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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
1885	A	RELEASED	EO	02/03/06	HO	2/6/06	JWM	2/6/06

**Description:** HIGH CURRENT TO-3 NPN SILICON POWER TRANSISTOR. Designed for use in high power amplifier and switching circuit applications.

**Features:**

- High Current Capability  $I_C$  Continuous = 50A
- DC Current Gain  $h_{FE15-60}$   $I_C = 20A$
- Low Collector Emitter Saturation Voltage  $V_{CE(sat)1V}$   $I_C = 25A$



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

**Absolute Maximum Ratings:**

- Collector-Base Voltage,  $V_{CBO} = 80V$
- Collector-Emitter Voltage,  $V_{CEO} = 80V$
- Emitter-Base Voltage,  $V_{EBO} = 5V$
- Continuous Collector Current,  $I_C = 50A$   
Base Current  $I_B = 15A$
- Total Device Dissipation ( $T_C = +25^\circ C$ ),  $P_D = 300W$   
Derate above  $25^\circ C = 1.715mW/^\circ C$
- Operating Junction Temperature Range,  $T_J = -65^\circ$  to  $+200^\circ C$
- Storage Temperature Range,  $T_{stg} = -65^\circ$  to  $+200^\circ C$

Parameter	Symbol	Test Conditions	Min	Max	Unit
<b>OFF Characteristics</b>					
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = .2A, I_B = 0$	80	-	V
Collector Cut-Off Current	$I_{CEX}$	$V_{CE} = 80V, V_{EB(off)} = 1.5V$	-	2	mA
	$I_{CBO}$	$V_{CB} = 80V, I_E = 0$	-	2	mA
Collector Cut-Off Current	$I_{CEO}$	$V_{CB} = 40V, I_E = 0$	-	1	mA
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$	-	5	mA

**ON Characteristics (Note 1)**

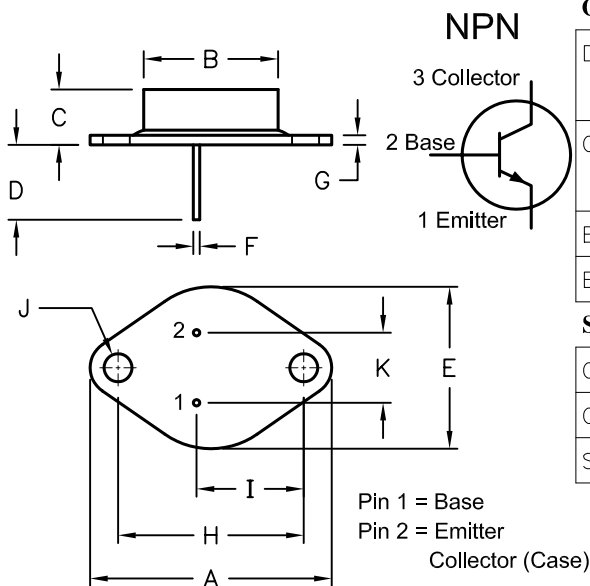
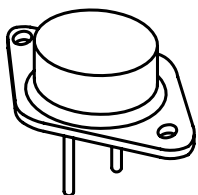
DC Current Gain	$h_{FE}$	$V_{CE} = 2V, I_C = 25A$	15	60	-
		$V_{CE} = 5V, I_C = 50A$	5	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 25A, I_B = 2.5A$	-	1	V
		$I_C = 50A, I_B = 10A$	-	5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 25A, I_B = 2.5A$	-	2	V
Base-Emitter On Voltage	$V_{BE(on)}$	$I_C = 25A, V_{CE} = 2V$	-	2	V

**Small-Signal Characteristics**

Current Gain-Bandwidth Product (Note 1)	$f_T$	$V_{CE} = 10V, I_C = 5A, f = 1MHz$	2	-	MHz
Output Capacitance	$C_{obo}$	$V_{CB} = 10V, I_E = 0, f = .1MHz$	-	1200	pF
Small-Signal Current Gain	$h_{fe}$	$V_{CE} = 5V, I_C = 10A, f = 1kHz$	15	-	-

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.



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	1.45	-
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

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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.

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DRAWING TITLE: <b>Transistor, Bipolar, Metal, TO-3, NPN</b>			
SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	2N5686	01H1383.DWG	A
SCALE: NTS	U.O.M.: Millimeters	SHEET: 1 OF 1	