multicomp

SPC-F005.DWG

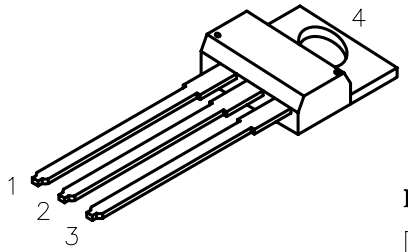
REVISIONS

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

DCP #	REV	DESCRIPTION	DRAWN	DATE	CHECKD	DATE	APPRVD	DATE
1447	A	RELEASED	HO	5/19/04	SF	8/10/04	JC	8/10/04
1885	B	UPDATED TO ROHS COMPLIANCE	EO	02/03/06	HO	2/6/06	HO	2/6/06

Description: Switchmode series TO-220 NPN Silicon Power Transistor. The MJE13005 transistor is designed for high voltage, high speed, Power switching in inductive circuits. They are particularly suited for 115-220V switch-mode applications.

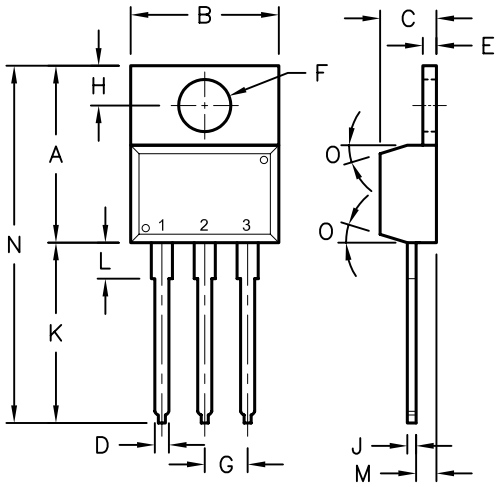
Features:
- Switching regulators
- DC-DC convertors
- Inverters
- Solenoid and relay drivers
- Motor controls

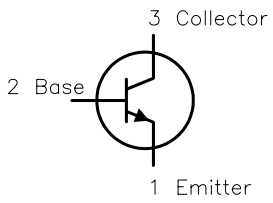


Pin Configuration:
1. Base
2. Collector
3. Emitter
4. Collector

RoHS Compliant

Absolute Maximum Ratings:
- Collector-Emitter Voltage, V_{CEV} = 700V
- Collector-Emitter Voltage, V_{CEO} = 400V
- Emitter-Base Voltage, V_{EBO} = 9V
- Continuous Collector Current, I_C = 4A
- Base Current, I_B = 2A
- Total Device Dissipation (T_C = +25°C), P_D = 75W
  Derate above 25°C = 0.6W/°C
- Operating Junction Temperature Range, T_J = -65°C to +150°C
- Storage Temperature Range, T_{stg} = -65°C to +150°C





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 = 10mA, I_B = 0	400	–	V
Collector Cut-Off Current	I_{CEV}	V_{CE} = 700V, $V_{EB(off)}$ = 1.5V	–	1	mA
Emitter Cut-Off Current	I_{EBO}	V_{EB} = 9V, I_C = 0	–	1	mA
ON Characteristics					
DC Current Gain, Note 1	h_{FE}	V_{CE} = 5V, I_C = 1A	10	60	–
		V_{CE} = 5V, I_C = 2A	8	40	–
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 1A, I_B = 200mA	–	0.5	V
Note 1		I_C = 2A, I_B = 500mA	–	0.6	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 1A, I_B = 200mA		1.2	V
Note 1		I_C = 2A, I_B = 500mA	–	1.6	V
Small-Signal Characteristics					
Current Gain-Bandwidth Product	f_T	V_{CE} = 10V, I_C = 500mA, f = 1MHz	4	–	MHz
Switching Characteristics					
Delay Time	t_d	V_{CC} = 125V, I_C = 2A, I_{B1} = I_{B2} = 0.4A	–	0.1	µs
Rise Time	t_r		–	0.7	
Storage Time	ts	V_{CC} = 125V, I_C = 2A, I_{B1} = I_{B2} = 0.4A	–	4	
Fall Time	t_f		–	0.9	

Note 1: Pulse test: Pulse width ≦300µs, Duty cycle ≦2%.

Dimensions	A	B	C	D	E	F	G	H	J	K	L	M	N	O
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	7°
Min.	14.42	9.63	3.65	–	1.15	3.75	2.29	2.54	–	12.70	2.80	2.03	–	

TOLERANCES:

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY.

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CHECKED BY:	DATE:
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APPROVED BY:	DATE:
JOHN COLE	8/10/04

DRAWING TITLE: Transistor, Power, Silicon, TO-220, NPN

SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	MJE13005	01H0840.DWG	B

SCALE: NTS | U.O.M.: Millimeters | SHEET: 1 OF 1