Ordering number : ENN6394A

SANYO Semiconductors
DATA SHEET

CPH3114 / ~~CPH3214~~

PNP / ~~NPN~~ Epitaxial Planar Silicon Transistors

DC / DC Converter Applications

Applications

- Relay drivers, lamp drivers, motor drivers, flash.

Features

- Adoption of MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Ultrasmall package facilitates miniaturization in end products (mounting height : 0.9mm).
- High allowable power dissipation.

( ) : CPH3114

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)15	V
Collector-to-Emitter Voltage	V_{CEO}		(–)15	V
Emitter-to-Base Voltage	V_{EBO}		(–)5	V
Collector Current	I_C		(–)1.5	A
Collector Current (Pulse)	I_{CP}		(–)3	A
Base Current	I_B		(–)300	mA
Collector Dissipation	P_C	Mounted on a ceramic board (600mm²×0.8mm)	0.9	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-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}=(-)12V, 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	

Marking : CPH3114 : AP, ~~CPH3214 : CP~~

Continued on next page.

SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

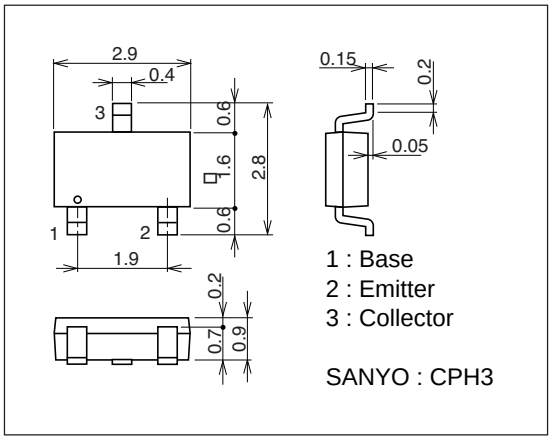
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwideth Product	f_T	V_{CE}=(-)2V, I_C=(-)300mA		(350)		MHz
				~~450~~		~~MHz~~
Output Capacitance	Cob	V_{CB}=(-)10V, f=1MHz		(17)~~9~~		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(-)750mA, I_B=(-)15mA		(-120)	(-180)	mV
				~~130~~	~~200~~	~~mV~~
		I_C=(-)1.5mA, I_B=(-)30mA		(-210)	(-320)	mV
				~~240~~	~~360~~	~~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	(-)15			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(-)1mA, R_{BE}=∞	(-)15			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.		(50)~~40~~		ns
Storage Time	t_{stg}	See specified test circuit.		(90)		ns
				~~180~~		~~ns~~
Fall Time	t_f	See specified test circuit.		(15)~~20~~		ns

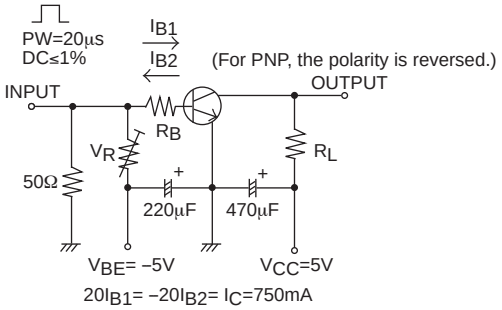
Package Dimensions

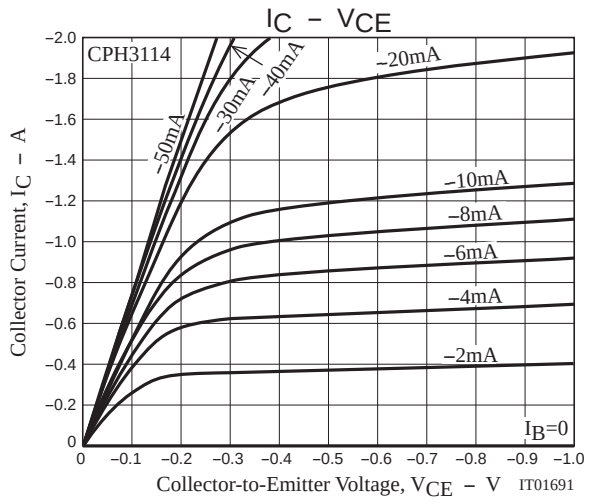
unit : mm

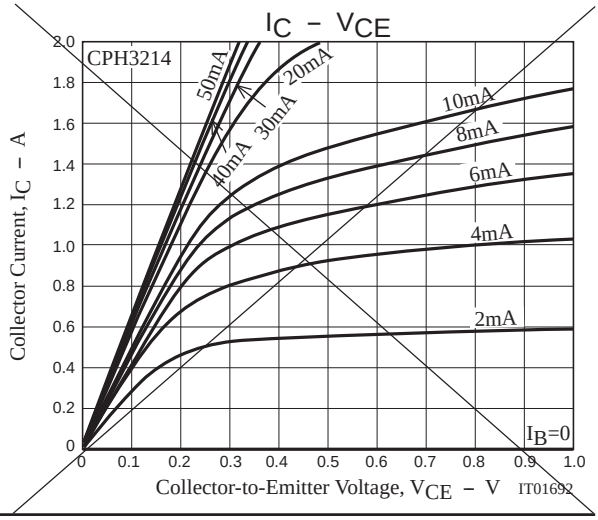
2150A

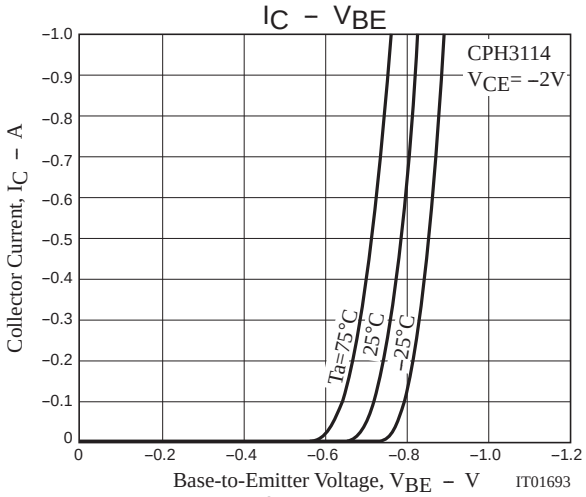


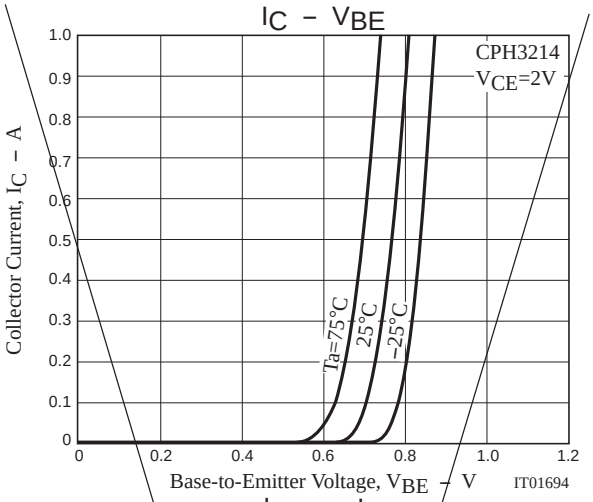
Switching Time Test Circuit

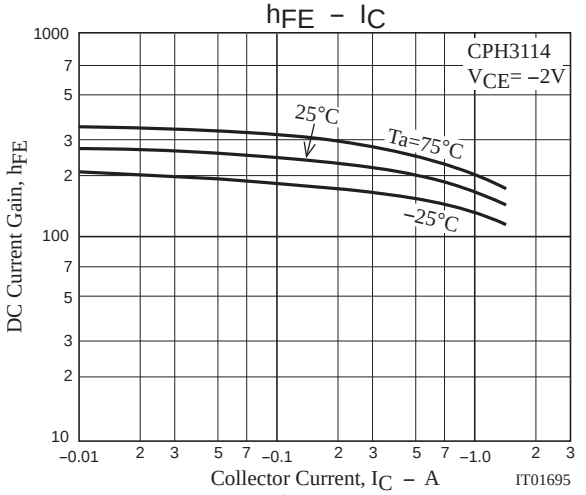


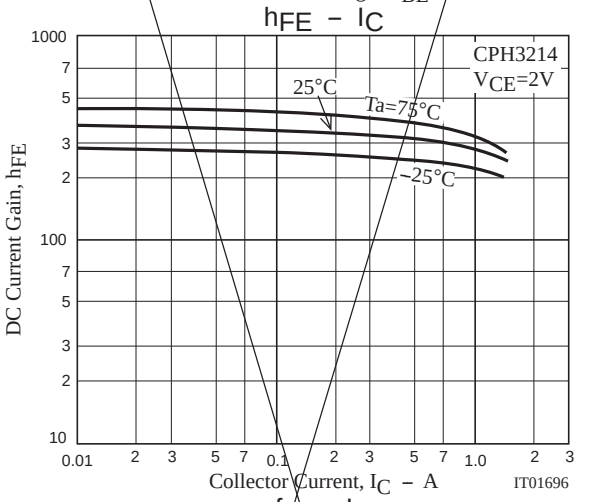


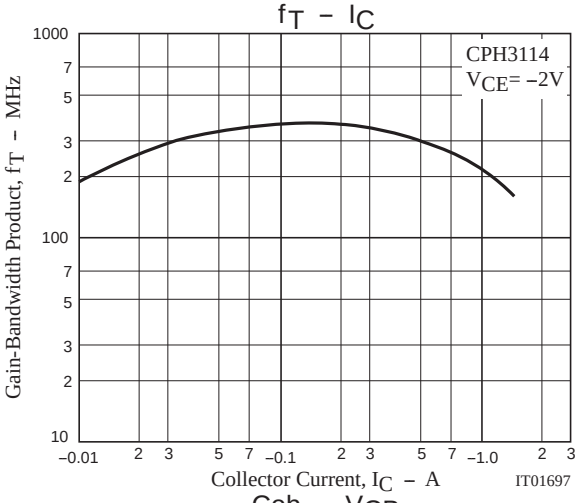


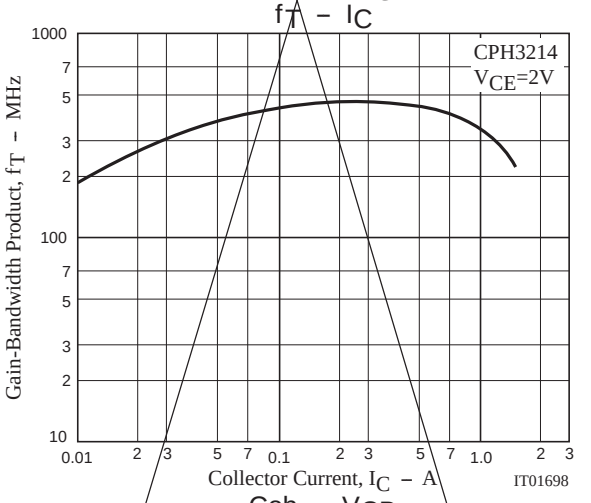

IC – VBE
CPH3114
VCE= –2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT01693

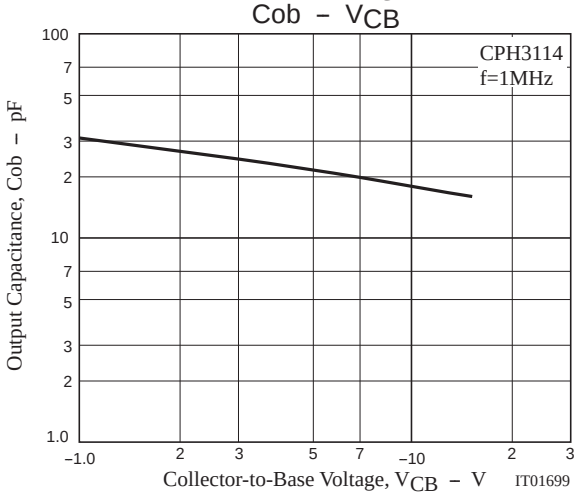

IC – VBE
CPH3214
VCE=2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT01694

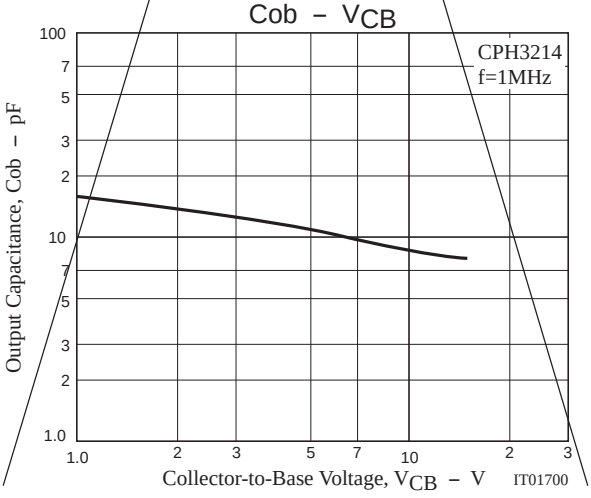

hFE – IC
CPH3114
VCE= –2V
25°C
Ta=75°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT01695

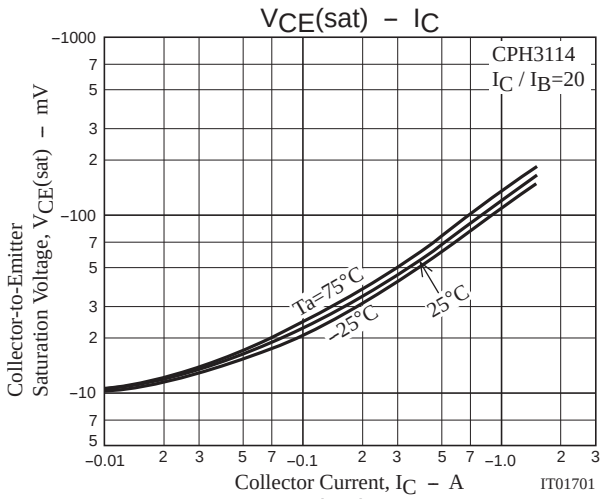

hFE – IC
CPH3214
VCE=2V
25°C
Ta=75°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT01696

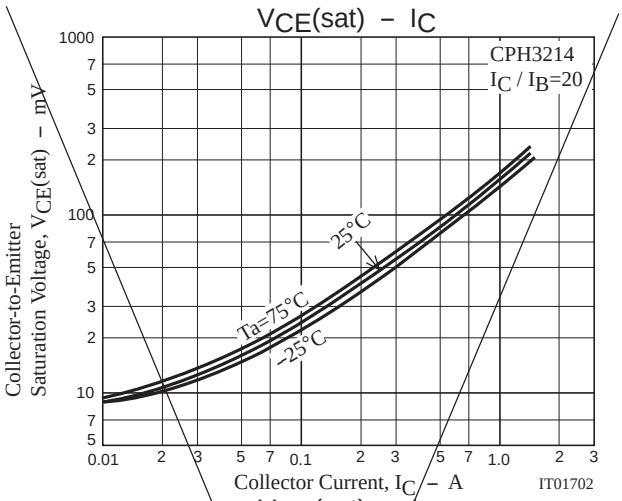

fT – IC
CPH3114
VCE= –2V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT01697

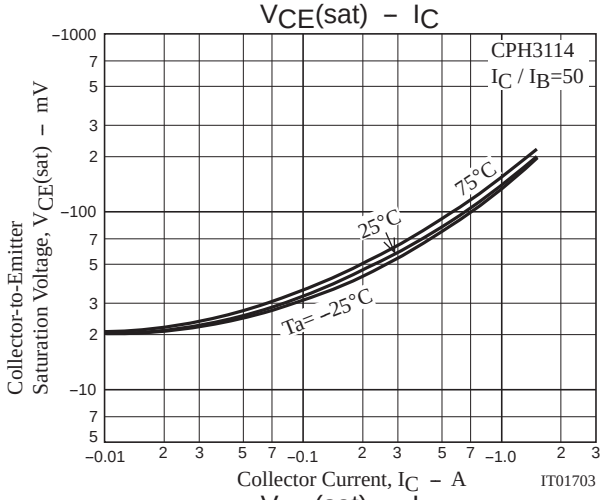

fT – IC
CPH3214
VCE=2V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT01698

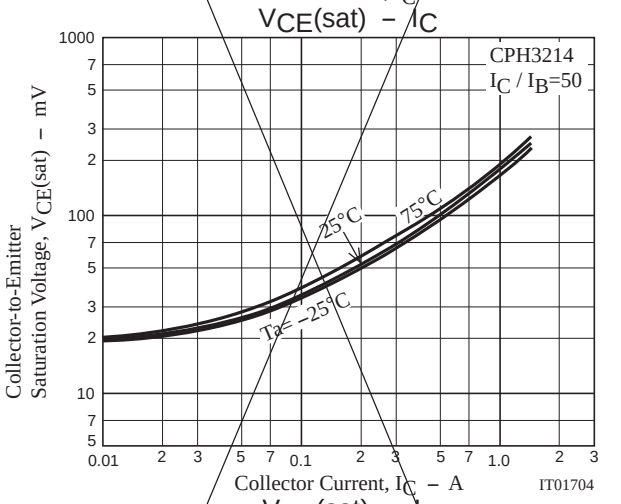

Cob – VCB
CPH3114
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT01699

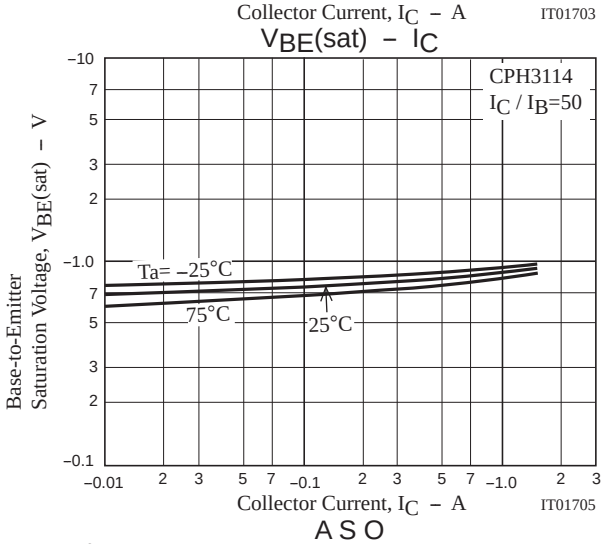

Cob – VCB
CPH3214
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT01700

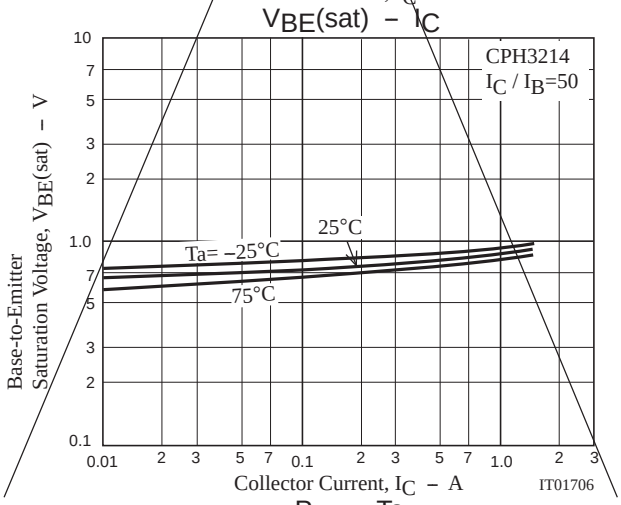

VCE(sat) – IC
CPH3114
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Ta=75°C
–25°C
25°C
Collector Current, IC – A
IT01701

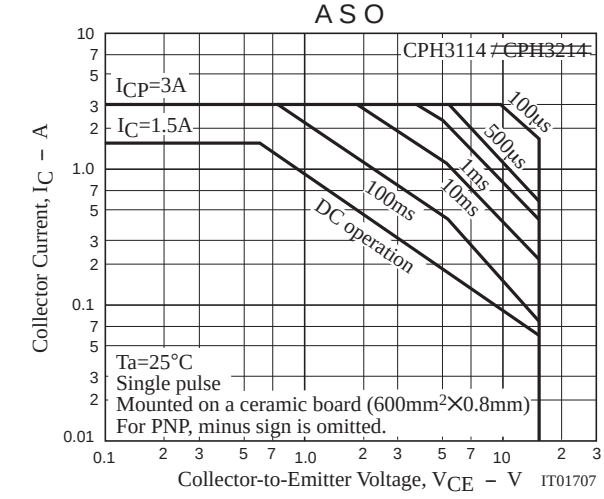

VCE(sat) – IC
CPH3214
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
25°C
Ta=75°C
–25°C
Collector Current, IC – A
IT01702

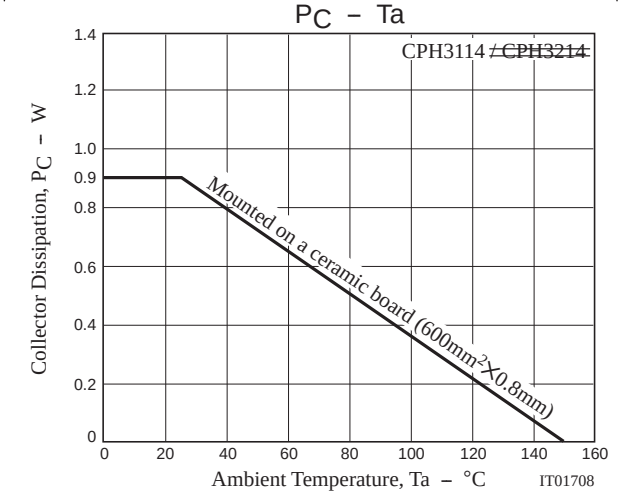

VCE(sat) – IC
CPH3114
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
75°C
25°C
Ta= –25°C
Collector Current, IC – A
IT01703


VCE(sat) – IC
CPH3214
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
25°C
75°C
Ta= –25°C
Collector Current, IC – A
IT01704


VBE(sat) – IC
CPH3114
IC / IB=50
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Ta= –25°C
75°C
25°C
Collector Current, IC – A
IT01705


VBE(sat) – IC
CPH3214
IC / IB=50
Base-to-Emitter Saturation Voltage, VBE(sat) – V
25°C
Ta= –25°C
75°C
Collector Current, IC – A
IT01706


A S O
CPH3114 / ~~CPH3214~~
ICP=3A
IC=1.5A
100µs
500µs
1ms
10ms
100ms
DC operation
Ta=25°C
Single pulse
Mounted on a ceramic board (600mm²×0.8mm)
For PNP, minus sign is omitted.
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT01707


PC – Ta
CPH3114 / ~~CPH3214~~
Mounted on a ceramic board (600mm²×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT01708