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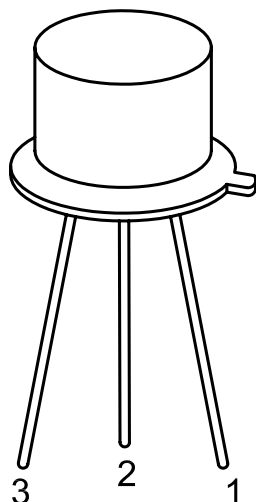
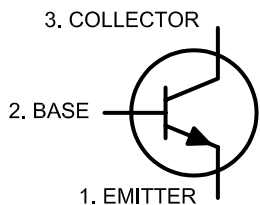
SPC-F005.DWG

REVISIONS

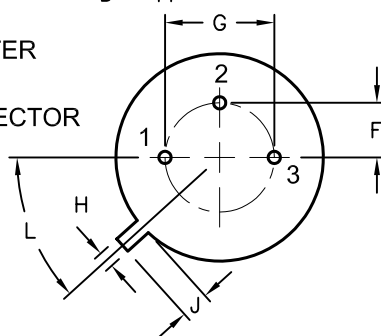
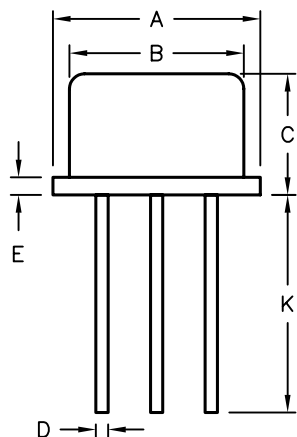
DOC. NO. SPC-F005 * Effective: 7/8/02 * DCP No: 1398

DCP #	REV	DESCRIPTION	DRAWN	DATE	CHECKD	DATE	APPRVD	DATE
1447	A	RELEASED	HYO	5/1/02	JWM	2/20/04	JC	2/20/04
1885	B	UPDATED TO ROHS COMPLIANCE	EO	02/03/06	HO	2/6/06	HO	2/6/06

NPN



1. EMITTER
2. BASE
3. COLLECTOR



This is a silicon NPN transistor in a TO-39 type case designed primarily for amplifier and switching applications. This device features high breakdown voltage, low leakage current, low capacity, and beta useful over an extremely wide current range.

Absolute Maximum Ratings:

- Collector-Base Voltage, $V_{CBO} = 120V$
- Collector-Emitter Voltage, $V_{CEO} = 65V$
- Emitter-Base Voltage, $V_{EBO} = 7V$
- Continuous Collector Current, $I_C = 1A$
- Total Device Dissipation ($T_A = +25^\circ C$), $P_D = 800mW$
Derate above $25^\circ C = 4.6mW/^\circ C$
- Total Device Dissipation ($T_C = +25^\circ C$), $P_D = 5W$
Derate above $25^\circ C = 28.6mW/^\circ C$
- Operating Junction Temperature Range, $T_J = -65^\circ$ to $+200^\circ C$
- Storage Temperature Range, $T_{stg} = -65^\circ$ to $+200^\circ C$
- Thermal Resistance, Junction-to-Case, $R_{thJC} = 35^\circ C/W$
- Thermal Resistance, Junction-to-Ambient, $R_{thJA} = 175^\circ C/W$
- Lead Temperature (During Soldering, 1/16" from case, 60sec max), $T_L = 300^\circ C$

Dimensions	A	B	C	D	E	F	G	H	J	K	L
Min.	8.50	7.74	6.09	0.40	-	2.41	4.82	0.71	0.73	12.70	42°
Max.	9.39	8.50	6.60	0.53	0.88	2.66	5.33	0.86	1.02	-	48°

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	5/1/02
CHECKED BY:	DATE:
JEFF MCVICKER	2/20/04
APPROVED BY:	DATE:
JOHN COLE	2/20/04

DRAWING TITLE: Transistor, Bipolar, TO-39, Metal, NPN			
SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	2N2102	35C0687.DWG	B
SCALE: NTS	U.O.M.: Millimeters	SHEET: 1 OF 2	

Electrical Characteristics: (T_A = +25°C Unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Max	Unit
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OFF Characteristics

Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C = 100mA, I _B = 0	65	-	V
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C = 100μA, I _E = 0	120	-	V
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	I _E = 100μA, I _C = 0	7	-	V
Collector Cut-Off Current	I _{CBO}	V _{CB} = 60V, I _E = 0	-	0.002	μA
		V _{CB} = 60V, I _E = 0, T _A = +150°C	-	2	μA
Emitter Cut-Off Current	I _{EBO}	V _{BE} = 5V, I _C = 0	-	0.002	μA

ON Characteristics (Note 1)

DC Current Gain	h _{FE}	V _{CE} = 10V, I _C = 0.1mA	20	-	-
		V _{CE} = 10V, I _C = 10mA	35	-	-
		V _{CE} = 10V, I _C = 150mA	40	120	-
		V _{CE} = 10V, I _C = 10mA, T _A = -55°C	20	-	-
		V _{CE} = 10V, I _C = 500mA	25	-	-
		V _{CE} = 10V, I _C = 1A	10	-	-
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C = 150mA, I _B = 15mA	-	0.5	V
Base-Emitter Saturation Voltage	V _{BE(sat)}	I _C = 150mA, I _B = 15mA	-	1.1	V

Small-Signal Characteristics

Current Gain-Bandwidth Product	f _T	V _{CE} = 10V, I _C = 50mA, f = 20MHz	60	-	MHz
Output Capacitance	C _{obo}	V _{CB} = 10V, I _E = 0, f = 1MHz	-	15	pF
Input Capacitance	C _{ibo}	V _{BE} = 500mV, I _C = 0, f = 1MHz	-	80	pF
Small-Signal Current Gain	h _{fe}	V _{CE} = 5V, I _C = 1mA, f = 1kHz	30	100	-
Noise Figure	NF	V _{CE} = 10V, I _C = 100μA, f = 1kHz, R _S = 1kohm	-	6	dB

Note 1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 1%.