

Ordering number : ENN7331

PNP / NPN Epitaxial Planar Silicon Transistors



2SA2099 / 2SC5888

High-Current Switching Applications

Applications

- Relay drivers, lamp drivers, motor drivers.

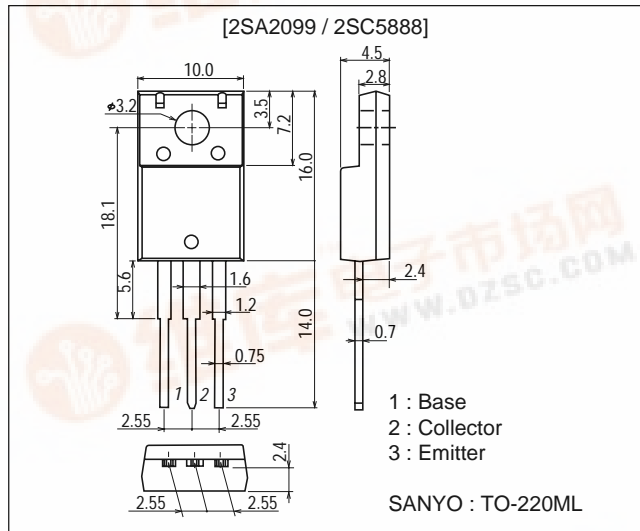
Features

- Adoption of MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.

Package Dimensions

unit : mm

2041A



Specifications

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Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CB0}		(-50)60	V
Collector-to-Emitter Voltage	V _{CEO}		(-50)	V
Emitter-to-Base Voltage	V _{EBO}		(-6)	V
Collector Current	I _C		(-10)	A
Collector Current (Pulse)	I _{CP}		(-13)	A
Base Current	I _B		(-2)	A
Collector Dissipation	P _C	T _c =25°C	2	W
			25	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} =(-)40V, I _E =0			(-10)	μA
Emitter Cutoff Current	I _{EBO}	V _{EB} =(-)4V, I _C =0			(-10)	μA

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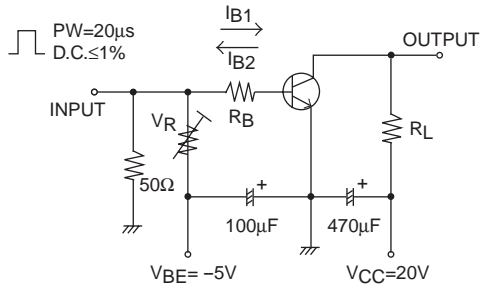


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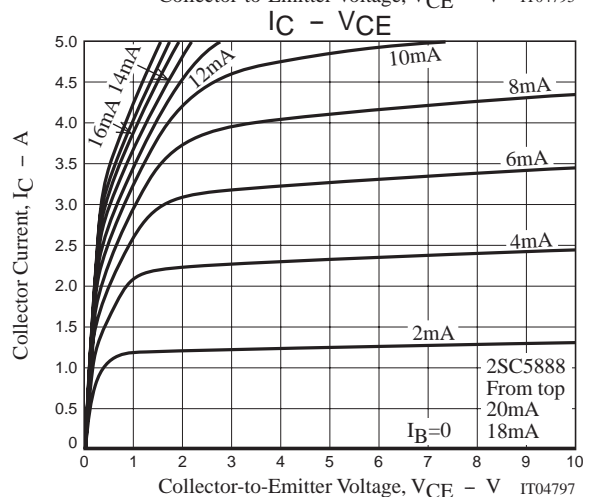
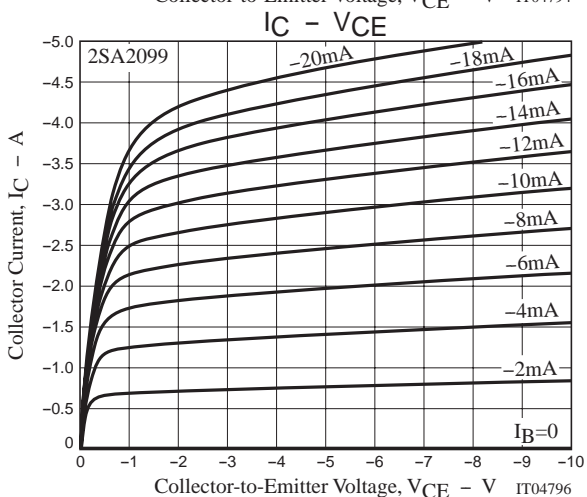
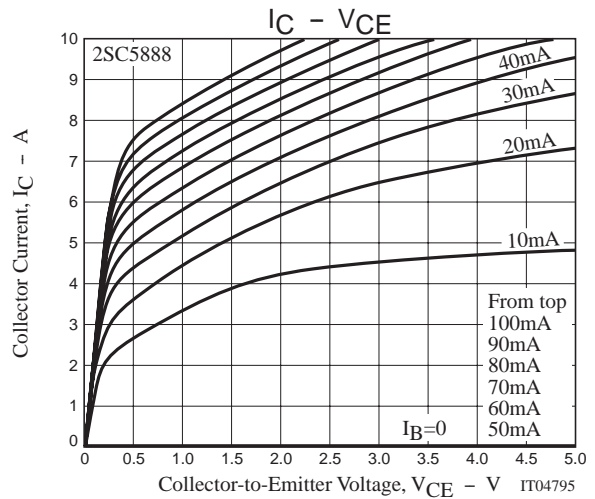
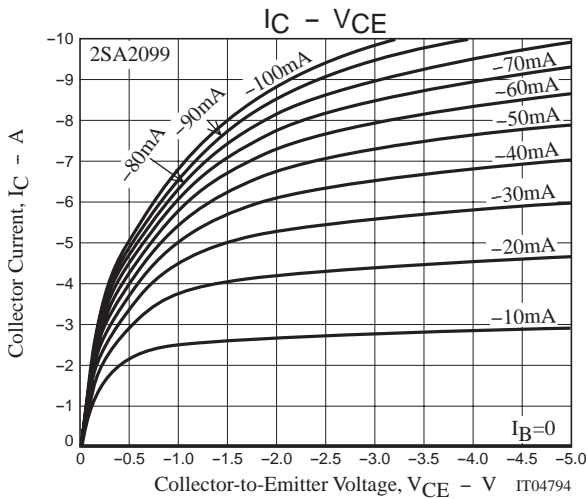
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	h_{FE}	$V_{CE}=(-)2V, I_C=(-)1A$	200		(560)700	
Gain-Bandwidth Product	f_T	$V_{CE}=(-)5V, I_C=(-)1A$		(130)200		MHz
Output Capacitance	C_{ob}	$V_{CB}=(-)10V, f=1MHz$		90(60)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)5A, I_B=(-)250mA$		(-250)180	(-500)360	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)5A, I_B=(-)250mA$		(-)0.93	(-)1.4	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)100\mu A, I_E=0$	(-50)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)100\mu A, I_C=0$	(-)6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		(70)40		ns
Storage Time	t_{stg}	See specified Test Circuit.		(650)1000		ns
Fall Time	t_f	See specified Test Circuit.		(60)80		ns

Switching Time Test Circuit

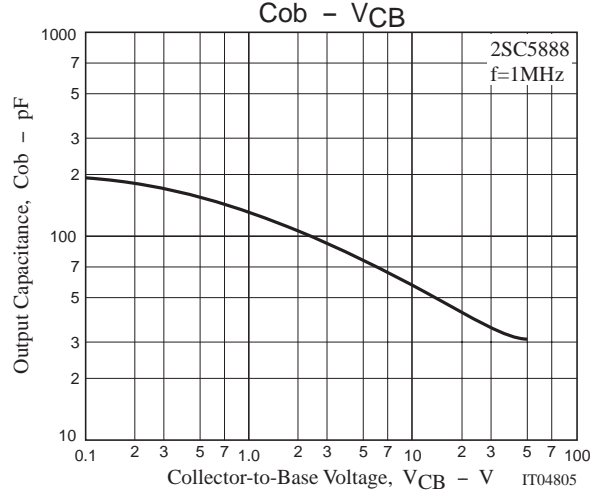
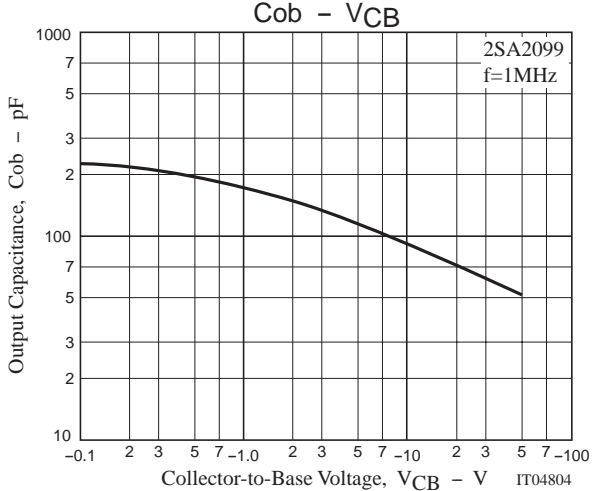
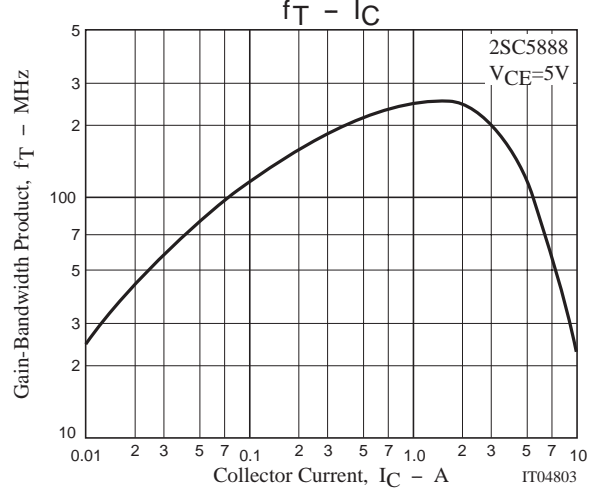
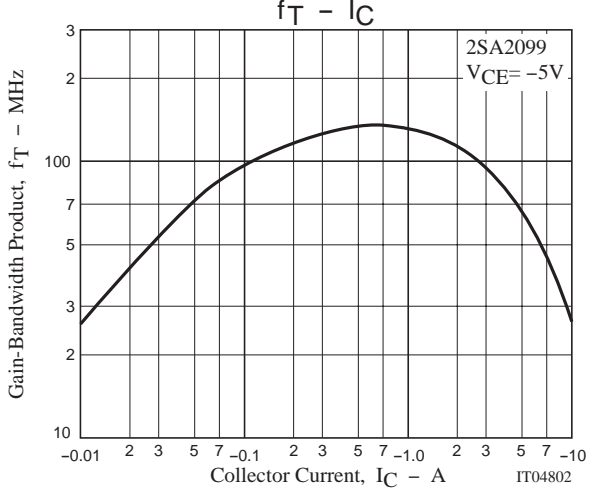
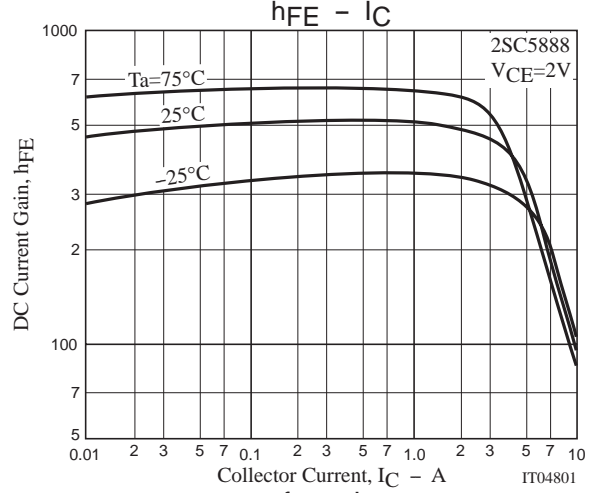
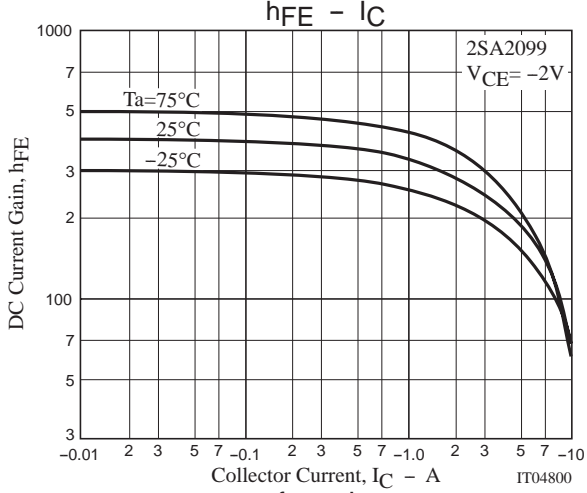
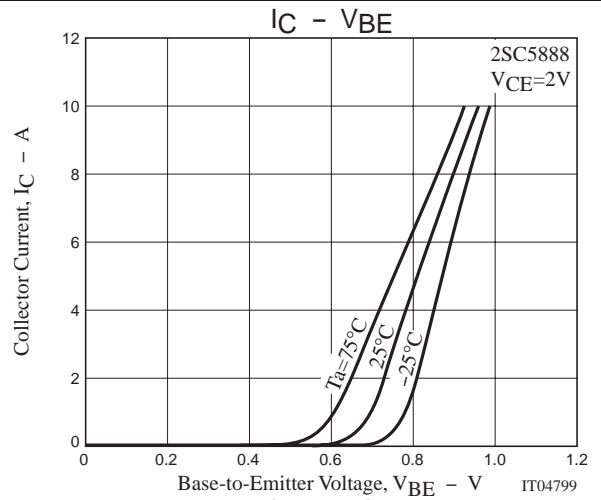
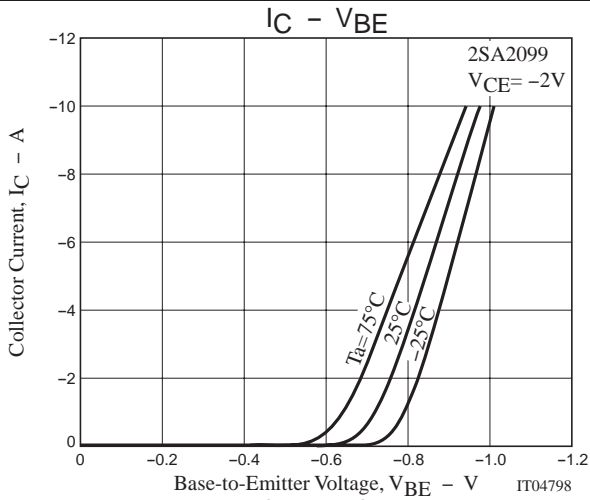


$$I_C = 20I_{B1} = -20I_{B2} = 3A$$

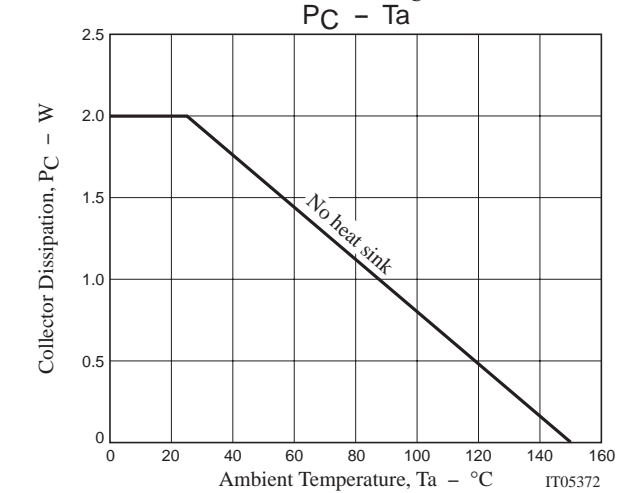
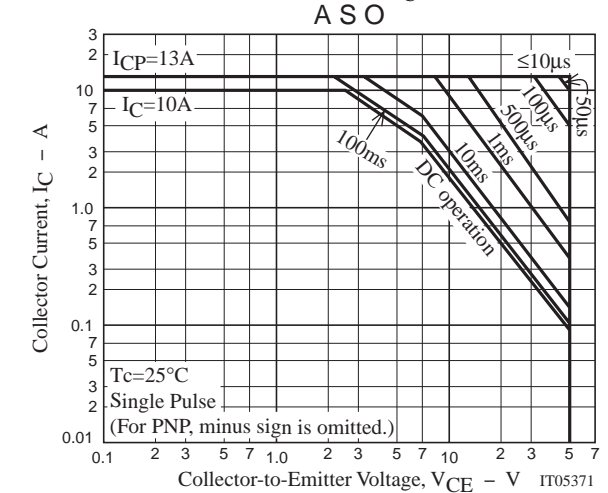
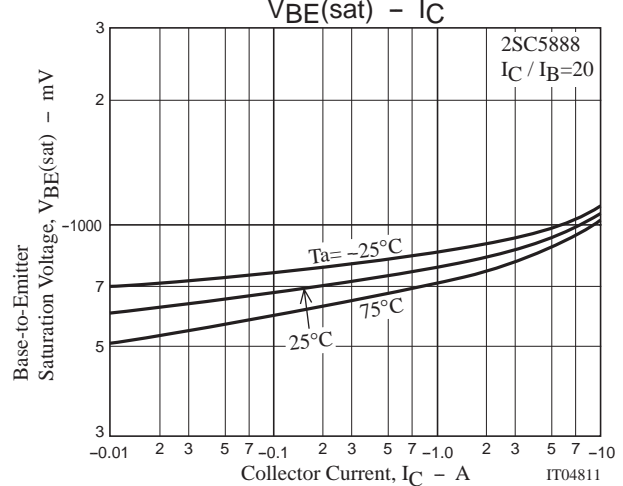
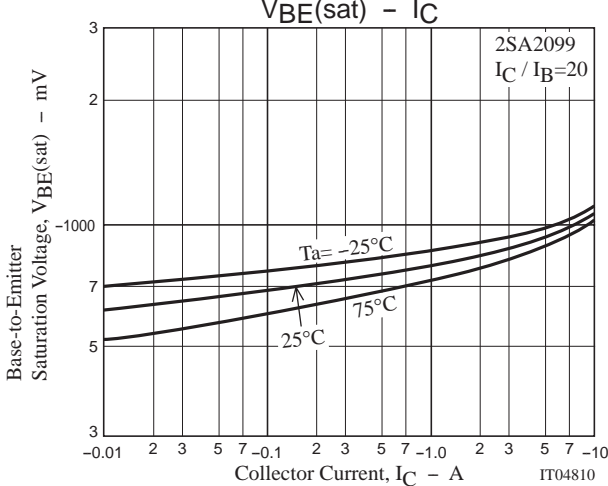
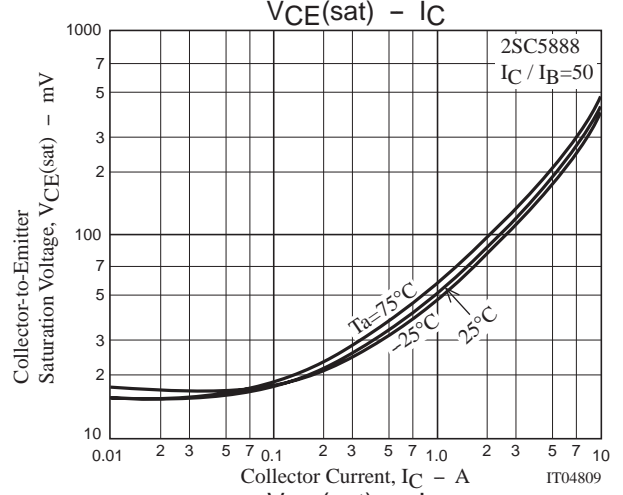
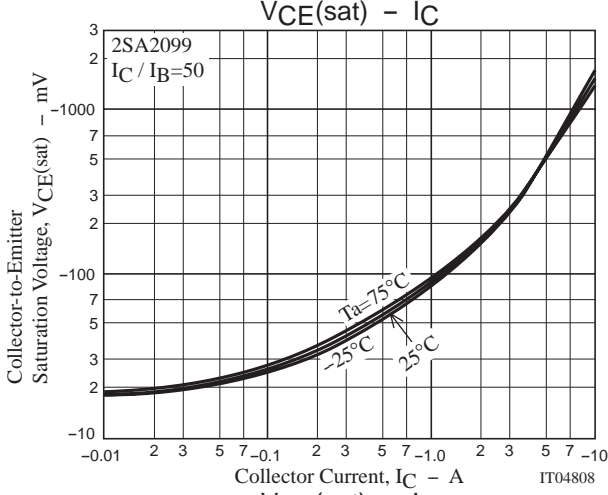
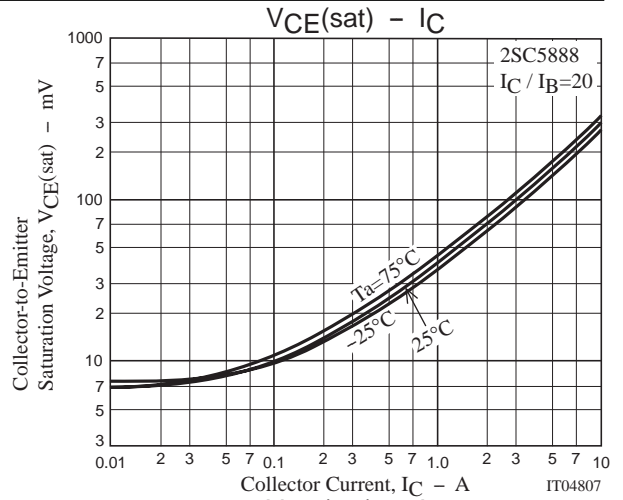
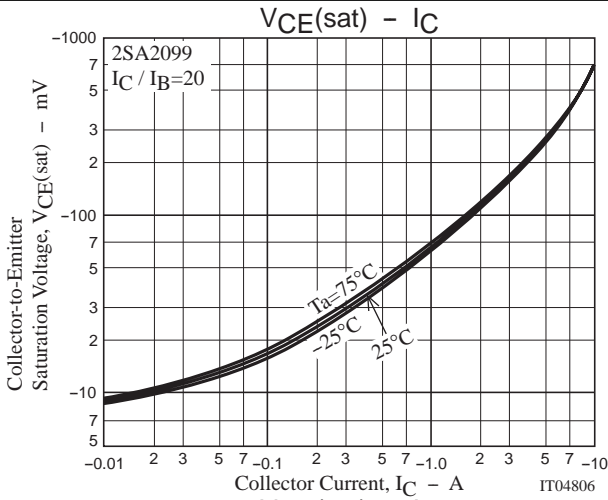
(For PNP, the polarity is reversed.)



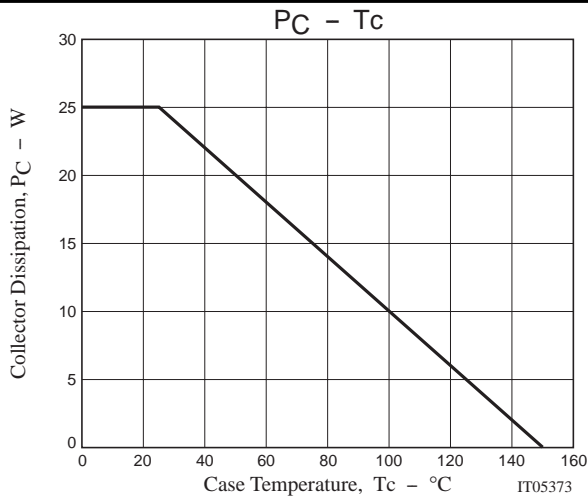
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