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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 $I_C=1A$, $I_B=0.2A$, $V_{CE} = 0.7V$ (Max)
- D.C. Current Gain $I_C= 0.2A$, $V_{CE}=4V$ $h_{FE}=40$ (Min)

Absolute Maximum Ratings:

- Collector-Base Voltage, $V_{CBO} = 115V$
- Collector-Emitter Voltage, $V_{CEO} = 100V$
- Emitter-Base Voltage, $V_{EBO} = 5V$
- Continuous Collector Current, $I_C = 2A$
- Total Device Dissipation ($T_C = +25^\circ C$), $P_D = 30W$
Derate above $25^\circ C = 0.24mW/^\circ C$
- Operating Junction Temperature Range, $T_J = -65^\circ$ to $+150^\circ C$
- Storage Temperature Range, $T_{stg} = -65^\circ$ to $+150^\circ C$

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

Parameter	Symbol	Test Conditions	Min	Max	Unit
OFF Characteristics					
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 30mA$, $I_B = 0$ (Note 1)	100	—	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 1mA$, $I_E = 0$	115	—	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1mA$, $I_C = 0$	5	—	V

Collector Cut-Off Current

Emitter 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
	I_{EBO}	$V_{EB} = 5V$, $I_C = 0$	—	1	mA

ON Characteristics (Note 1)

DC Current Gain	h_{FE}	$V_{CE} = 4V$, $I_C = 0.2A$	40	—	—
		$V_{CE} = 4V$, $I_C = 1A$	15	—	—
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1A$, $I_B = 0.2A$	—	0.7	V
Base-Emitter On Voltage	$V_{BE(on)}$	$I_C = 1A$, $V_{CE} = 4V$	—	1.3	V

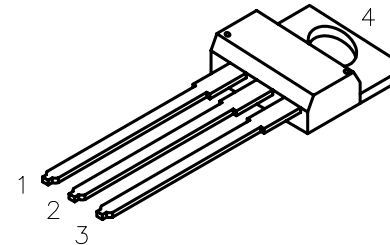
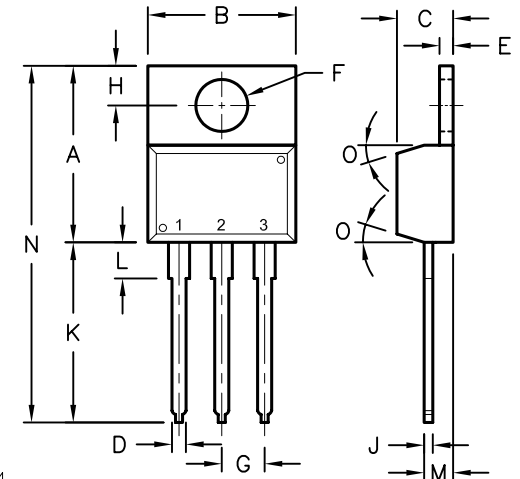
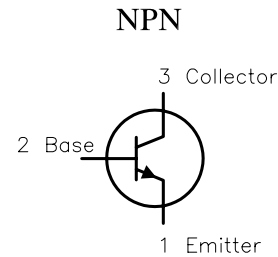
Small-Signal Characteristics

Current Gain-Bandwidth Product	f_T	$V_{CE} = 10V$, $I_C = 0.2A$, $f = 1MHz$	3	—	MHz
Small-Signal Current Gain	h_{fe}	$V_{CE} = 10V$, $I_C = 0.2A$, $f = 1kHz$	20	—	—

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



Dimensions	A	B	C	D	E	F	G	H	J	K	L	M	N	O
Min.	14.42	9.63	3.56	—	1.15	3.75	2.29	2.54	—	12.70	2.80	2.03	—	7*
Max.	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	



Pin Configuration:

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

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TOLERANCES:

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY.

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DATE:

02/08/06

DATE:

2/6/06

DATE:

2/6/06

DRAWING TITLE:

Power Transistor, General Purpose, Plastic, TO-22, NPN

SIZE

A

DWG. NO.

BD239C

ELECTRONIC FILE

02H2177.DWG

REV

A

SCALE:

NTS

U.O.M.: MILLIMETERS

SHEET:

1 OF 1