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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	12/9/03	JW	2/20/04	JC	2/20/04
1885	B	UPDATED TO ROHS COMPLIANCE	EO	02/03/06	HO	2/6/06	HO	2/6/06

Description: HIGH POWER TO-3 NPN SILICON TRANSISTOR For use in power amplifier and switching circuits applications

Features:

- High Collector Emitter Sustaining Voltage: $V_{CE0} 80V @ I_C 200mA$
- Low Collector Emitter Saturation Voltage: $V_{CE(sat)} 1V @ I_C 10A$

Absolute Maximum Ratings:

- Collector-Base Voltage, $V_{CBO} = 80V$
- Collector-Emitter Voltage, $V_{CEO} = 80V$
- Continuous Collector Current, $I_C = 20A$
- Base Current = 7.5A
- Total Device Dissipation ($T_C = +25^\circ C$), $P_D = 200W$
Derate above $25^\circ C = 1.14mW/^\circ C$
- 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
OFF Characteristics					
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 200mA, I_B = 0$	80	-	V
Collector Cut-Off Current	I_{CEO}	$V_{CE} = 80V, I_B = 0$	-	5	mA
Collector Cut-Off Current	I_{CEX}	$V_{CE} = 80V, V_{EB(off)} = 1.5V$	-	1	mA
	I_{CBO}	$V_{CB} = 80V, I_B = 0$	-	1	mA
Emitter Cut-Off Current	I_{EBO}	$V_{EB} = 5V, I_C = 0$	-	5	mA

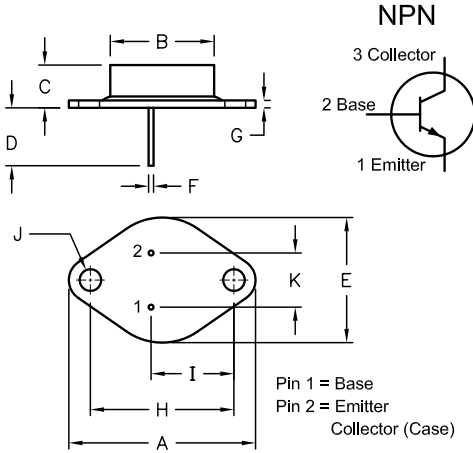
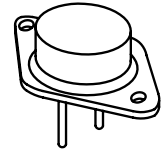
ON Characteristics (see note 1)

DC Current Gain	β_{FE}	$V_{CE} = 2V, I_C = 1A,$	40	-	-
		$V_{CE} = 2V, I_C = 10A$	15	60	-
		$V_{CE} = 4V, I_C = 20A,$	5	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10A, I_B = 1A,$	-	1	V
		$I_C = 15A, I_B = 1.5A,$	-	1.5	V
		$I_C = 20A, I_B = 4A,$	-	2	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10A, I_B = 1A,$	-	1.7	V
		$I_C = 15A, I_B = 1.5A,$	-	2	V
		$I_C = 20A, I_B = 4A,$	-	2.5	V
Base-Emitter On Voltage	$V_{BE(on)}$	$I_C = 10A, V_{CE} = 2V,$	-	1.5	V
		$I_C = 20A, V_{CE} = 4V,$	-	2.5	V

Small-Signal Characteristics

Current Gain-Bandwidth Product	f_T	$V_{CE} = 10V, I_C = 1A, f = 1MHz,$	2	-	MHz
Small-Signal Current Gain	h_{fe}	$V_{CE} = 10V, I_C = 1A, f = 1kHz$	40	-	-
Switching Characteristics					
Rise Time	t_r	$V_{CC} = 30V, I_C = 10A, I_{B1} = I_{B2} = 1A$	-	1	us
Storage Time	t_s	$V_{CC} = 30V, I_C = 10mA, I_{B1} = I_{B2} = 1A$	-	2	us
Fall Time	t_f		-	1	us

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



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.

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CHECKED BY:	DATE:
JEFF MCVICKER	2/20/04
APPROVED BY:	DATE:
JOHN COLE	2/20/04

DRAWING TITLE: Transistor, Bipolar, Metal, TO-3, NPN			
SIZE	DWG. NO.	ELECTRONIC FILE	REV
A	2N5303	01H1382.DWG	B
SCALE:	NTS	U.O.M.: Millimeters	SHEET: 1 OF 1