

## 2ST1480FP

## Low voltage NPN power transistor

### **Features**

- High current gain characteristic
- Fast switching speed
- Fully insulated package

### **Applications**

- Printer
- DC-DC converter

### **Description**

The device is manufactured using new "PB-HCD" (power bipolar high current density) technology. The resulting transistor shows exceptional high gain performances coupled with very low saturation voltage.

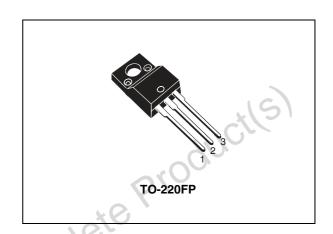


Figure 1. Internal schematic diagrams

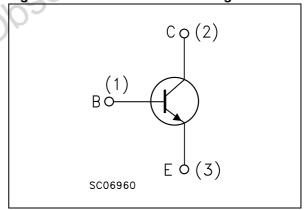


Table 1. Device summary

Order code	Marking	Package	Packaging
2ST1480FP	2ST1480FP	TO-220FP	Tube

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#### **Absolute maximum ratings** 1

**Absolute maximum ratings** Table 2.

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-base voltage (I <sub>E</sub> = 0)	80	V
V <sub>CEO</sub>	Collector-emitter voltage (I <sub>B</sub> = 0)	80	V
V <sub>EBO</sub>	Emitter-base voltage (I <sub>C</sub> = 0)	5	V
I <sub>C</sub>	Collector current	5	Α
I <sub>CM</sub>	Collector peak current	10	Α
I <sub>B</sub>	Base current	1	Α
P <sub>TOT</sub>	Total dissipation at T <sub>c</sub> ≤ 25 °C	25	W
T <sub>STG</sub>	Storage temperature	-65 to 150	°C
TJ	Max. operating junction temperature	150	°C
Table 3.	Thermal data		
Symbol	Parameter	Value	Unit

Table 3. Thermal data

	Symbol	Parameter		Value	Unit	
	R <sub>thJC</sub>	Thermal resistance junction-case	Max	5	°C/W	
	ie Pr	oduct(s)				
Obsole						

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## 2 Electrical characteristics

 $T_{case} = 25$  °C; unless otherwise specified.

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
I <sub>CBO</sub>	Collector cut-off current (I <sub>E</sub> = 0)	V <sub>CE</sub> = 80 V			0.1	μΑ
I <sub>EBO</sub>	Emitter cut-off current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			0.1	μΑ
V <sub>(BR)CEO</sub> <sup>(1)</sup>	Collector-emitter breakdown voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 10 mA	80		G)	V
V <sub>CE(sat)</sub> <sup>(1)</sup>	Collector-emitter saturation voltage	$I_C = 3 \text{ A}$ $I_B = 300 \text{ mA}$		W	1	V
V <sub>BE(on)</sub> <sup>(1)</sup>	Base-emitter on voltage	$I_C = 3 A$ $V_{CE} = 5 V$	(O)		1.5	V
h <sub>FE</sub> <sup>(1)</sup>	DC current gain	$I_C = 0.5 \text{ A}$ $V_{CE} = 5 \text{ V}$ $I_C = 3 \text{ A}$ $V_{CE} = 5 \text{ V}$	170 50		290	
f <sub>T</sub>	Transition frequency	$I_C = 50 \text{ mA}$ $V_{CE} = 10 \text{ V}$		120		MHz
C <sub>CBO</sub>	Collector-base capacitance (I <sub>E</sub> = 0)	V <sub>CB</sub> = 10 V f = 1 MHz		20		pF
	Resistive load					
t <sub>on</sub>	Turn-on time	$I_C = 1.5 A, V_{CC} = 10 V$		60		ns
t <sub>off</sub>	Turn-off time	$I_{B(on)} = -I_{B(off)} = 150 \text{ mA}$		450		ns

<sup>1.</sup> Pulse test: pulse duration ≤ 300 μs, duty cycle ≤ 2 %

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## 3 Package mechanical data

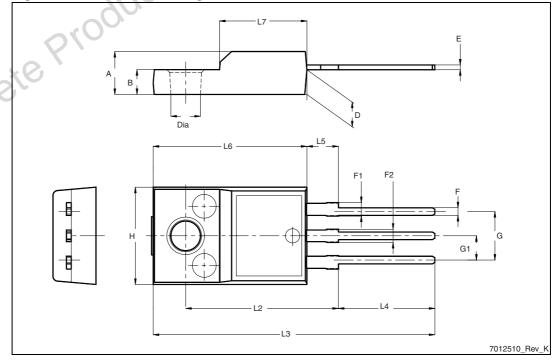
In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK<sup>®</sup> packages, depending on their level of environmental compliance. ECOPACK<sup>®</sup> specifications, grade definitions and product status are available at: <a href="https://www.st.com">www.st.com</a>. ECOPACK<sup>®</sup> is an ST trademark.

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Table 5. TO-220FP mechanical data

Dim	mm				
Dim.	Min. Typ.		Max.		
А	4.4		4.6		
В	2.5		2.7		
D	2.5		2.75		
E	0.45		0.7		
F	0.75		1		
F1	1.15		1.70		
F2	1.15		1.70		
G	4.95		5.2		
G1	2.4		2.7		
Н	10		10.4		
L2		16			
L3	28.6	10	30.6		
L4	9.8		10.6		
L5	2.9	WS	3.6		
L6	15.9	P	16.4		
L7	9		9.3		
Dia	3		3.2		

Figure 2. TO-220FP drawing



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Revision history 2ST1480FP

# 4 Revision history

Table 6. Document revision history

Date	Revision	Changes
03-Dec-2009	1	Initial release.



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