multicomp

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	02/03/06	HO	2/6/06	JWM	2/6/06

RoHS Compliant

Description:

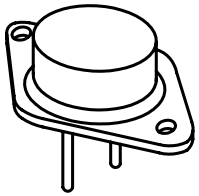
High Power TO-3, NPN, Silicon Transistor For use in power amplifier and switching circuits applications

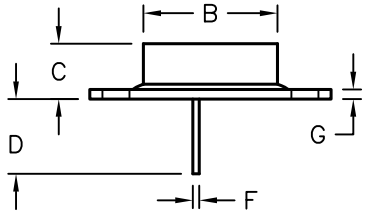
Features:

- High Collector Emitter Sustaining Voltage V_{CEO} = 80V @ I_C = 200MA
- Low Collector Emitter Saturation Voltage $V_{CE(sat)}$ = 0.75V @ I_C =10A

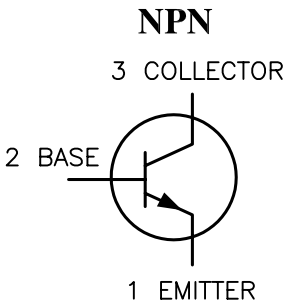
Absolute Maximum Ratings:

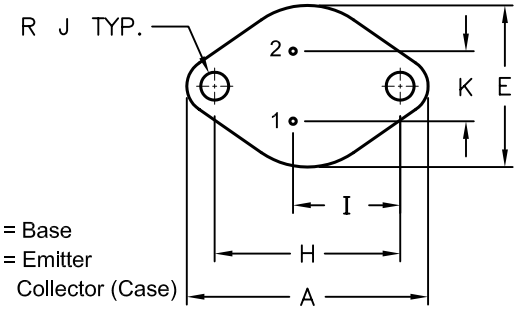
- Collector-Base Voltage, V_{CBO} = 40V
- Collector-Emitter Voltage, V_{CEO} = 40V
- Continuous Collector Current, I_C = 30A
- Base Current, I_B = 7.5A
- Total Device Dissipation (T_C = +25°C), P_D = 200W
  Derate above 25°C = 1.14mW/°C
- Operating Junction Temperature Range, T_J = -65°C to +200°C
- Storage Temperature Range, T_{stg} = -65°C to +200°C





DIM	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.23
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
H	29.90	30.40
I	16.64	17.30
J	3.88	4.36
K	10.67	11.18





TOLERANCES:

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY.

DRAWN BY:	DATE:
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DRAWING TITLE: High Power Transistor, Silicon, TO-3, NPN

SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	2N5301	01H1381.DWG	A

SCALE: NTS | U.O.M.: MILLIMETERS | SHEET: 1 OF 2

Electrical Characteristics: (T_C= +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Max	Unit
OFF Characteristics					
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 200mA, I_B = 0 (Note 1)	40	–	V
			–	–	V
Collector Cut–Off Current	I_{CEO}	V_{CB} = 40V, I_B = 0	–	5	mA
Collector Cut–Off Current	I_{CEX}	V_{CE} = 40V, $V_{EB(off)}$ = 1.5V	–	1	mA
	I_{CBO}	V_{CB} = 40V, I_E = 0	–	1	mA
Emitter Cut–Off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	–	5	mA
ON Characteristics					
DC Current Gain (Note 1)	h_{FE}	V_{CE} = 2V, I_C = 1A	40	–	–
		V_{CE} = 2V, I_C = 15A	15	60	–
		V_{CE} = 4V, I_C = 30A	5	–	–
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10A, I_B = 1A	–	0.75	V
		I_C = 20A, I_B = 2A	–	2	V
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 30A, I_B = 6A	–	3	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10A, I_B = 1A	–	1.7	V
	$V_{BE(sat)}$	I_C = 15A, I_B = 1.5A	–	1.8	V
		I_C = 20A, I_B = 2A	–	2.5	V
Base–Emitter Saturation Voltage	$V_{BE(on)}$	I_C = 15A, V_{CE} = 2V		1.7	V
		I_C = 30A, = V_{CE} 4V	–	3	V
Small-Signal Characteristics					
Current Gain–Bandwidth Product (Note 2)	f_T	V_{CE} = 10V, I_C = 1A, f = 1MHz	2	–	MHz
Small–Signal Current Gain	h_{fe}	V_{CE} = 10V, I_C = 1A, f = 1kHz	40	–	–
Switching Characteristics					
Rise Time	t_r	V_{CC} = 30V, I_C = 10A, I_{B1} = 1A	–	1	us
Storage Time	t_s	V_{CC} = 30V, I_C = 10A, I_{B1} = I_{B2} = 1A	–	2	us
Fall Time	t_f		–	1	us

Note 1. Pulse Test: Pulse Width ≦ 300μs, Duty Cycle ≦ 2%.
Note 2. f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.