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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	4/12/02	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

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°

Description: 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.

Electrical Characteristics: (T_A = +25°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	80	-	V
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C = 100μA, I _E = 0	140	-	V
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	I _E = 100μA, I _C = 0	7	-	V
Collector Cut-Off Current	I _{CBO}	V _{CB} = 90V, I _E = 0	-	0.01	μA
		V _{CB} = 90V, I _E = 0, T _A = +150°C	-	10	μA
Emitter Cut-Off Current	I _{EBO}	V _{BE} = 5V, I _C = 0	-	0.01	μA

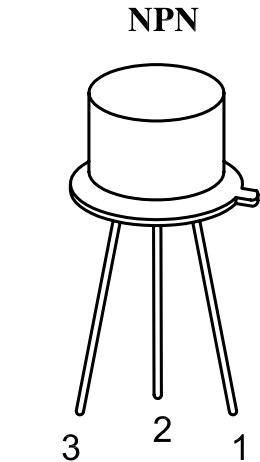
ON Characteristics (Note 1)

DC Current Gain (Note 1)	h _{FE}	V _{CE} = 10V, I _C = 0.1mA	50	-	-
		V _{CE} = 10V, I _C = 10mA	90	-	-
		V _{CE} = 10V, I _C = 150mA	100	300	-
		V _{CE} = 10V, I _C = 150mA, T _A = -55°C	40	-	-
		V _{CE} = 10V, I _C = 500mA	50	-	-
		V _{CE} = 10V, I _C = 1A	15	-	-
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C = 150mA, I _B = 15mA	-	0.2	V
		I _C = 500mA, I _B = 50mA	-	0.5	V
Base-Emitter Saturation Voltage	V _{BE(sat)}	I _C = 150mA, I _B = 15mA	-	1.1	V

Small-Signal Characteristics

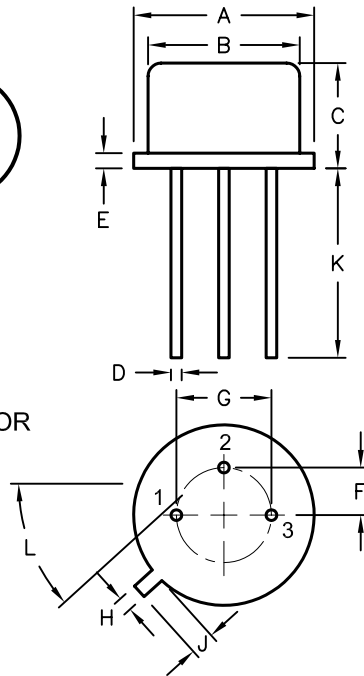
Current Gain-Bandwidth Product	f _T	V _{CE} = 10V, I _C = 50mA, f = 20MHz	100	400	MHz
Output Capacitance	C _{obo}	V _{CB} = 10V, I _E = 0, f = 1MHz	-	12	pF
Input Capacitance	C _{lbo}	V _{BE} = 500mV, I _C = 0, f = 1MHz	-	60	pF
Small-Signal Current Gain	h _{fe}	V _{CE} = 5V, I _C = 1mA, f = 1kHz	80	400	-
Collector-Base Time Constant	rb'C _c	V _{CE} = 10V, I _E = 10mA, f = 1MHz	-	400	ps
Noise Figure	NF	V _{CE} = 10V, I _C = 100μA, f = 1kHz, R _S = 1Kohm	-	4	dB

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



3. COLLECTOR
2. BASE
1. EMITTER

1. EMITTER
2. BASE
3. COLLECTOR



Absolute Maximum Ratings:

- Collector-Base Voltage, V_{CBO} = 140V
- Collector-Emitter Voltage, V_{CEO} = 80V
- Emitter-Base Voltage, V_{EBO} = 7V
- Continuous Collector Current, I_C = 1A
- Total Device Dissipation (T_A = +25°C), P_D = 800mW
Derate above 25°C = 4.6mW/°C
- Total Device Dissipation (T_C = +25°C), P_D = 5W
Derate above 25°C = 28.6mW/°C
- Operating Junction Temperature Range, T_J = -65° to +200°C
- Storage Temperature Range, T_{stg} = -65° to +200°C
- Thermal Resistance, Junction-to-Case, R_{thJC} = 16.5°C/W
- Thermal Resistance, Junction-to-Ambient, R_{thJA} = 89.5°C/W
- Lead Temperature (During Soldering, 1/16" from case, 60sec max), T_L = 300°C



RoHS
Compliant

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

DRAWING TITLE:

Transistor, Bipolar, Metal, TO-39, NPN

SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	2N3019	35C0697.DWG	B
SCALE: NTS		U.O.M.: Millimeters	SHEET: 1 OF 1