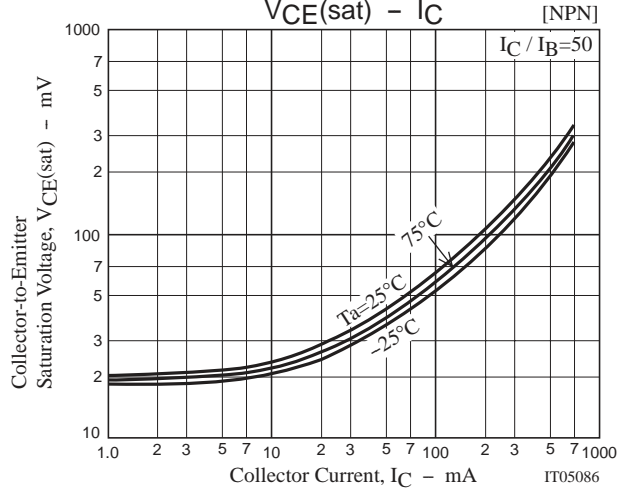
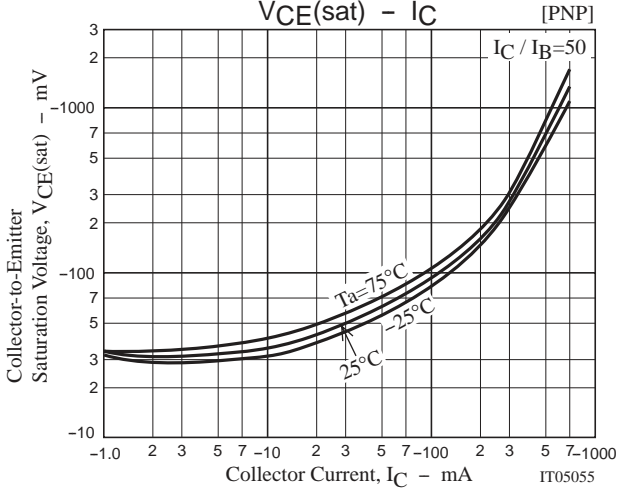
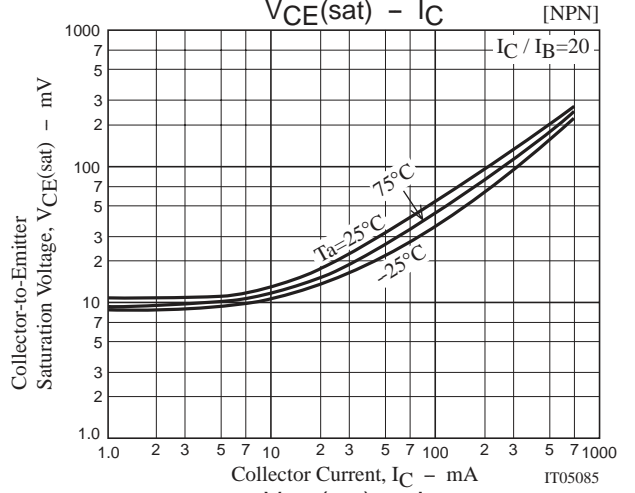
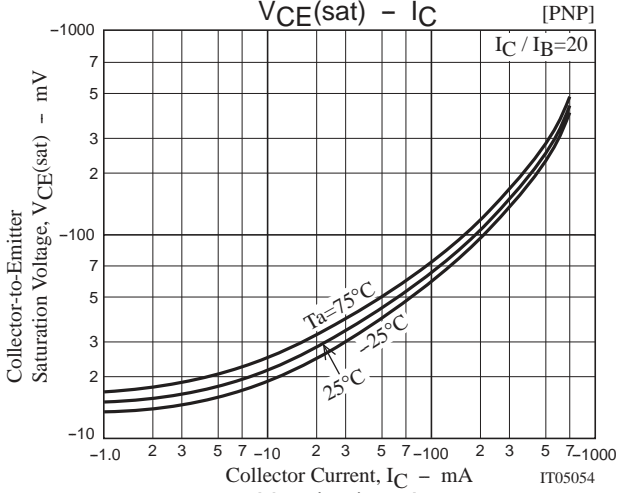
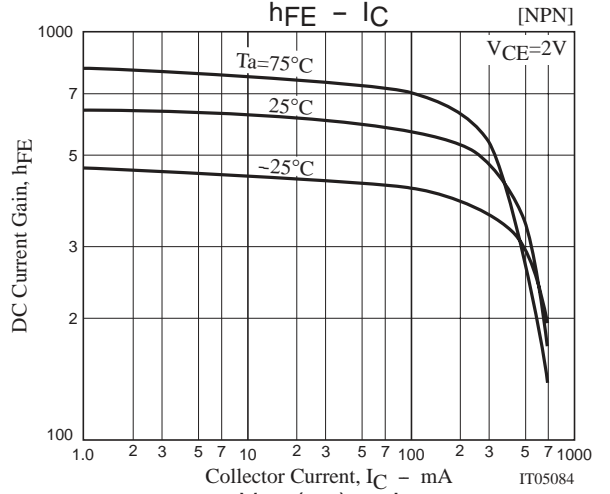
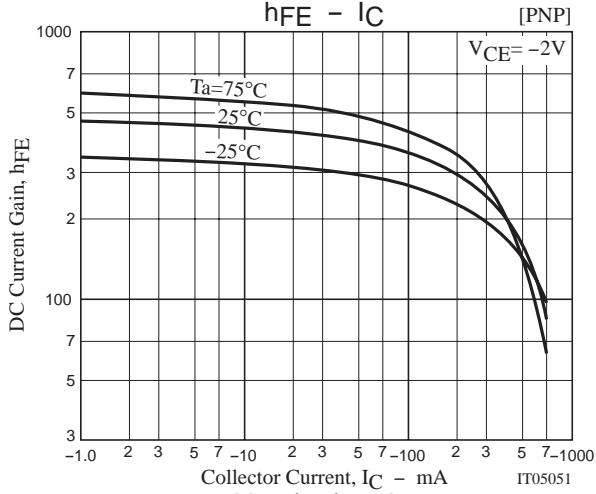
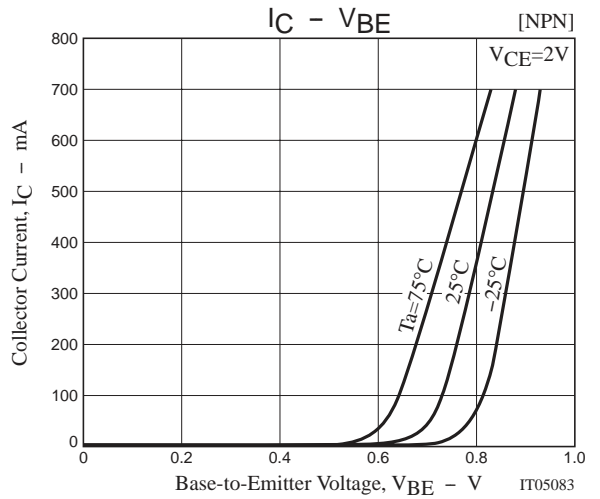
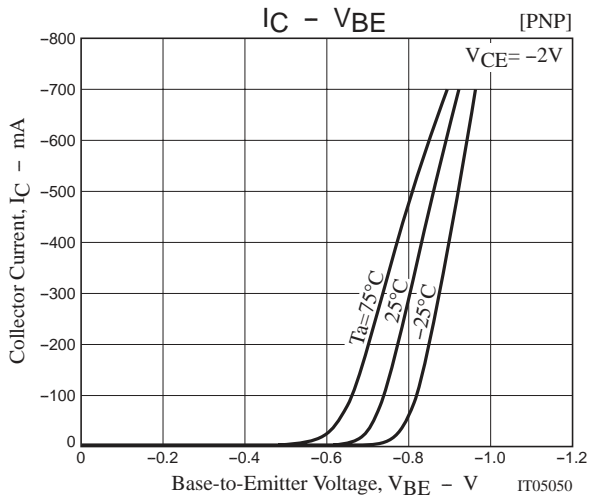
Switching Time Test Circuit



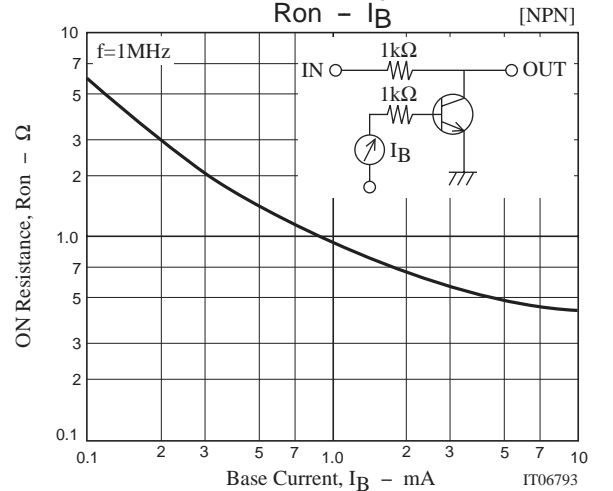
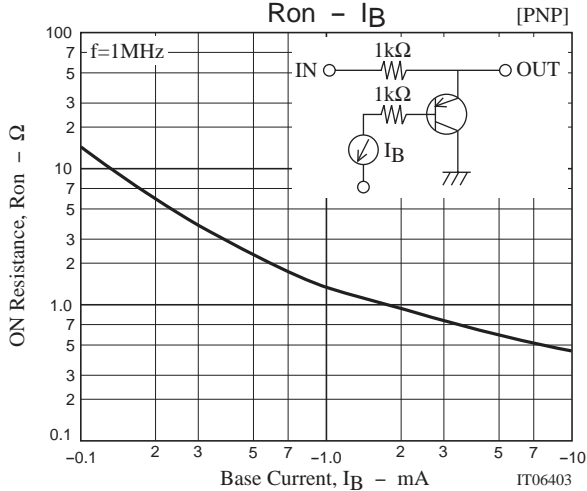
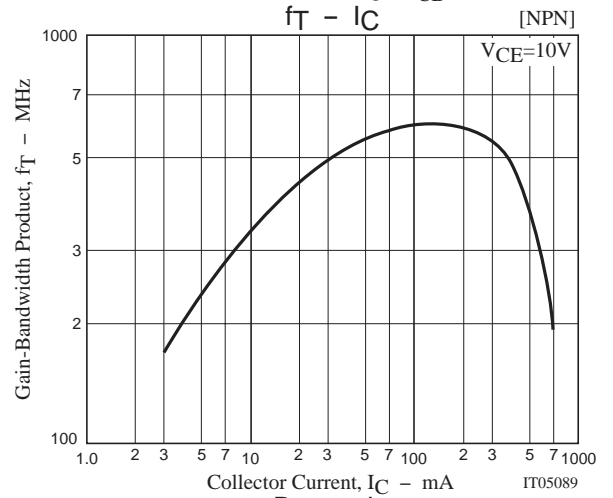
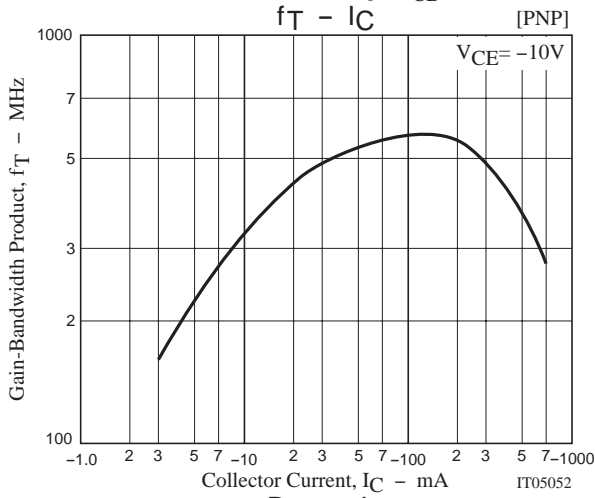
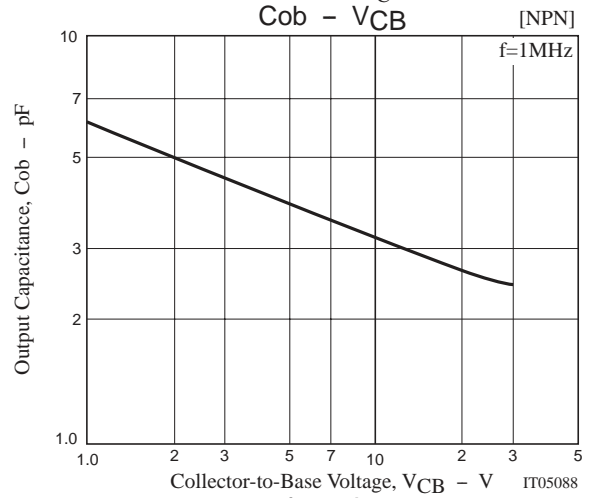
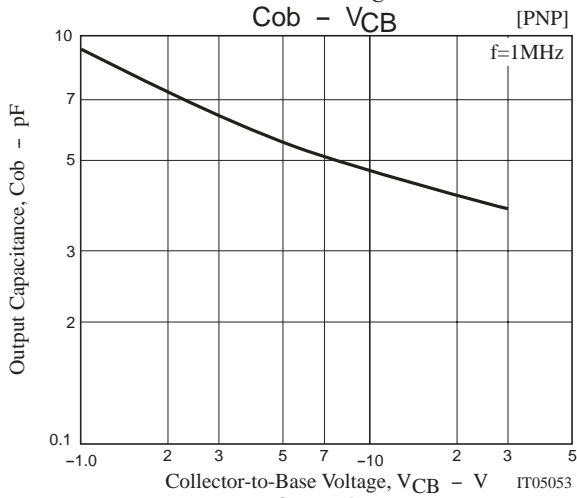
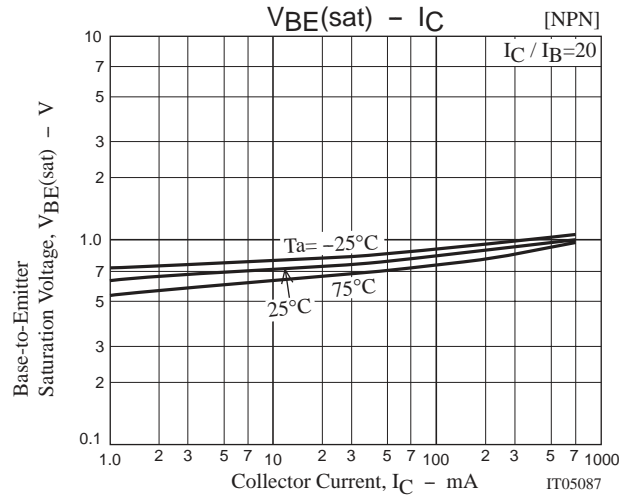
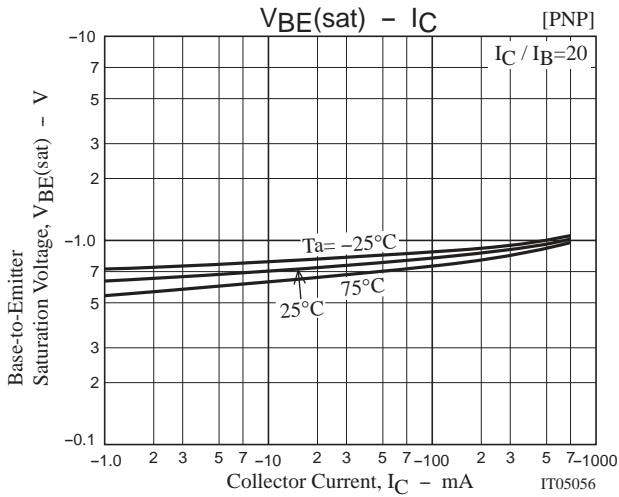
$20I_{B1} = -20I_{B2} = I_C = 300mA$
 For PNP, minus sign is omitted.



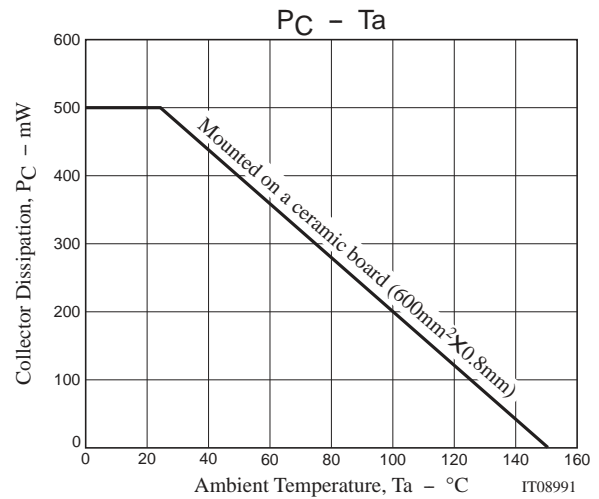
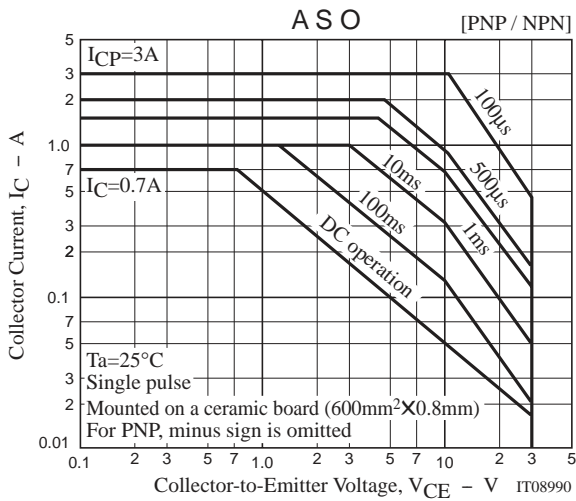
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