Ordering number:ENN6457

PNP/NPN Epitaxial Planar Silicon Transistors

FP207

Push-Pull Circuit Applications

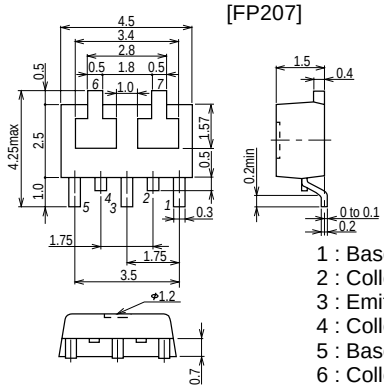
Features

- Composite type with a PNP transistor and an NPN transistor contained in one package, facilitating high-density mounting.
- Each device incorporated in the FP207 is equivalent to the 2A1729 and to the 2SC4520, respectively.

Package Dimensions

unit:mm

2097B



Specifications

( ) : PNP

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)50	V
Collector-to-Emitter Voltage	V_{CEO}		(–)40	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 (250mm²×0.8mm) 1unit	0.8	W
Total Power Dissipation	P_T	Mounted on a ceramic board (250mm²×0.8mm)	1.1	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditons	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}=(–)3V, I_C=0			(–)1	μA
DC Current Gain	h_{FE}	V_{CE}=(–)2V, I_C=(–)100mA	100		400	
Gain-Bandwidth Product	f_T	V_{CE}=(–)2V, I_C=(–)100mA		300		MHz
Output Capacitance	Cob	V_{CB}=(–)10V, f=1MHz		(18)13		pF

Marking : 207

Continued on next page.

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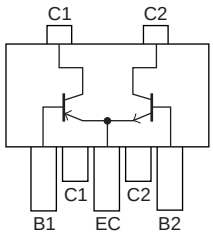
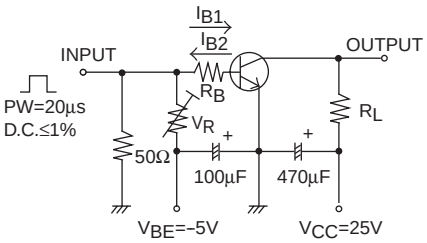
Continued from preceding page.

Parameter	Symbol	Conditons	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=(–)800mA, I_B=(–)40mA		(–0.3)	(–0.8)	mV
				0.25	0.7	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=(–)800mA, I_B=(–)40mA		(–)0.9	(–)1.3	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)50			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)40			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)	(100)	ns
				50	100	ns
Storage Time	t_{stg}	See specified Test Circuit		(120)	(220)	ns
				150	270	ns
Fall Time	t_f	See specified Test Circuit		(30)30	(80)80	ns

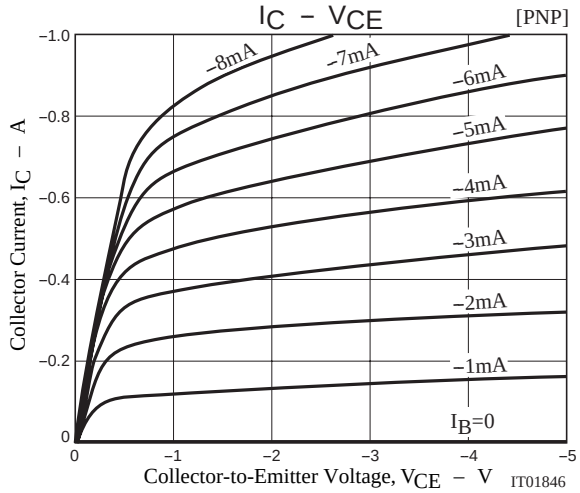
Electrical Connection (Top view)

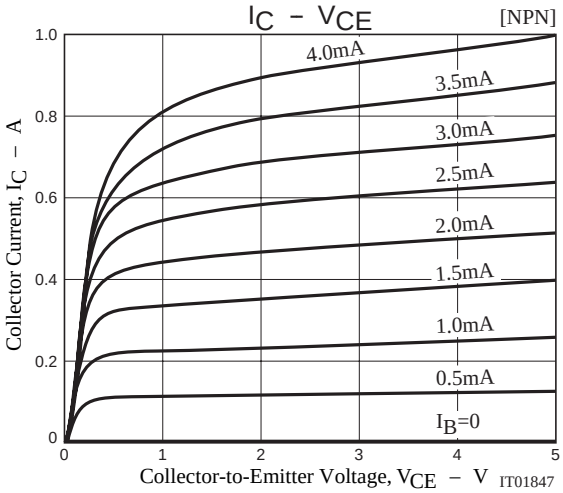


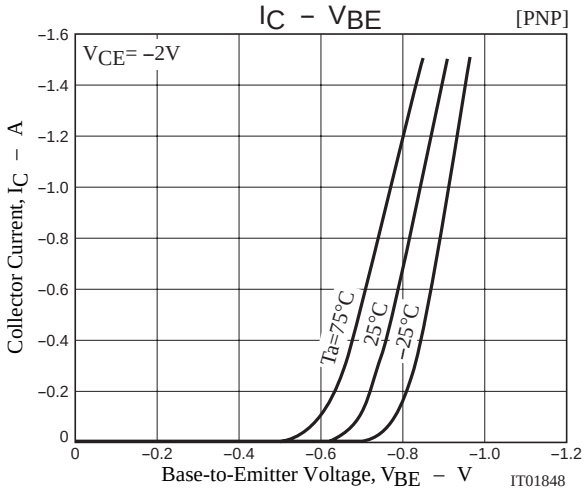
Switching Time Test Circuit

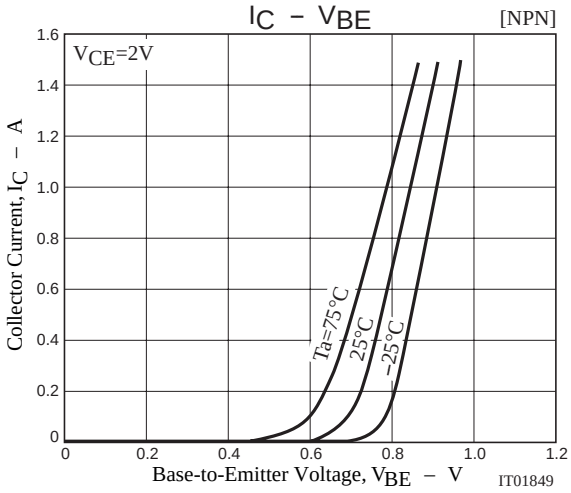


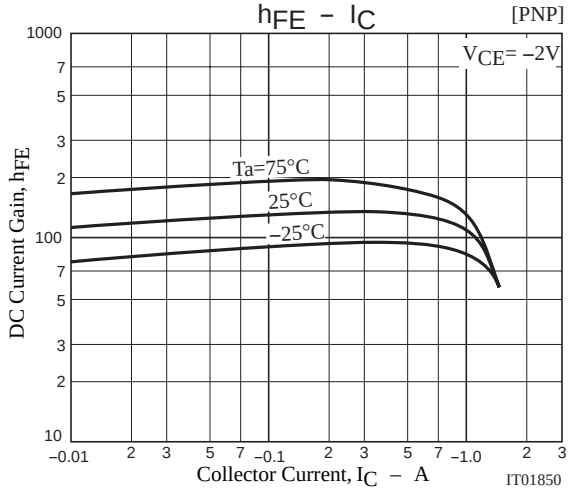
(For PNP, the polarity is reversed.)
$10I_{B1}$= –$10I_{B2}$= I_C=400mA

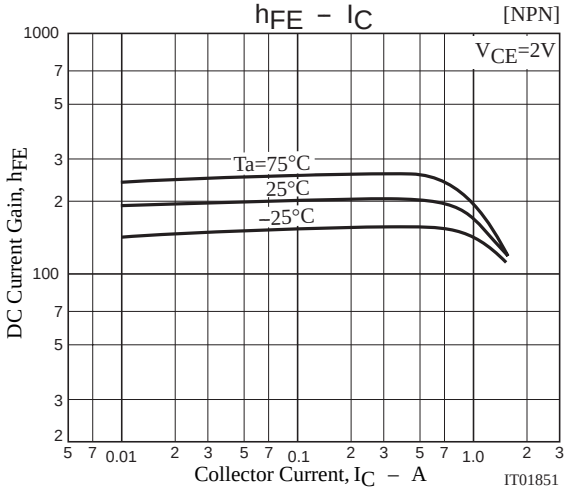


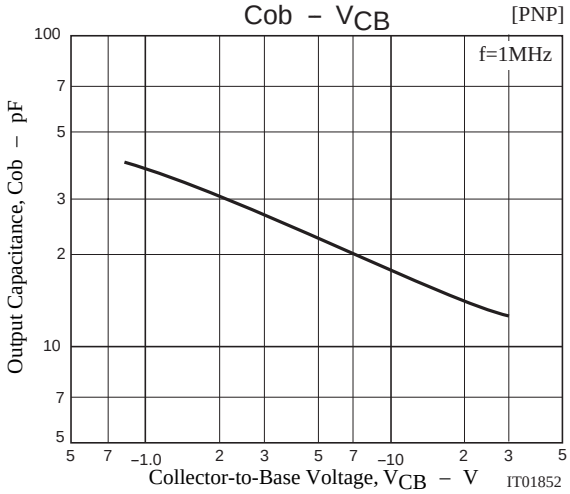


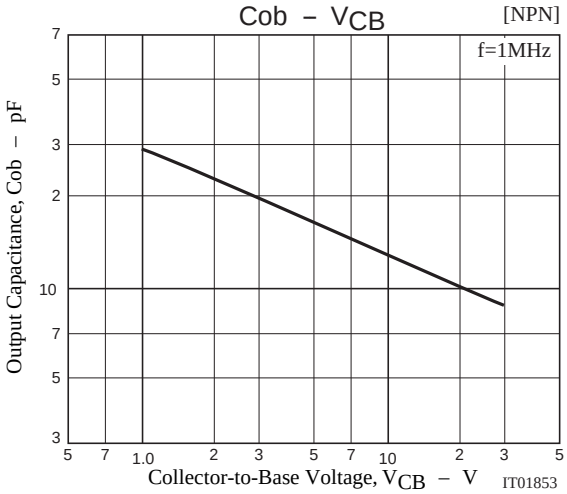


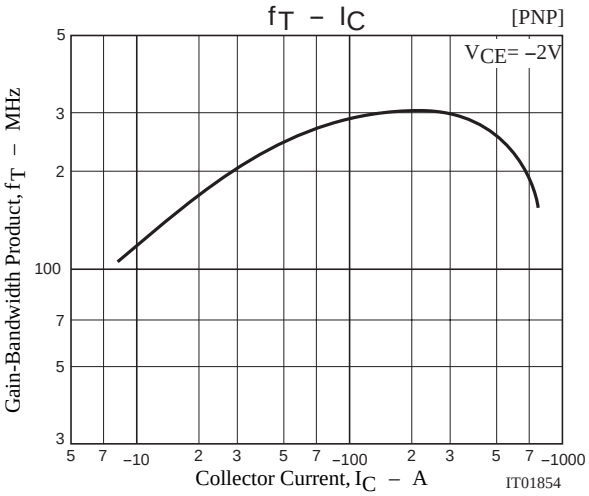


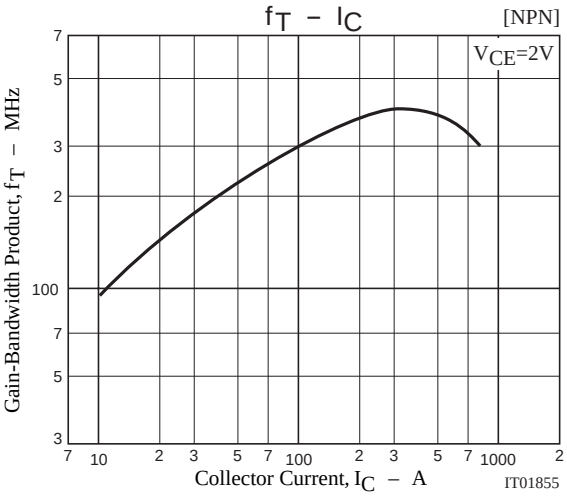

hFE – IC
[PNP]
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT01850

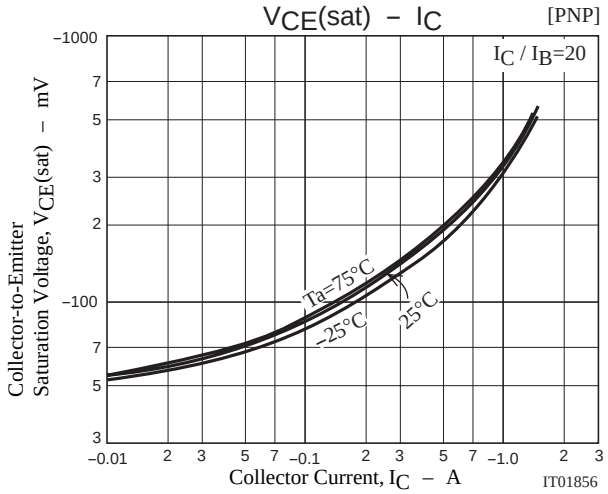

hFE – IC
[NPN]
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT01851

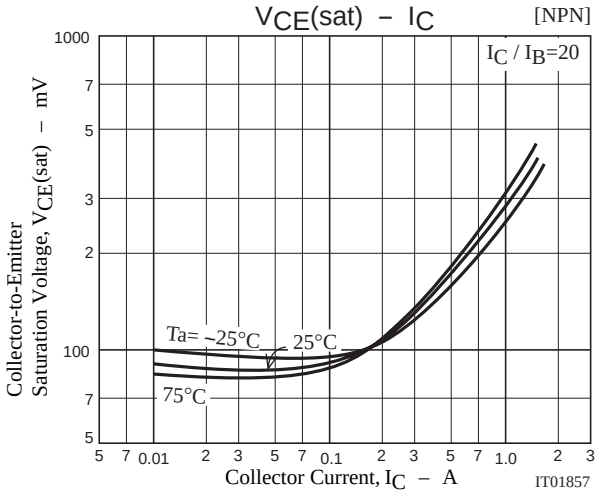

Cob – VCB
[PNP]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT01852

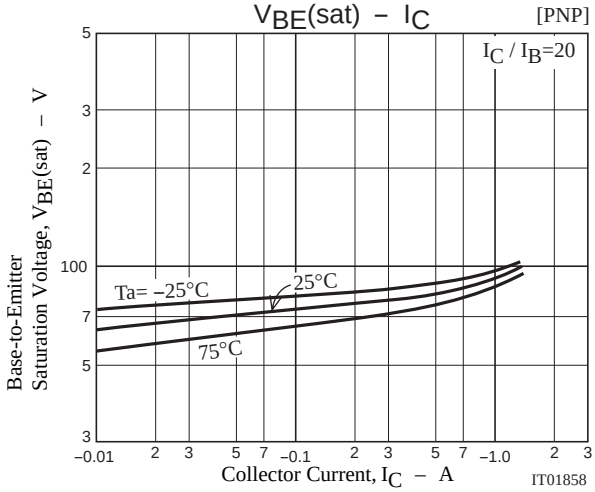

Cob – VCB
[NPN]
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT01853

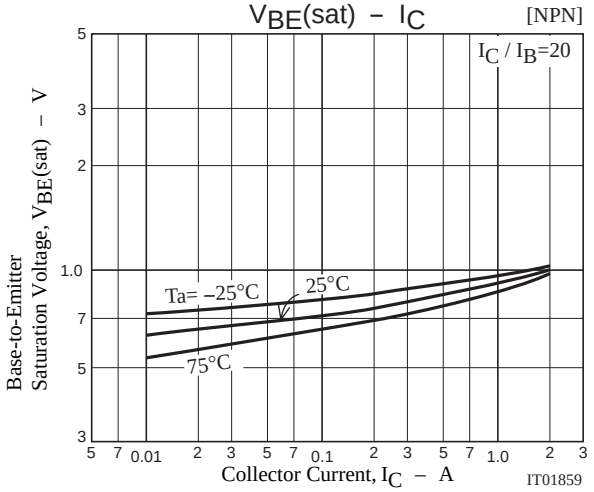

fT – IC
[PNP]
VCE= –2V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT01854

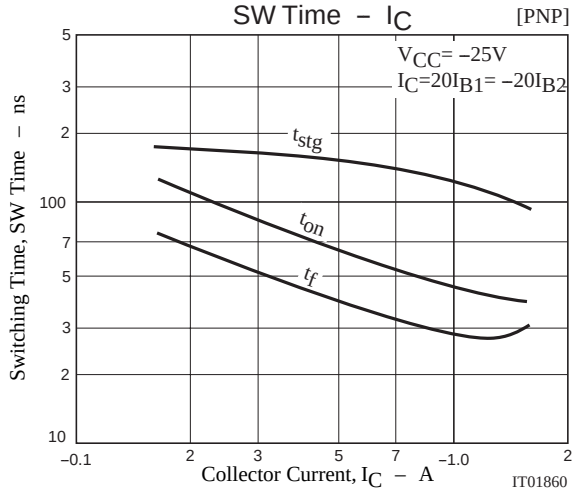

fT – IC
[NPN]
VCE=2V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT01855

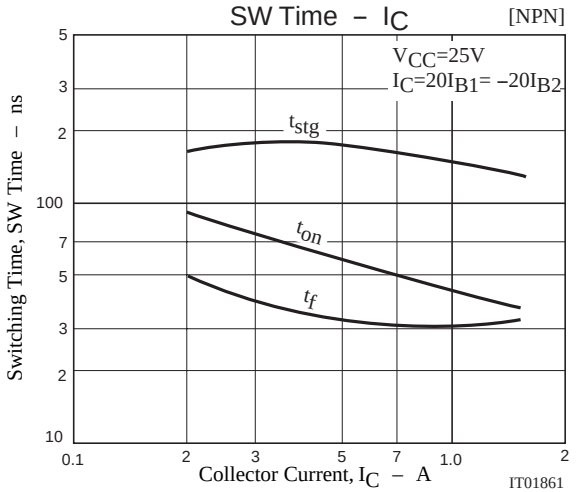

VCE(sat) – IC
[PNP]
IC / IB=20
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT01856

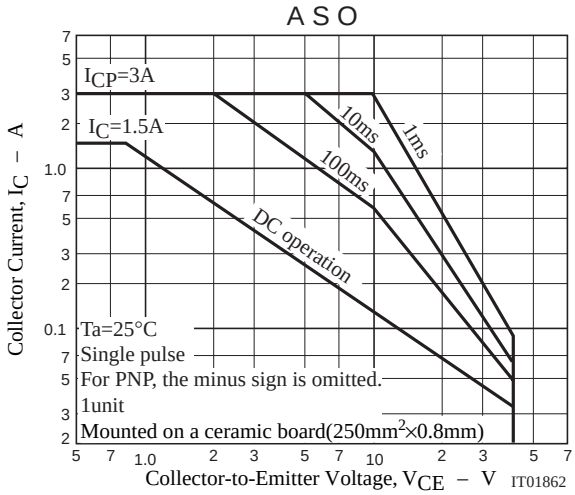

VCE(sat) – IC
[NPN]
IC / IB=20
Ta= –25°C
25°C
75°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
IT01857

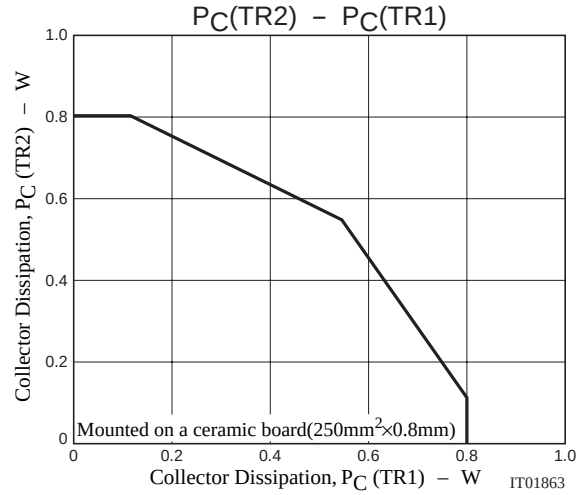

VBE(sat) – IC
[PNP]
IC / IB=20
Ta= –25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT01858

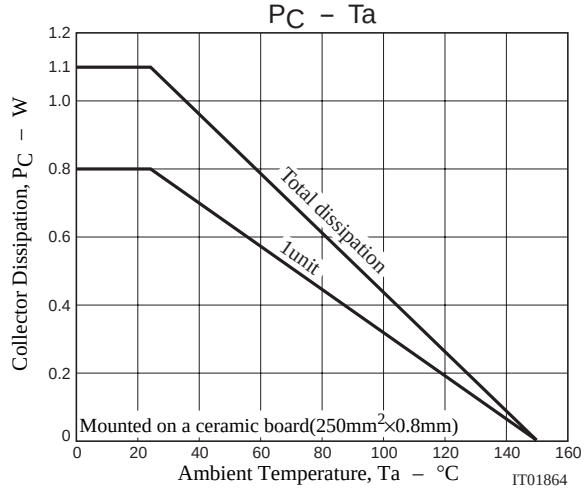

VBE(sat) – IC
[NPN]
IC / IB=20
Ta= –25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT01859


SW Time – IC
[PNP]
VCC= –25V
IC=20IB1= –20IB2
tstg
ton
tf
Switching Time, SW Time – ns
Collector Current, IC – A
IT01860


SW Time – IC
[NPN]
VCC=25V
IC=20IB1= –20IB2
tstg
ton
tf
Switching Time, SW Time – ns
Collector Current, IC – A
IT01861


A S O
ICP=3A
IC=1.5A
10ms
1ms
100ms
DC operation
Ta=25°C
Single pulse
For PNP, the minus sign is omitted.
1unit
Mounted on a ceramic board(250mm2×0.8mm)
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT01862


PC(TR2) – PC(TR1)
Mounted on a ceramic board(250mm2×0.8mm)
Collector Dissipation, PC (TR2) – W
Collector Dissipation, PC (TR1) – W
IT01863


PC – Ta
Total dissipation
1unit
Mounted on a ceramic board(250mm2×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT01864

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