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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	6/27/03	JWM	6/27/03	DJC	6/27/03
1885	B	UPDATED TO ROHS COMPLIANCE	EO	02/03/06	HO	2/6/06	HO	2/6/06

Features:

- SWITCHING REGULATORS
- CONTINUOUS COLLECTOR CURRENT- $I_C = 20mA$
- INVERTERS
- SOLENOID AND RELAY DRIVERS
- MOTOR CONTROLS

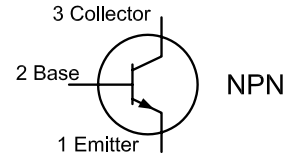
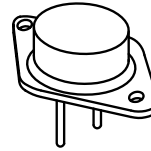
Description: SWITCHMODE SERIES TO-3 NPN SILICON POWER DARLINGTON TRANSISTOR WITH BASE-EMITTER SPEEDUP DIODE. The MJ10005 darlington transistor is designed for high voltage, high speed, power switching in inductive circuits where fall time is critical. They are particularly suited for line operated switch-mode applications.

Absolute Maximum Ratings:

- Collector-Emitter Voltage, $V_{CEV} = 500V$
- Collector-Emitter Voltage, $V_{CEO} = 400V$
- Emitter-Base Voltage, $V_{EBO} = 8V$
- Continuous Collector Current, $I_C = 20A$
- Base Current, $I_B = 2.5A$
- Total Device Dissipation ($T_C = +25^\circ C$), $P_D = 175W$
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 $+200^\circ C$

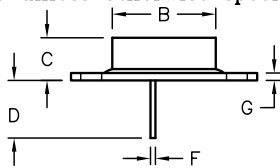


RoHS Compliant

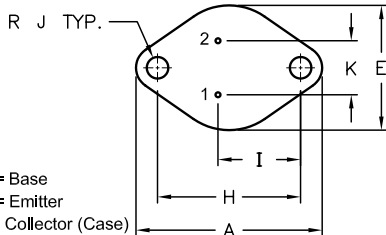


Electrical Characteristics:

($T_A = +25^\circ C$ unless otherwise specified)



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



Parameter	Symbol	Test Conditions	Min	Max	Unit
OFF Characteristics					
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 250mA, I_B = 0$	400	-	V
Collector Cut-Off Current	I_{CEV}	$V_{CE} = 500V, V_{EB(off)} = 1.5V$	-	0.25	mA
	I_{CER}	$V_{CE} = 500V, R_{BE} = 50 \text{ ohm}, T_C = +100^\circ C$	-	5	mA
Emitter Cut-Off Current	I_{EBO}	$V_{EB} = 2V, I_C = 0$	-	175	mA
ON Characteristics (Note 1)					
DC Current Gain	h_{FE}	$V_{CE} = 5V, I_C = 5A$	50	600	-
		$V_{CE} = 5V, I_C = 10A$	40	400	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10A, I_B = 400mA$	-	1.9	V
		$I_C = 20A, I_B = 2A$	-	3	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10A, I_B = 400mA$	-	2.5	V
Diode Forward Voltage	V_F	$I_F = 10A$	-	5	V
Small-Signal Characteristics					
Output Capacitance	C_{obo}	$V_{CB} = 10V, I_B = 0, f = 100MHz$	100	-	pF
Small-Signal Current Gain (Note 2)	h_{fe}	$V_{CE} = 10V, I_C = 1A, f = 1MHz$	10	-	-
Switching Characteristics					
Delay Time	t_d	$V_{CC} = 250V, I_C = 10A, V_{BE(off)} = 5V, I_{Bt} = 400mA$	-	0.2	μs
Rise Time	t_r		-	0.6	μs
Storage Time	t_s	$V_{CC} = 250V, I_C = 10A, V_{BE(off)} = 5V, I_{Bt} = 400mA$	-	1.5	μs
Fall Time	t_f		-	0.5	μs

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

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TOLERANCES: UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY.

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DRAWING TITLE: Transistor, Power Switching, High Voltage, Bipolar, TO-3, NPN			
SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	MJ10005	01H0845.DWG	B
SCALE:	NTS	U.O.M.: Millimeters	SHEET: 1 OF 1