Ordering number : ENN8166

SANYO Semiconductors
DATA SHEET

CPH3145 / CPH3245 — PNP / NPN Epitaxial Planar Silicon Transistors
DC / DC Converter Applications

Applications

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

Features

- Adoption of MBIT process.
- High 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.

Specifications ( ) : CPH3145

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(-50)80	V
Collector-to-Emitter Voltage	V_{CES}		(-50)80	V
Collector-to-Emitter Voltage	V_{CEO}		(-)50	V
Emitter-to-Base Voltage	V_{EBO}		(-)6	V
Collector Current	I_C		(-)2	A
Collector Current (Pulse)	I_{CP}		(-)4	A
Base Current	I_B		(-)400	mA
Collector Dissipation	P_C	Mounted on a ceramic board (600mm²×0.8mm)	0.9	W
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}=(-)40V, I_E=0			(-)1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(-)4V, I_C=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		420		MHz
Output Capacitance	Cob	V_{CB}=(-)10V, f=1MHz		(16)8		pF

Marking : CPH3145 : BE, CPH3245 : DQ

Continued on next page.

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

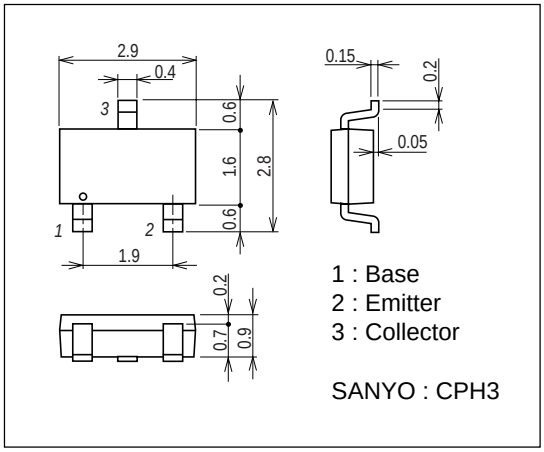
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(–)1A, I_B=(–)50mA		(-165)130	(-330)260	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(–)1A, I_B=(–)50mA		(–)0.9	(–)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(-50)80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=(–)100μA, R_{BE}=0	(-50)80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	(–)6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		(35)35		ns
Storage Time	t_{stg}	See specified Test Circuit.		(200)330		ns
Fall Time	t_f	See specified Test Circuit.		(24)40		ns

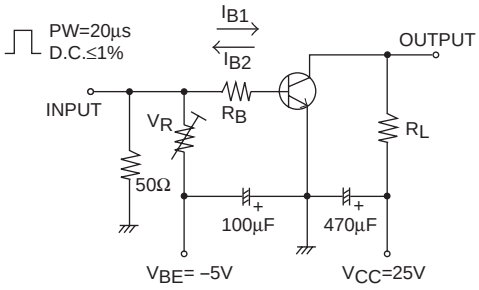
Package Dimensions

unit : mm

2150A

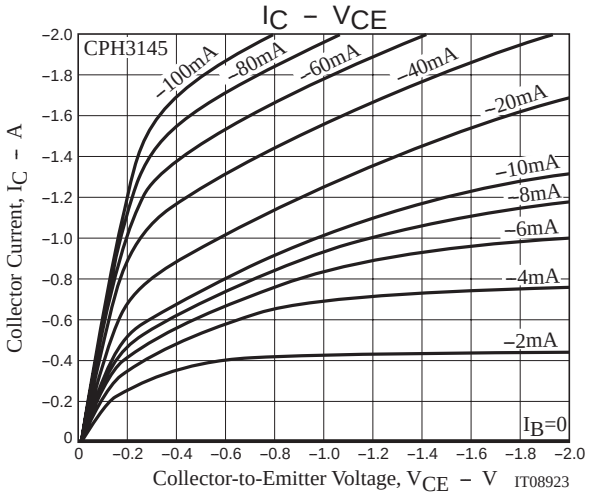


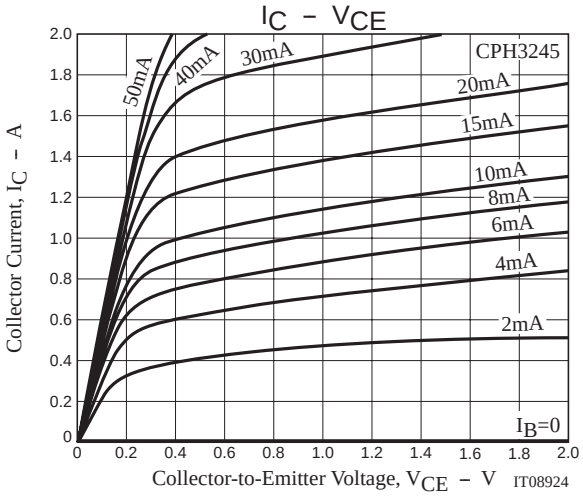
Switching Time Test Circuit

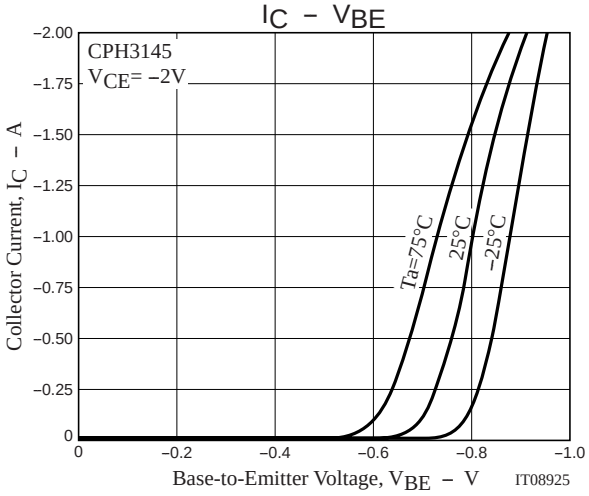


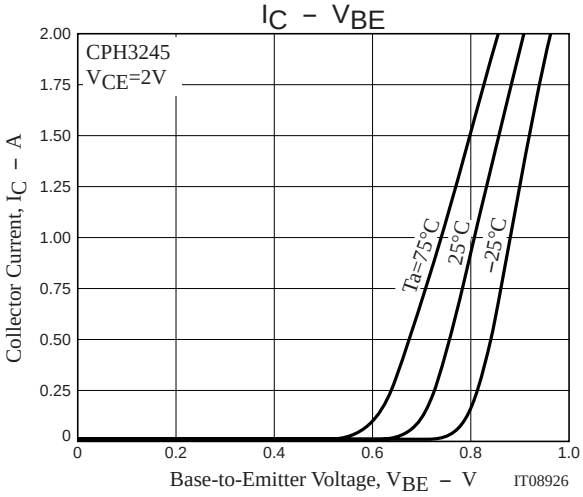
I_C=10I_{B1}= –10I_{B2}=0.7A

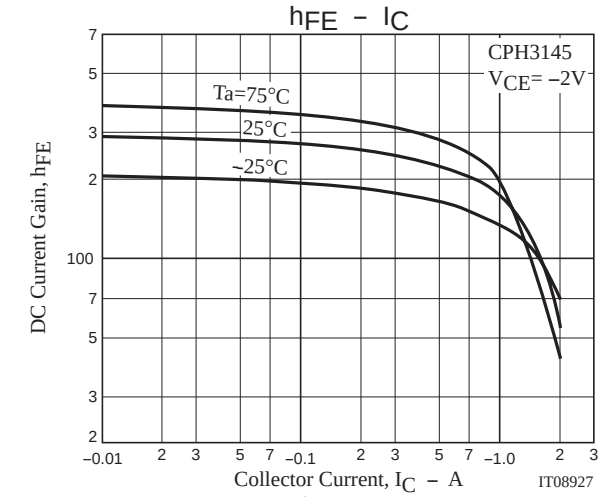
For PNP, the polarity is reversed.

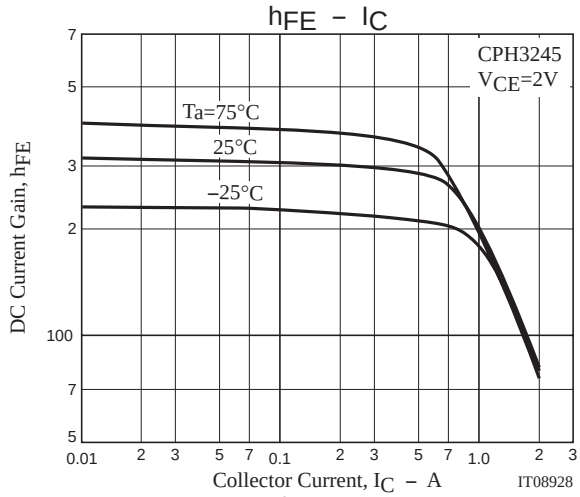


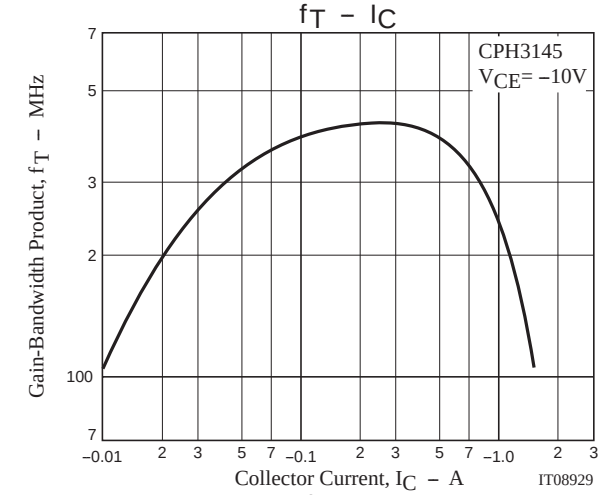


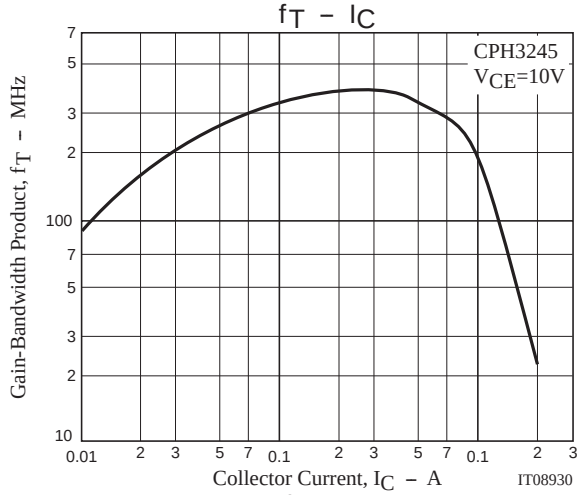


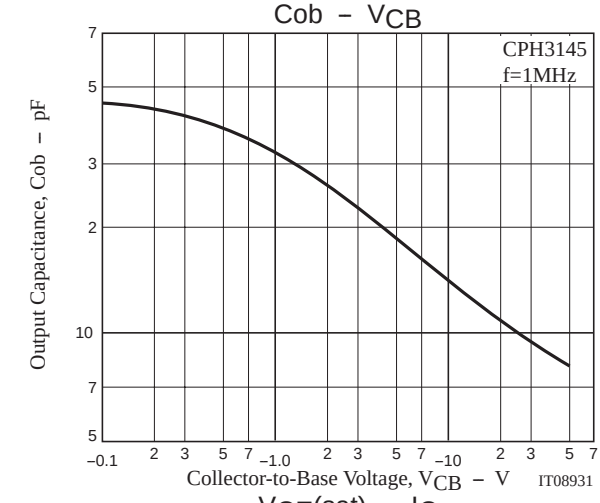


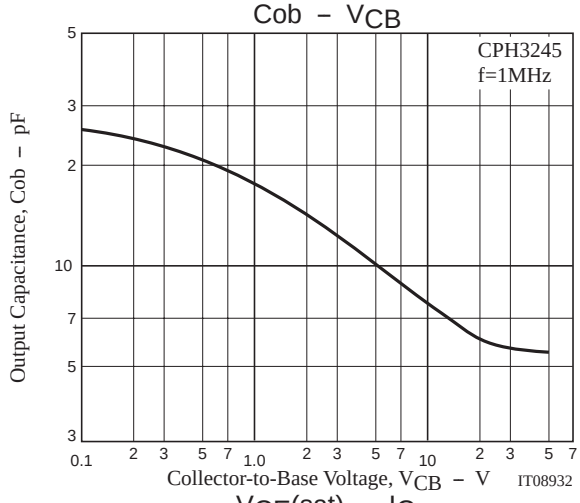

hFE – IC
CPH3145
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT08927

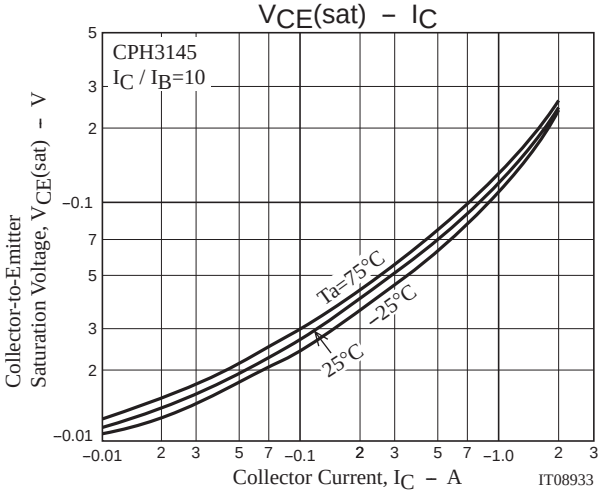

hFE – IC
CPH3245
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT08928

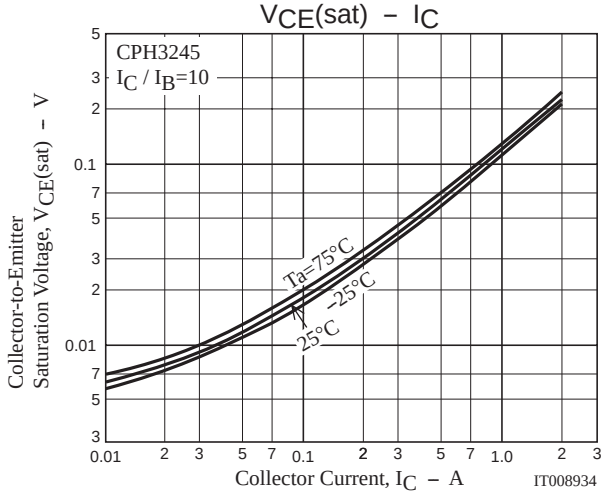

fT – IC
CPH3145
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT08929

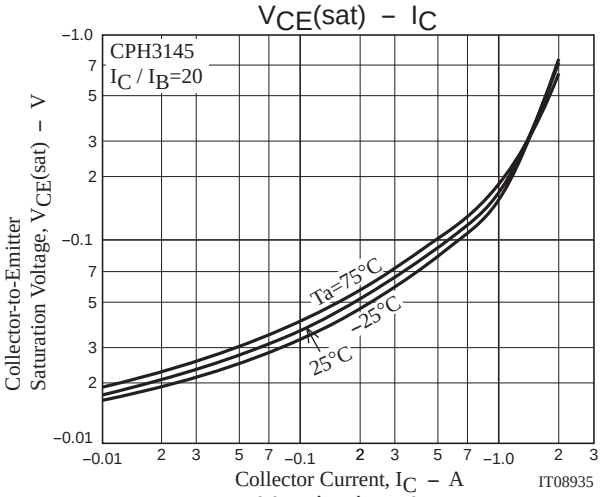

fT – IC
CPH3245
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT08930

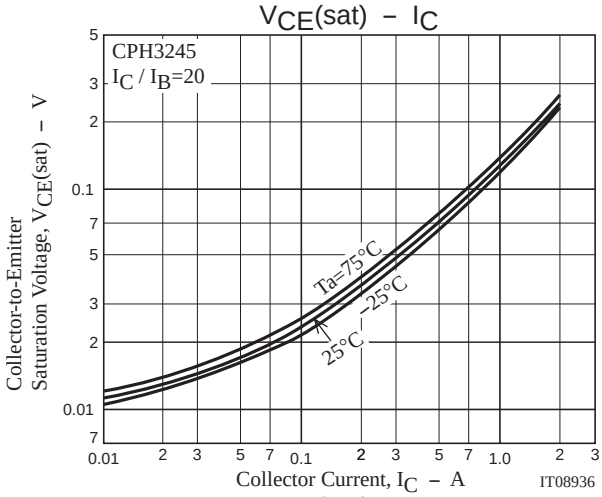

Cob – VCB
CPH3145
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT08931

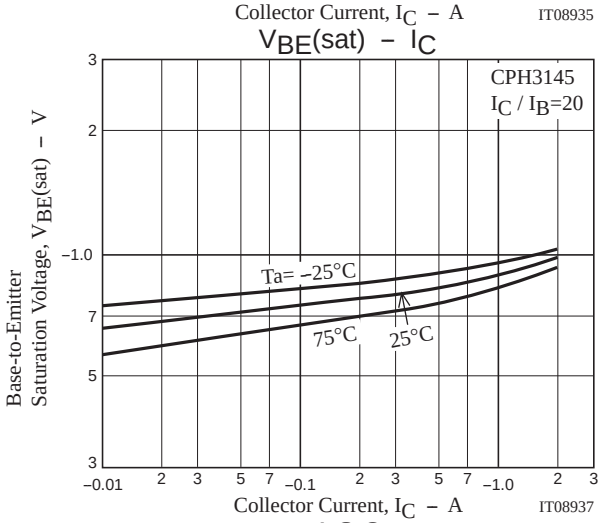

Cob – VCB
CPH3245
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT08932

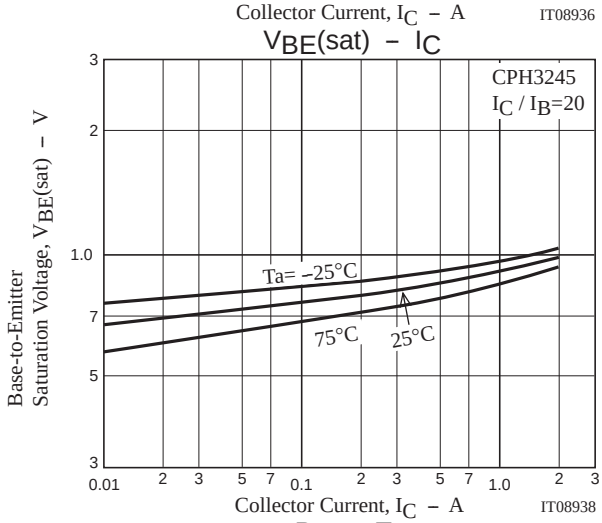

VCE(sat) – IC
CPH3145
IC / IB=10
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT08933

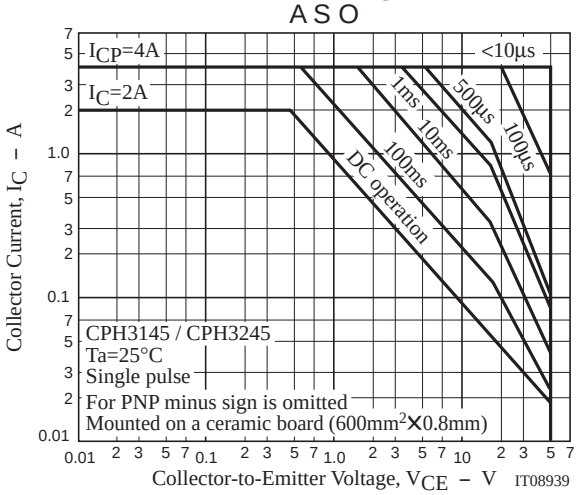

VCE(sat) – IC
CPH3245
IC / IB=10
Ta=75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT008934

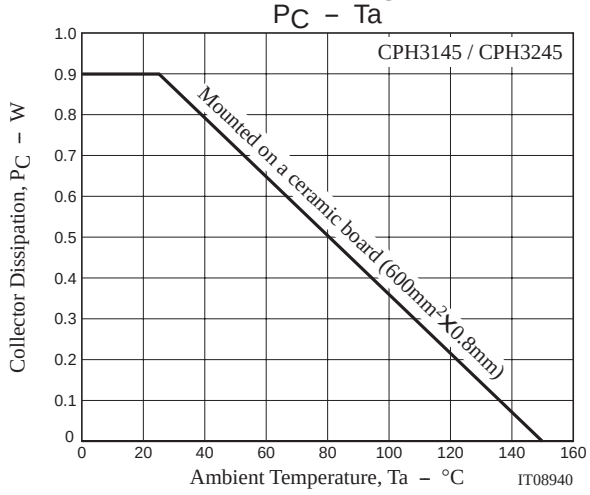

VCE(sat) – IC
CPH3145
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT08935


VCE(sat) – IC
CPH3245
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT08936


VBE(sat) – IC
CPH3145
IC / IB=20
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT08937


VBE(sat) – IC
CPH3245
IC / IB=20
Ta= –25°C
75°C
25°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT08938


A S O
ICP=4A
IC=2A
<10µs
1ms
10ms
100ms
DC operation
500µs
100µs
CPH3145 / CPH3245
Ta=25°C
Single pulse
For PNP minus sign is omitted
Mounted on a ceramic board (600mm2×0.8mm)
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT08939


PC – Ta
CPH3145 / CPH3245
Mounted on a ceramic board (600mm2×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT08940

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