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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	HO	4/20/04	SF	8/12/04	JC	8/16/04
1885	B	UPDATED TO ROHS COMPLIANCE	EO	02/03/06	HO	2/6/06	HO	2/6/06

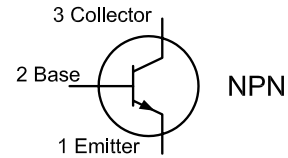
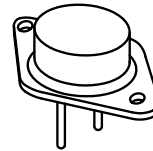
- Features:**
- Switching regulators
  - Inverters
  - Solenoids and relay drivers
  - Motor controls
  - Deflection circuits

**Description:** This TO-3 NPN Transistor is designed for high voltage, high speed, power switching in inductive circuits where fall time is critical. They are particularly suited for line operated switchmode applications.



**Absolute Maximum Ratings:**

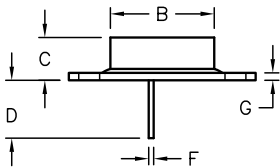
- Collector-Emitter Voltage,  $V_{CEV} = 700V$
- Collector-Emitter Voltage,  $V_{CEO} = 400V$
- Emitter-Base Voltage,  $V_{EBO} = 6V$
- Continuous Collector Current,  $I_C = 20A$
- Base Current,  $I_B = 10A$
- Total Device Dissipation ( $T_C = +25^\circ C$ ),  $PD = 175W$   
Derate above  $25^\circ C = 1W/^\circ C$
- Operating Junction Temperature Range,  $T_J = -65^\circ$  to  $+200^\circ C$
- Storage Temperature Range,  $T_{stg} = -65^\circ$  to  $+200^\circ C$



**Electrical Characteristics: ( $T_A = +25^\circ C$  unless otherwise specified)**

Parameter	Symbol	Test Conditions	Min	Max	Unit
<b>OFF Characteristics</b>					
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 100mA, I_B = 0$	400	-	V
Collector Cut-Off Current	$I_{CEV}$	$V_{CE} = 700V, V_{EB(off)} = 1.5V$	-	0.25	mA
	$I_{CER}$	$V_{CE} = 700V, R_{BE} = 50 \text{ ohm}, T_C = +100^\circ C$	-	5	mA
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB} = 6V, I_C = 0$	-	1	mA
<b>ON Characteristics</b>					
DC Current Gain, Note 1	$h_{FE}$	$V_{CE} = 5V, I_C = 5A$	10	60	-
Collector-Emitter Saturation Voltage Note 1	$V_{CE(sat)}$	$I_C = 10A, I_B = 2A$	-	1.8	V
		$I_C = 20A, I_B = 6.7A$	-	5	V
Base-Emitter Saturation Voltage, Note 1	$V_{BE(sat)}$	$I_C = 10A, I_B = 2A$		1.8	V
<b>Small-Signal Characteristics</b>					
Output Capacitance	$C_{obo}$	$V_{CB} = 10V, I_B = 0, f = 1kHz$	125	500	pF
<b>Switching Characteristics</b>					
Delay Time	$t_d$	$V_{CC} = 250V, I_C = 10A, V_{BE(off)} = 5V, I_{BI} = 2A$	-	0.1	$\mu s$
Rise Time	$t_r$		-	0.7	$\mu s$
Storage Time	$t_s$	$V_{CC} = 250V, I_C = 10A, V_{BE(off)} = 5V, I_{BI} = 2A$	-	4	$\mu s$
Fall Time	$t_f$		-	0.7	$\mu s$

Note 1. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .



Pin 1 = Base  
Pin 2 = Emitter  
Collector (Case)

DIM	MIN	MAX
A	38.75	39.96
B	19.28	22.23
C	7.96	9.28
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

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	4/20/04
CHECKED BY:	DATE:
STEVE FEIWELL	8/12/04
APPROVED BY:	DATE:
JOHN COLE	8/16/04

DRAWING TITLE: <b>Transistor, Power Switching, High Voltage, TO-3, NPN</b>			
SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	MJ13333	01H0846.DWG	B
SCALE:	NTS	U.O.M.: Millimeters	SHEET: 1 OF 1