Ordering number : ENN6590

PNP/NPN Epitaxial Planar Silicon Transistors

CPH5506

DC / DC Converter Applications

Applications

- Relay drivers, Lamp drivers, Motor drivers.

Features

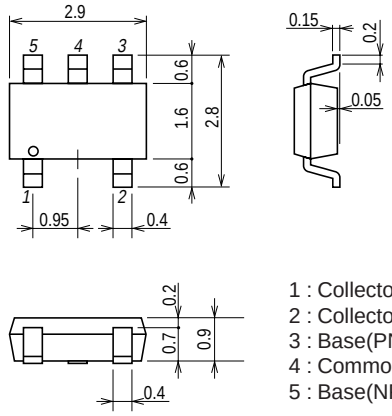
- Composite type with a PNP transistor and an NPN transistor contained in one package, facilitating high-density mounting.
- The CPH5506 consists of two chips encapsulated in a package which are equivalent to the CPH3115 and the CPH3215, respectively.
- Ultrasmall package facilitate miniaturization in end products. (0.9mm mounting height)

Package Dimensions

unit : mm

2186

[CPH5506]



1 : Collector(NPN TR)
2 : Collector(PNP TR)
3 : Base(PNP TR)
4 : Common Emitter
5 : Base(NPN TR)

SANYO : CPH5

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		(–)1.5	A
Collector Current (Pulse)	I_{CP}		(–)5	A
Base Current	I_B		(–)300	mA
Collector Dissipation	P_C	Mounted on a ceramic board (600mm²×0.8mm)	0.9	W
Total Dissipation	P_T	Mounted on a ceramic board (600mm²×0.8mm)	1.2	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		–55 to +150	°C

SANYO Electric Co.,Ltd. Semiconductor Company

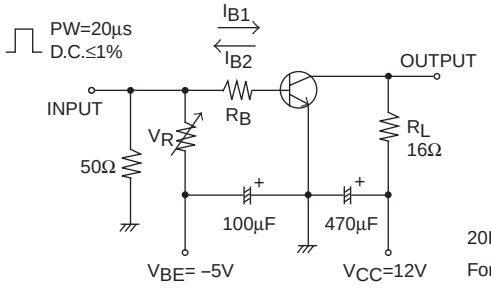
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Rathings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)30V, I_E=0			(–)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)0.1	μA
DC Current Gain	h_{FE}	V_{CE}=(–)2V, I_C=(–)100mA	200		560	
Gain Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)300mA		(450)500		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(9)8		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(–)750mA, I_B=(–)15mA		(–250)150	(–375)225	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(–)750mA, I_B=(–)15mA		(–)0.85	(–)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
Turn-ON Time	t_{on}	See specified Test Circuit		35		ns
Storage Time	t_{stg}	See specified Test Circuit		(115)205		ns
Fall Time	t_f	See specified Test Circuit		30		ns

Marking : EF

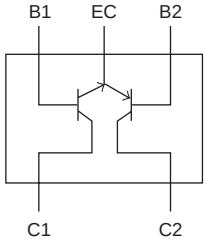
Switching Time Test Circuit

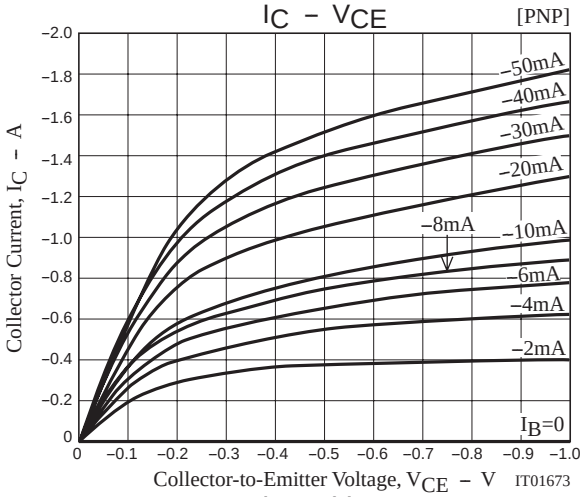


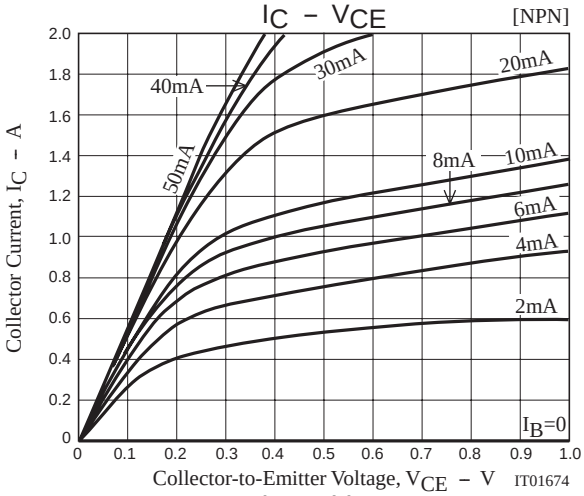
$20I_{B1}$= –$20I_{B2}$=I_C=750mA

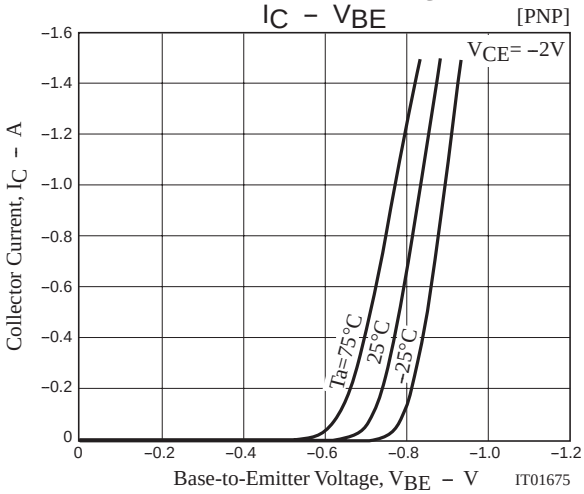
For PNP, the polarity is reversed.

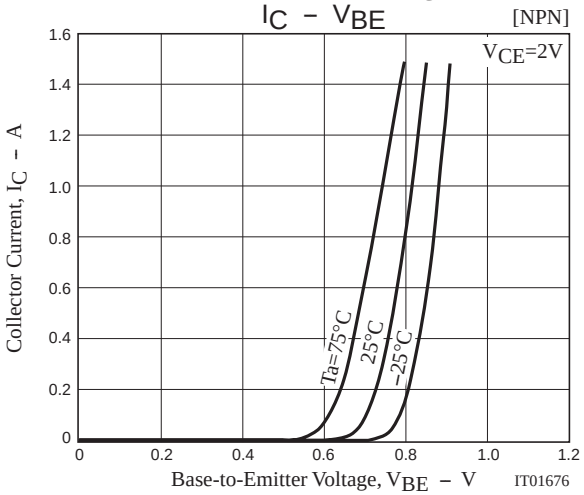
Electrical Connection

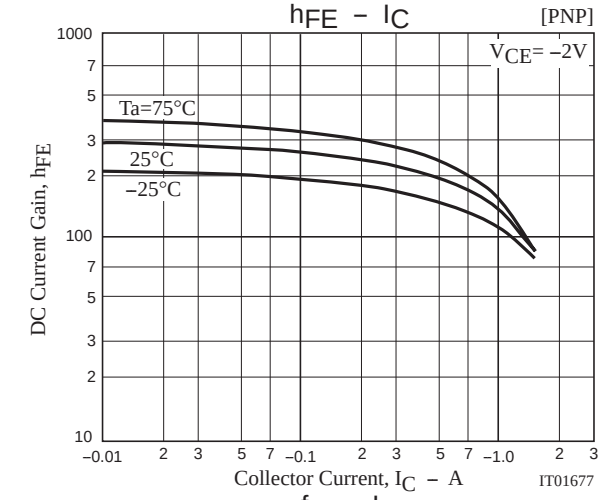


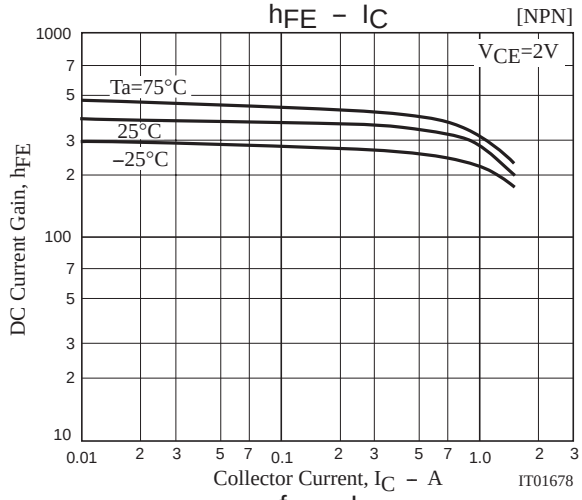


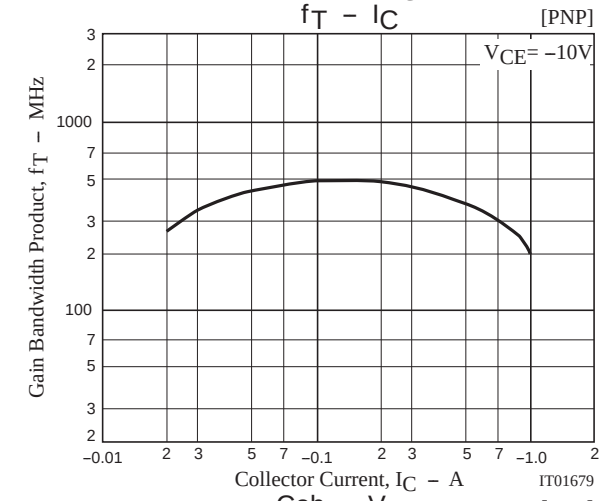


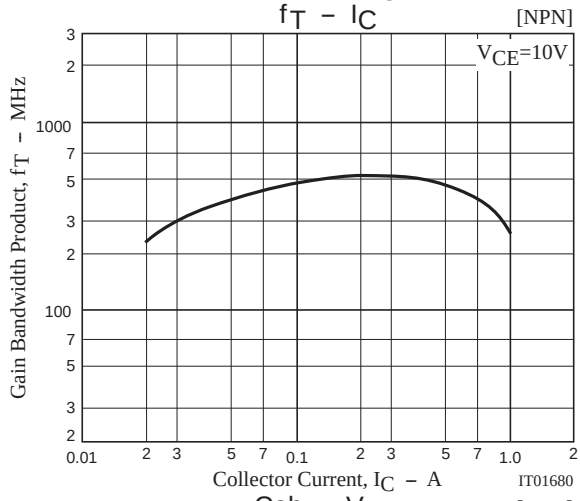


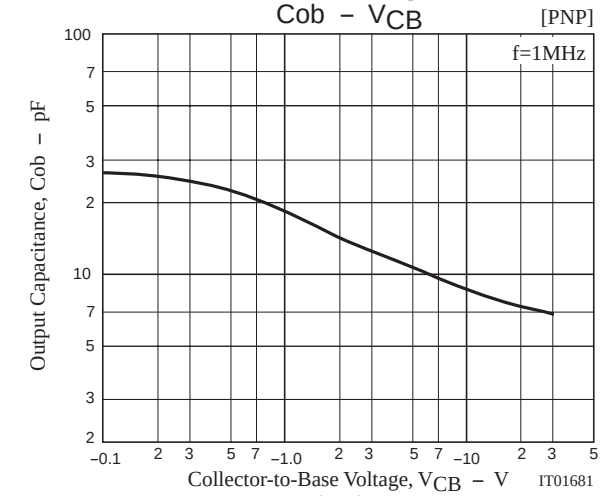


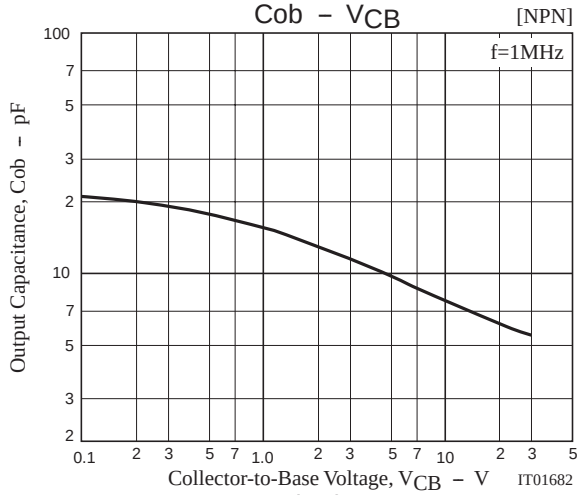

hFE – IC
[PNP]
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT01677

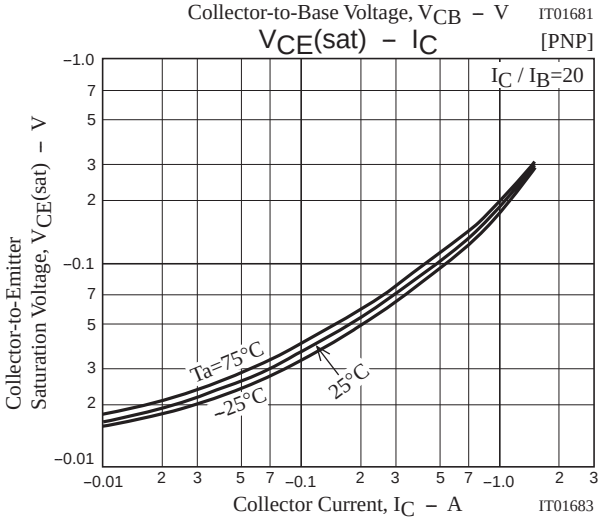

hFE – IC
[NPN]
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT01678

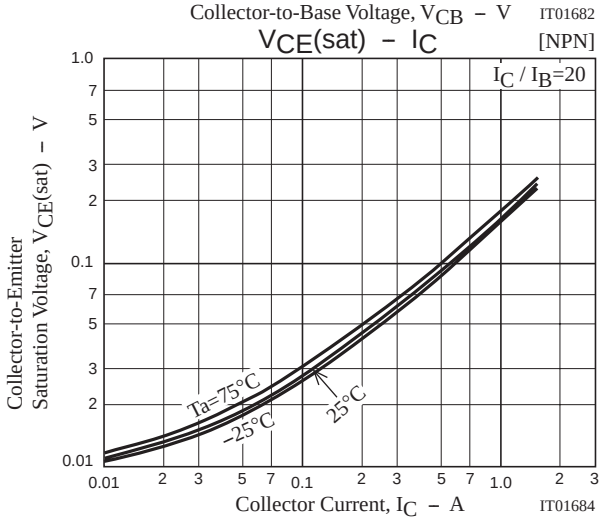

fT – IC
[PNP]
VCE= –10V
Gain Bandwidth Product, fT – MHz
Collector Current, IC – A
IT01679

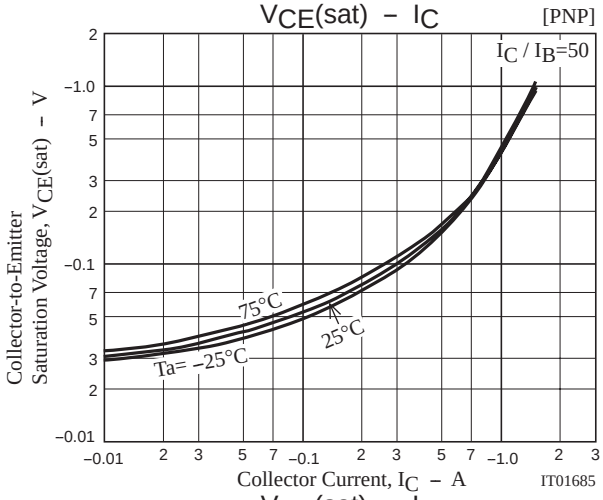

fT – IC
[NPN]
VCE=10V
Gain Bandwidth Product, fT – MHz
Collector Current, IC – A
IT01680

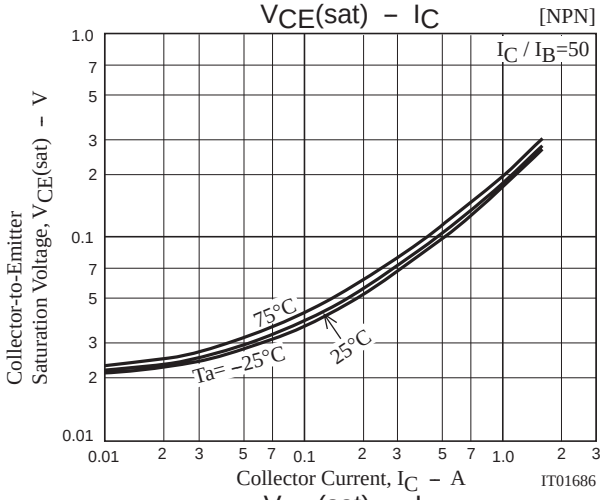

Cob – VCB
[PNP]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT01681

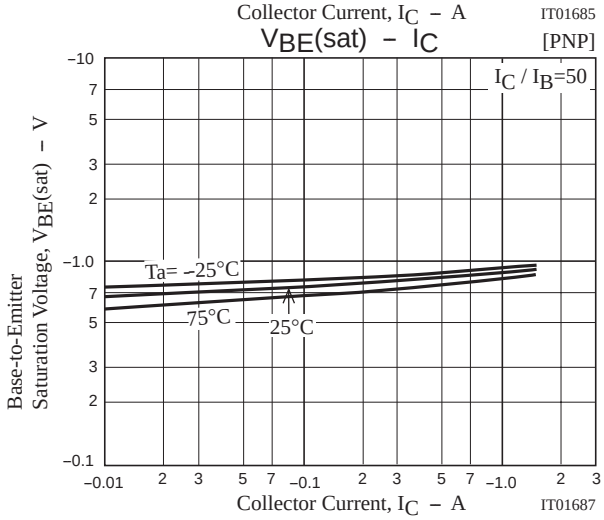

Cob – VCB
[NPN]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT01682

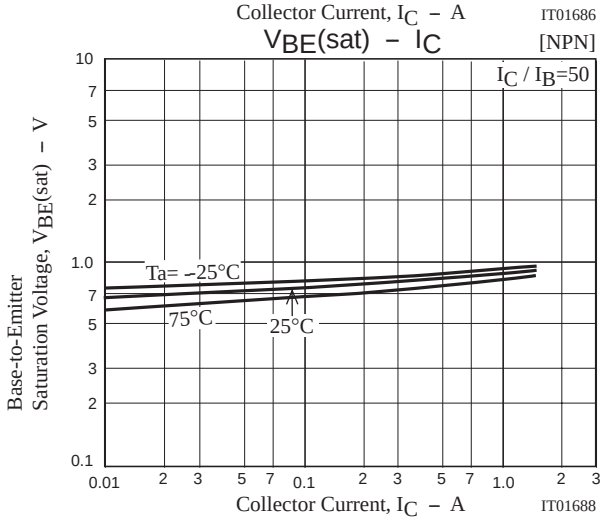

VCE(sat) – IC
[PNP]
IC / IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT01683

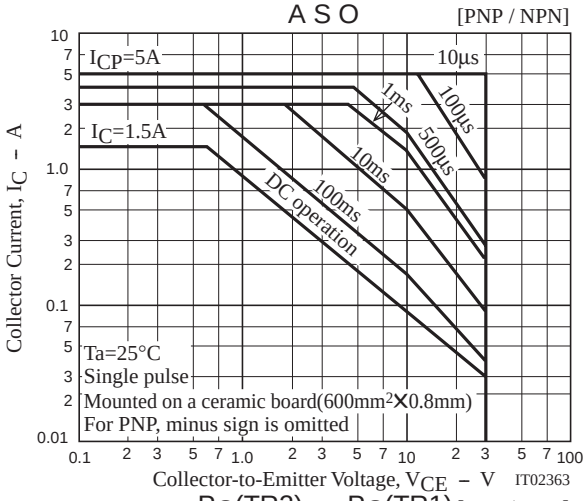

VCE(sat) – IC
[NPN]
IC / IB=20
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT01684

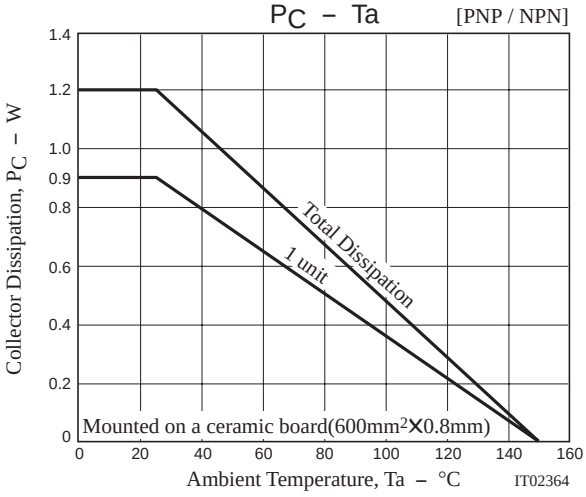

VCE(sat) – IC
[PNP]
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
75°C
25°C
Ta= –25°C
Collector Current, IC – A
IT01685

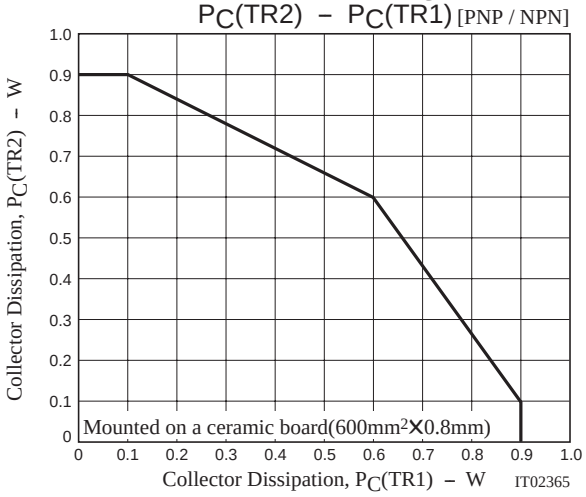

VCE(sat) – IC
[NPN]
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
75°C
25°C
Ta= –25°C
Collector Current, IC – A
IT01686


VBE(sat) – IC
[PNP]
IC / IB=50
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Ta= –25°C
75°C
25°C
Collector Current, IC – A
IT01687


VBE(sat) – IC
[NPN]
IC / IB=50
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Ta= –25°C
75°C
25°C
Collector Current, IC – A
IT01688


A S O
[PNP / NPN]
ICP=5A
IC=1.5A
10µs
1ms
100µs
500µs
10ms
100ms
DC operation
Collector Current, IC – A
Ta=25°C
Single pulse
Mounted on a ceramic board(600mm2×0.8mm)
For PNP, minus sign is omitted
Collector-to-Emitter Voltage, VCE – V
IT02363


PC – Ta
[PNP / NPN]
Collector Dissipation, PC – W
Total Dissipation
1 unit
Mounted on a ceramic board(600mm2×0.8mm)
Ambient Temperature, Ta – °C
IT02364


PC(TR2) – PC(TR1)
[PNP / NPN]
Collector Dissipation, PC(TR2) – W
Mounted on a ceramic board(600mm2×0.8mm)
Collector Dissipation, PC(TR1) – W
IT02365