



ALL RIGHTS RESERVED. NO PORTION OF THIS PUBLICATION, WHETHER IN WHOLE OR IN PART CAN BE REPRODUCED WITHOUT THE EXPRESS WRITTEN CONSENT OF SPC TECHNOLOGY.

SPC-F005.DWG

REVISIONS

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

DCP #	REV	DESCRIPTION	DRAWN	DATE	CHECKD	DATE	APPRVD	DATE
1262	A	RELEASED	HO	12/12/02	JWM	12/13/02	DJC	12/13/02
1885	B	UPDATED TO ROHS COMPLIANCE	EO	02/03/06	HO	2/6/06	HO	2/6/06

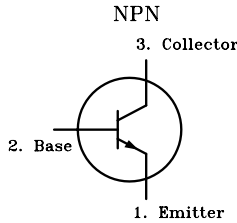
Description: A general purpose, medium power silicon NPN transistor in a TO-220 type package designed for switching and amplifier applications. This device is especially designed for series and shunt regulators and as a driver and output stage of high-fidelity amplifiers.

Features:

- Low Saturation Voltage

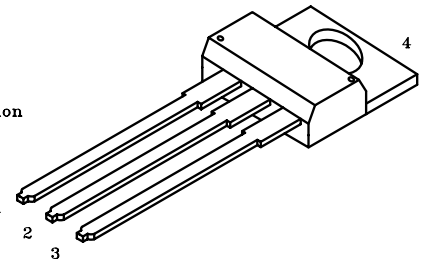
Absolute Maximum Ratings:

- Collector-Base Voltage, V_{CB0} : 100V
- Collector-Emitter Voltage, V_{CE0} : 100V
- Emitter-Base Voltage, V_{EB0} : 5V
- Continuous Collector Current = 3A
- Continuous Base Current = 1A
- Total Device Dissipation ($T_C = +25^\circ\text{C}$), $P_D = 40\text{W}$
Derate Linearly Above $25^\circ\text{C} = 0.32\text{W}/^\circ\text{C}$
- Total Device Dissipation ($T_A = +25^\circ\text{C}$), $P_D = 2\text{W}$
Derate Linearly Above $25^\circ\text{C} = 0.016\text{W}/^\circ\text{C}$
- Operating Junction Temperature Range, $T_{opr} = -65^\circ\text{C} \sim +150^\circ\text{C}$
- Storage Temperature Range, $T_{stg} = -65^\circ\text{C} \sim +150^\circ\text{C}$
- Thermal Resistance, Junction-to-Case, $R_{thJC} = 3.125^\circ\text{C}/\text{W}$
- Thermal Resistance, Junction-to-Ambient, $R_{thJA} = 62.5^\circ\text{C}/\text{W}$
- Lead Temperature (During Soldering, $\frac{1}{8}$ " (3.17mm) from case, 5 sec), $T_L = +235^\circ\text{C}$



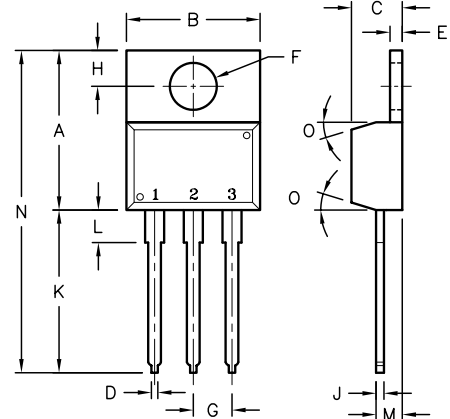
Pin Configuration

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



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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CBO}	$V_{CE} = 60\text{V}, I_B = 0$	-	-	0.3	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = -5\text{V}, I_C = 0$	-	-	1	mA
Collector-Emitter Sustaining Voltage	$V_{CE0(sus)}$	$I_C = 30\text{mA}, I_B = 0$, Note 1	100	-	-	V
DC Current Gain	h_{FE}	$I_C = 1\text{A}, V_{CE} = 4\text{V}$, Note 1	25	-	-	
		$I_C = 3\text{A}, V_{CE} = 4\text{V}$, Note 1	10	-	50	
Base-Emitter Voltage	$V_{BE(on)}$	$I_C = 3\text{A}, V_{CE} = 4\text{V}$, Note 1	-	-	1.8	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 3\text{A}, I_B = 375\text{mA}$, Note 1	-	-	1.2	V
Gain Bandwidth Product	f_T	$V_{CE} = 10\text{V}, I_C = 500\text{mA}, f = 1\text{MHz}$	3	-	-	MHz
Small Signal Forward Current Transfer Ratio	$ h_{fe} $	$V_{CB} = 10\text{V}, I_C = 500\text{mA}, f = 1\text{KHz}$	3	-	-	



Note 1: Pulsed: Pulse Duration = 300µs, Duty Factor = 0.018

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	

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.

DRAWN BY:	DATE:
HISHAM ODISH	12/12/02
CHECKED BY:	DATE:
JEFF MCVICKER	12/13/02
APPROVED BY:	DATE:
DANIEL CAREY	12/13/02

DRAWING TITLE:			
Transistor, General Purpose, Silicon, Bipolar, TO-220, NPN			
SIZE	DWG. NO.	ELECTRONIC FILE	
A	TIP31C	35C0641.DWG	
SCALE:	NTS	U.O.M.: Millimeters	SHEET: 1 OF 1
			REV
			B