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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:** A Darlington transistor in a TO-220 type case designed for general-purpose amplifier and low-speed switching applications

- Features:**
- High DC Current Gain
  - Collector-Emitter Sustaining Voltage:  $V_{CE(sus)} = 100V$  Min @ 100mA
  - Monolithic Construction with Built-in Base-Emitter Shunt Resistors

- Absolute Maximum Ratings:**
- Collector-Emitter Voltage,  $V_{CEO} = 100V$
  - Collector-Base Voltage,  $V_{CB} = 100V$
  - Emitter-Base Voltage,  $V_{EB} = 5V$
  - Collector Current,  $I_C$

- Continuous = 5A
- Peak = 8A
- Base Current,  $I_B = 120mA$
- Total Power Dissipation ( $T_C = +25^\circ C$ ),  $P_D = 65W$   
Derate above  $+25^\circ C = 0.52W/^\circ C$
- Total Power Dissipation ( $T_A = +25^\circ C$ ),  $PD = 2W$   
Derate above  $+25^\circ C = 0.016W/^\circ C$
- Unclamped Inductive Load Energy (Note 1),  $E = 50mJ$
- Operating Junction Temperature Range,  $T_J = -65^\circ$  to  $+150^\circ C$
- Storage Temperature Range,  $T_{stg} = -65^\circ$  to  $+150^\circ C$
- Thermal Resistance, Junction-to-Case,  $R_{thJC} = 1.92^\circ C/W$
- Thermal Resistance, Junction-to-Ambient,  $R_{thJA}$  (Note 1) =  $62.5^\circ C/W$

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

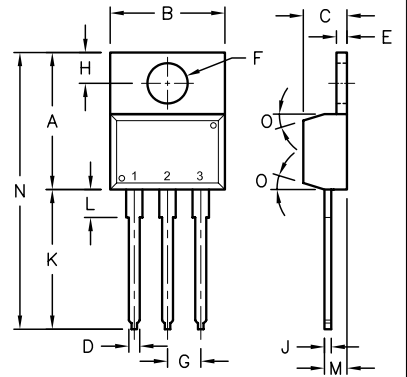
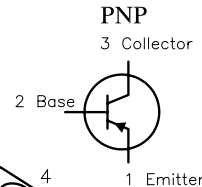
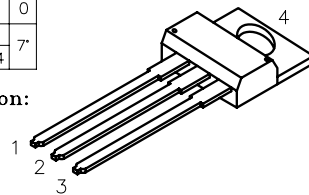
Parameter	Symbol	Test Conditions	Min	Max	Unit
<b>OFF Characteristics</b>					
Collector-Emitter Sustaining Voltage	$V_{CE(sus)}$	$I_C = 30mA, I_B = 0, (Note\ 2)$	100	-	V
Collector Cutoff Current	$I_{CEO}$	$V_{CE} = 50V, I_B = 0$	-	2	mA
	$I_{CBO}$	$V_{CB} = 100V, I_E = 0$	-	1	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 5V, I_C = 0$	-	2	mA
<b>ON Characteristics (Note 2)</b>					
DC Current Gain	$h_{FE}$	$V_{CE} = 4V, I_C = 1A$ $V_{CE} = 4V, I_C = 2A$	1000	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 3A, I_B = 12mA$	-	2	V
Base-Emitter ON Voltage	$V_{BE(on)}$	$V_{CE} = 4V, I_C = 2A$	-	2.8	V
<b>Dynamic Characteristics</b>					
Small-Signal Current Gain	$h_{fe}$	$V_{CE} = 10V, I_C = .75A, f = 1MHz$	25	-	-
Output Capacitance	$C_{ob}$	$V_{CB} = 10V, I_E = 0, f = 0.1MHz$	-	200	pF

Note 1.  $I_C = 1A, L = 100mH, P.R.F. = 10Hz, V_{CC} = 20V, R_{BE} = 100\ Ohm$ .  
Note 2. 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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CHECKED BY:	DATE:
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APPROVED BY:	DATE:
JEEF MCVICKER	2/6/06

DRAWING TITLE:

General Purpose Transistor, TO-220, PNP

SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	TIP117	35C0633.DWG	A
SCALE: NTS	U.O.M.: MILLIMETERS	SHEET: 1 OF 1	