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,		REVISIONS			DOC. NO. SPC-F005 * Effective: 7/8/02 * DCP I					
	DCP # REV DESCRIPTION		DESCRIPTION	DRAWN	DATE	CHECKD	DATE	APPRVD	DATE	
	1885	Α	RELEASED	BYF	02/03/06	НО	2/6/06	JWM	2/6/06	

SPC-F005.DWG

Description:

High Power TO-3, NPN, Silicon Transistor For use in power amplifier and switching circuits applications

Features:

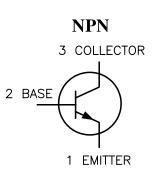
- High Collector Emitter Sustaining Voltage $V_{\text{CEO}} =$ 80V @ $I_{\text{C}} =$ 200MA
- Low Collector Emitter Saturation Voltage $V_{\text{CE(sat)}} = 0.75 \text{V}$ @ $I_{\text{C}} = 10 \text{A}$

Absolute Maximum Ratings:

- Collector-Base Voltage, V_{CBO} = 40V
- Collector-Emitter Voltage, $V_{CEO}=40V$ Continuous Collector Current, $I_{C}=30A$
- Base Current, $I_B = 7.5A$
- Total Device Dissipation ($T_C = +25^{\circ}C$), $P_D = 200W$

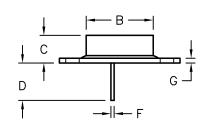
Derate above 25°C = 1.14mW/°C

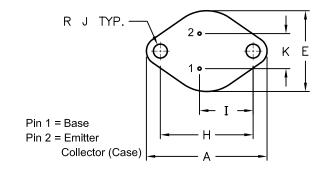
- Operating Junction Temperature Range, $T_J = -65^{\circ}\text{C}$ to $+200^{\circ}\text{C}$
- Storage Temperature Range, $T_{sta} = -65^{\circ}\text{C}$ to +200°C



DIM	MIN	MAX
А	38.75	39.96
В	19.28	22.23
С	7.96	9.23
D	11.18	12.19
E	25.20	26.67
F	0.92	1.09
G	1.38	1.62
Н	29.90	30.40
- 1	16.64	17.30
J	3.88	4.36
K	10.67	11.18







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:
BASAM YOUSIF	02/03/06
CHECKED BY:	DATE:
HISHAM ODISH	2/6/06
APPROVED BY:	DATE:
JEEF MCVICKER	2/6/06

DRAWIN			Power
CI7E	DWC	NΩ	

· Transistor, Silicon, TO-3, NPN

SIZE	DWG. NO.			ELEC.	TRONIC FIL	E		REV
Α	2N5301			01	3	Α		
 SCALE	E: NTS		U.O.M.: MILLIMETERS		SHEET:	1	OF	2

Electrical Characteristics: $(T_C = +25^{\circ}C \text{ unless otherwise specified})$

Parameter

OFF Characteristics									
Collector-Emitter Breakdown Voltage		$I_{\rm C}$ = 200mA, $I_{\rm B}$ = 0 (Note 1)		ı	V				
	(BN)OLO	10 = 20011A, 18 = 0 (Note 1)		_	V				
Collector Cut-Off Current	I_{CEO}	$V_{CB} = 40V, I_{B} = 0$	_	5	mA				
Collector Cut-Off Current	I _{CEX}	$V_{CE} = 40V, V_{EB(off)} = 1.5V$	_	1	mA				
	I _{CBO}	$V_{CB} = 40V, I_{E} = 0$	_	1	mA				
Emitter Cut-Off Current	I _{EBO}	$V_{EB} = 5V, I_{C} = 0$	_	5	mA				

Symbol

Test Conditions

| Min | Max | Unit |

ON Characteristics

DC Current Gain (Note 1)		$V_{CE} = 2V, I_{C} = 1A$	40	_	_
	h _{FE}	$V_{CE} = 2V, I_{C} = 15A$	15	60	_
		$V_{CE} = 4V, I_{C} = 30A$	5	_	_
ollector—Emitter Saturation Voltage	I_{C} = 10A, I_{B} = 1A	_	0.75	V	
	CE(sat)	$I_C = 20A$, $I_B = 2A$	_	2	V
Collector—Emitter Saturation Voltage	V _{CE(sat)}	$I_C = 30A$, $I_B = 6A$	_	3	V
Base—Emitter Saturation Voltage	V _{BE(sat)}	I_{C} = 10A, I_{B} = 1A	_	1.7	V
	V BE(sat)	$I_{C} = 15A, I_{B} = 1.5A$	_	1.8	V
*BE(so	BE(sat)	$I_C = 20A$, $I_B = 2A$	_	2.5	V
Base—Emitter Saturation Voltage	V BE(on)	$I_C = 15A$, $V_{CE} = 2V$		1.7	V
	BE(OII)	$I_C = 30A$, = $V_{CE} 4V$	_	3	V

Small-Signal Characteristics

Current Gain-Bandwidth Product (Note 2)	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	tr	$V_{CC} = 30V, I_{C} = 10A, I_{B1} = 1A$	_	1	us
Storage Time	ts	$V_{CC} = 30V, I_{C} = 10A, I_{B1} = I_{B2} = 1A$	_	2	us
Fall Time	t _f		_	1	us

- Note 1. Pulse Test: Pulse Width \leq 300 μ 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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SPC-F005.DWG	DOC. NO. SPC-F005 * Effective: 7/8/02 * DCP No: 1398	SCAL	E: NTS	U.O.M.: MILLIMETERS	SHEET: 2 0	F 2