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SPC-F005.DWG

REVISIONS

DOC. NO. SPC-F005 \* Effective: 7/8/02 \* DCP No: 1398

DCP #	REV	DESCRIPTION	DRAWN	DATE	CHECKD	DATE	APPRVD	DATE
1885	A	RELEASED	BYF	02/08/06	HO	2/6/06	JWM	2/6/06

**Description:** Plastic, NPN, TO-220 power transistor General purpose amplifier and switching applications

**Features:**

- Collector Emitter Saturation Voltage  $I_C=3A, I_B=0.6A, V_{CE} = 1.2V$  (Max)
- D.C. Current Gain  $I_C=1A, V_{CE}=4V, h_{FE}=25$  (Min)



**Absolute Maximum Ratings:**

- Collector-Base Voltage,  $V_{CES} = 115V$
- Collector-Emitter Voltage,  $V_{CEO} = 100V$
- Emitter-Base Voltage,  $V_{EBO} = 5V$
- Continuous Collector Current,  $I_C = 3A$
- Base Current,  $I_B = 1A$
- Total Device Dissipation ( $T_C = +25^\circ C$ ),  $P_D = 40W$   
Derate above  $25^\circ C = 0.32mW/^\circ C$
- Operating Junction Temperature Range,  $T_J = -65^\circ C$  to  $+150^\circ C$
- Storage Temperature Range,  $T_{stg} = -65^\circ C$  to  $+150^\circ C$

Dimensions	A	B	C	D	E	F	G	H	J	K	L	M	N	O
<b>Min.</b>	14.42	9.63	3.56	-	1.15	3.75	2.29	2.54	-	12.70	2.80	2.03	-	7*
<b>Max.</b>	16.51	10.67	4.83	0.90	1.40	3.88	2.79	3.43	0.56	14.73	4.07	2.92	31.24	

**Electrical Characteristics:** ( $T_C = +25^\circ C$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Max	Unit
<b>OFF Characteristics</b>					
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 30mA, I_B = 0$ Note 1	100	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CES}$	$I_C = 1mA, V_{BE} = 0$	115	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1mA, I_C = 0$	5	-	V
Collector Cut-Off Current	$I_{CES}$	$V_{CE} = 100V, V_{BE} = 0$	-	0.2	mA
	$I_{CEO}$	$V_{CB} = 60V, I_B = 0$	-	0.3	mA
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$	-	1	mA

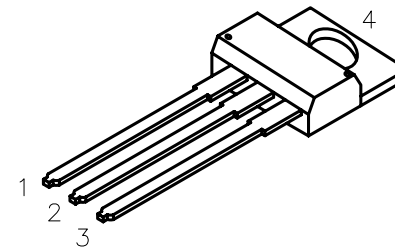
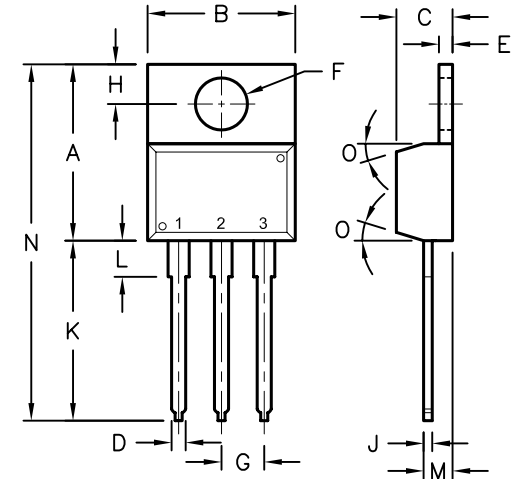
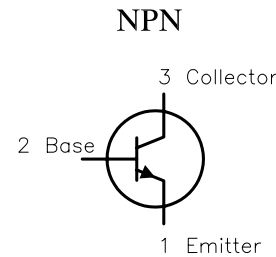
**ON Characteristics (Note 1)**

DC Current Gain	$h_{FE}$	$V_{CE} = 4V, I_C = 1A$	25	-	-
		$V_{CE} = 4V, I_C = 3A$	10	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 3A, I_B = 0.6A$	-	1.2	V
Base-Emitter On Voltage	$V_{BE(on)}$	$I_C = 3A, V_{CE} = 4V$	-	1.8	V

**Small-Signal Characteristics**

Current Gain-Bandwidth Product	$f_T$	$V_{CE} = 10V, I_C = 0.5A, f = 1MHz$	3	-	MHZ
Small-Signal Current Gain	$h_{fe}$	$V_{CE} = 10V, I_C = 0.5A, f = 1kHz$	20	-	-

Note 1. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$



**Pin Configuration:**

1. Base
2. Collector
3. Emitter
4. Collector

**DISCLAIMER:**  
ALL STATEMENTS AND TECHNICAL INFORMATION CONTAINED HEREIN ARE BASED UPON INFORMATION AND/OR TESTS WE BELIEVE TO BE ACCURATE AND RELIABLE. SINCE CONDITIONS OF USE ARE BEYOND OUR CONTROL, THE USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR THE INTENDED USE AND ASSUME ALL RISK AND LIABILITY WHATSOEVER IN CONNECTION THEREWITH.

**TOLERANCES:**  
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY.

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DRAWING TITLE: <b>General Purpose Power Transistor, Plastic, TO-220, NPN</b>			
SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	BD241C	02H2179.DWG	A
SCALE: NTS	U.O.M.: MILLIMETERS	SHEET: 1 OF 1	