

REVISIONS

DCP #	REV	DESCRIPTION	DRAWN	DATE	CHECKD	DATE	APPRD	DATE
1447	A	RELEASED	HO	6/27/03	JWM	6/27/03	DJC	6/27/03

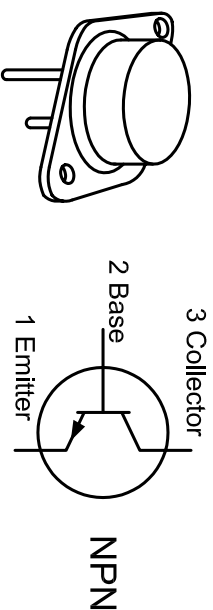
Features:

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

Absolute Maximum Ratings:

- Collector—Emitter Voltage, $V_{CEV} = 500V$
- Collector—Emitter Voltage, $V_{CE0} = 400V$
- Emitter—Base Voltage, $V_{EBO} = 8V$
- Continuous Collector Current, $I_c = 20A$
- Base Current, $I_B = 2.5 A$
- 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 $+200^\circ C$

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.



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

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}	$V_{CE} = 500V, V_{BE(off)} = 1.5V$	—	0.25	mA
Emitter Cut-Off Current	I_{CEB}	$V_{CE} = 500V, R_{BE} = 50 \text{ ohm}, T_c = +100^\circ C$	—	5	mA
ON Characteristics (Note 1)	I_{EBO}	$V_{EB} = 2V, I_c = 0$	—	175	mA

DC Characteristics

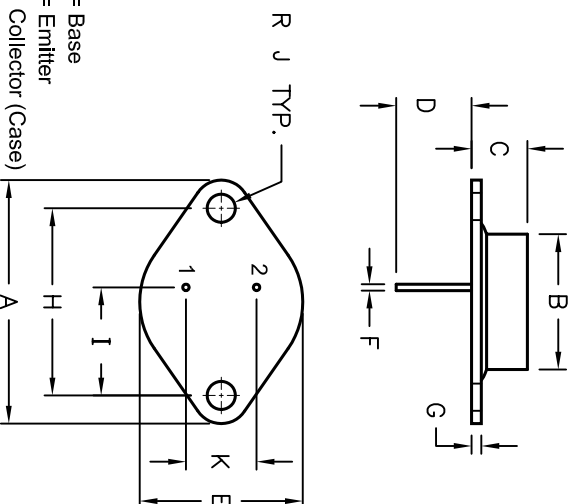
DC Current Gain	h_{FE}	$V_{CE} = 5V, I_c = 5A$	50	600	—
Collector—Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{CE} = 5V, I_c = 10A$	40	400	—
Base—Emitter Saturation Voltage	$V_{BE(sat)}$	$I_c = 10A, I_B = 400mA$	—	1.9	V
Diode Forward Voltage	V_F	$I_c = 20A, I_B = 2A$	—	3	V
		$I_c = 10A, I_B = 400mA$	—	2.5	V
		$I_B = 10A$	—	5	V

Small-Signal Characteristics

Output Capacitance	C_{obo}	$V_{OB} = 10V, I_B = 0, f = 100MHz$	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	$V_{OC} = 250V, I_c = 10A, V_{BE(off)} = 5V, I_{B1} = 400mA$	—	0.2	μs
Rise Time	t_r	$V_{OC} = 250V, I_c = 10A, V_{BE(off)} = 5V, I_{B1} = 400mA$	—	0.6	μs
Storage Time	t_s	$V_{OC} = 250V, I_c = 10A, V_{BE(off)} = 5V, I_{B1} = 400mA$	—	1.5	μs
Fall Time	t_f		—	0.5	μs



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

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

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:

HISHAM ODISH

DATE:

6/27/03

CHECKED BY:

JEFF MCWICKER

DATE:

6/27/03

APPROVED BY:

DANIEL CAREY

DATE:

6/27/03

DRAWING TITLE:

Transistor, Power Switching, High Voltage, Bipolar, TO-3, NPN

SIZE

A

DWG. NO.

MJ10005

ELECTRONIC FILE

01H0845.DWG

REV

A

SCALE:

NTS

U.O.M.:

Millimeters

SHEET:

1 OF 1