ESCC
European Space Components Coordination

Pages 1 to 15

TRANSISTORS, MATCHED DUAL, PNP

BASED ON TYPE 2N3350

ESCC Detail Specification No. 5207/003

as applicable

Issue ~~2~~ 3 - Draft A	~~February 2008~~

Document Custodian: European Space Agency - see https://escies.org

as applicable

LEGAL DISCLAIMER AND COPYRIGHT

DOCUMENTATION CHANGE NOTICE

(Refer to https://escies.org for ESCC DCR content)

DCR No.	CHANGE DESCRIPTION
~~187, 328~~	Specification up issued to incorporate editorial and technical changes per DCRs.

447, tbd

when stipulated in Test Methods and Procedures of the ESCC Generic Specification.

Characteristics	Symbols	Maximum Ratings	Unit	Remarks
Collector-Base Voltage	V_{CBO}	-60	V	Over entire operating temperature range
Collector-Emitter Voltage	V_{CEO}	-45	V	
Emitter-Base Voltage	V_{EBO}	-6	V	
Collector Current	I_C	30	mA	Continuous
Power Dissipation (One Section)				At $T_{amb} \leq +25^{\circ}C$ ~~Note 1~~
For TO-77 and CCP	P_{totO1}	0.3	W	
~~For CCP~~	~~P_{totO2}~~	~~0.6 (Note 2)~~	~~W~~	
For TO-77	$P_{totO\cancel{3}2}$	0.6	W	At $T_{case} \leq +25^{\circ}C$ ~~Note 1~~
Power Dissipation (Both Sections)				At $T_{amb} \leq +25^{\circ}C$ ~~Note 1~~
For TO-77 and CCP	P_{totB1}	0.6	W	
~~For CCP~~	~~P_{totB2}~~	~~1.2 (Note 2)~~	~~W~~	
For TO-77	$P_{totB\cancel{3}2}$	1.2	W	At $T_{case} \leq +25^{\circ}C$ ~~Note 1~~
Operating Temperature Range	T_{op}	-55 to +200	°C	Note ~~3~~ 2
Storage Temperature Range	T_{stg}	-65 to +200	°C	Note ~~3~~ 2
Soldering Temperature For TO-77 For CCP	T_{sol}	 +260 +245	°C	 Note ~~4~~ 3 Note ~~5~~ 4

make ° symbols bigger

see attached

NOTES:

1. ~~For T_{amb} or T_{case} > +25°C, derate linearly to 0W at +200°C.~~ Thermal Resistance, Junction-to-case
~~2. When mounted on a 15 x 15 x 0.6mm ceramic substrate.~~
2. ~~3~~ For Variants with tin-lead plating or hot solder dip lead finish all testing performed at $T_{amb} > +125^{\circ}C$ shall be carried out in a 100% inert atmosphere.
3. ~~4~~ Duration 10 seconds maximum at a distance of not less than 1.5mm from the device body and the same lead shall not be resoldered until 3 minutes have elapsed.
4. ~~5~~ Duration 5 seconds maximum and the same terminal shall not be resoldered until 3 minutes have elapsed.

only applies to TO-77 packaged Variants.

Thermal Resistance, Junction-to-Ambient	$R_{th(j-a)}$	583.3 291.7	°C/W	For one section For both sections
Thermal Resistance, Junction-to-Case	$R_{th(j-c)}$	291.7 145.8	°C/W	For one section For both sections Note 1

Characteristics	Symbols	MIL-STD-750 Test Method	Test Conditions	Limits		Units
				Min	Max	
Small-Signal Input Impedance	h_{ie}	3201	I_C=-1mA V_{CE}=-5V f=1kHz Note 2	3.7	20	kΩ
Small-Signal Output Impedance	h_{oe}	3216	I_C=-1mA V_{CE}=-5V f=1kHz Note 2	-	100	µmho
Noise Figure	NF	3246	I_C=-10µA V_{CE}=-5V R_S=10kΩ BW=15.7kHz Note 2	-	4	dB

NOTES:

1. Pulse measurement: Pulse Width ≤ 300µs, Duty Cycle ≤ 2%.
2. For AC characteristics read and record measurements shall be performed on a sample of 32 components with 0 failures allowed. Alternatively a 100% inspection may be performed.

2.4.2 High and Low Temperatures Electrical Measurements

Characteristics	Symbols	MIL-STD-750 Test Method	Test Conditions Note 1	Limits		Units
				Min	Max	
Collector-Base Cut-off Current	I_{CBO}	3036	T_{amb}=+150(+0-5)°C V_{CB}=-45V, Bias Condition D	-	-10	µA
Forward-Current Transfer Ratio 2	h_{FE2}	3076	T_{amb}=-55(+5-0)°C I_C=-1mA V_{CE}=-5V	70	-	-
Forward-Current Transfer Ratio Comparison	h_{FE1-1}/h_{FE1-2}	3076	T_{amb}=-55 to +125°C I_C=-10µA ; V_{CE} =-5V	0.9	1.1	-
Base-Emitter Voltage Differential Change	$\vert\Delta(V_{BE1}-V_{BE2})\Delta T_{amb}\vert$ 1	3066	T_{amb}=-55(+5-0)°C to +25±3°C I_C=-10µA V_{CE}=-5V	-	800	µV
	$\vert\Delta(V_{BE1}-V_{BE2})\Delta T_{amb}\vert$ 2	3066	T_{amb}=+25±3°C to +125(+5-0)°C I_C=-10µA V_{CE}=-5V	-	1000	

bigger
o
symbols

NOTES:

1. Read and record measurements shall be performed on a sample of 5 components with 0 failures allowed. Alternatively a 100% inspection may be performed.

2.5 PARAMETER DRIFT VALUES

Unless otherwise specified, the measurements shall be performed at T_{amb}=+22 ±3°C.

2.7 HIGH TEMPERATURE REVERSE BIAS BURN-IN CONDITIONS

Characteristics	Symbols	Test Conditions	Units
Case Temperature	T_{case}	+150 (+0 -5)	°C
Collector-Base Voltage	V_{CB}	-60	V
Emitter-Base Voltage	V_{EB}	-6	V
Duration	t	72 minimum	hrs

2.8 POWER BURN-IN CONDITIONS

Characteristics	Symbols	Test Conditions	Units
Ambient Temperature	T_{amb}	+25~~±3~~ to +50	°C
Power Dissipation (Both Sections)	P_{totB}	As per Maximum Ratings. Derate P_{totB1} ~~derated~~ at the chosen T_{amb} using the specified $R_{th(j-a)}$.	W
Collector-Base Voltage	V_{CB}	-30	V

2.9 OPERATING LIFE CONDITIONS

The conditions shall be as specified for Power Burn-in.

P

APPENDIX 'A'

S -

AGREED DEVIATIONS FOR STMICROELECTRONICS (F)

ITEMS AFFECTED	DESCRIPTION OF DEVIATIONS
Deviations from Production Control-Chart F2	Special In-process Control Internal Visual Inspection. For CCP packages the criteria specified for voids in the fillet and minimum die mounting material around the visible die perimeter for die mounting defects may be omitted providing that a radiographic inspection to verify the die-attach process is performed on a sample basis in accordance with STMicroelectronics procedure 0076637.
Deviations from Room Temperature Electrical Measurements	All AC characteristics (Room Temperature Electrical Measurement Note 2) may be considered guaranteed but not tested if successful pilot lot testing has been performed on the wafer lot which includes AC characteristic measurements per the Detail Specification. A summary of the pilot lot testing shall be provided if required by the Purchase Order.
Deviations from High and Low Temperatures Electrical Measurements	All characteristics specified may be considered guaranteed but not tested if successful pilot lot testing has been performed on the wafer lot which includes characteristic measurements at high and low temperatures per the Detail Specification. A summary of the pilot lot testing shall be provided if required by the Purchase Order.
Deviations from Screening Tests - Chart F3	Solderability is not applicable unless specifically stipulated in the Purchase Order.

(Approved DCR 447 refers)