



## DOCUMENT CHANGE REQUEST

DCR number 514

Changes required for: General

Originator: S Jeffery - ESCC

Date: 2009/05/06

Date sent: 2009/05/06

Organisation: ESA/ESTEC

Status: IMPLEMENTED

Title: Transistors High Power NPN, based on types 2N5664 through 2N5667

Number: 5203/038

Issue: 2

Other documents affected:

Page:

See attachment

Paragraph:

See attachment

Original wording:

Proposed wording:

Update the Maximum Ratings table (see the attachment for details) so that this detail spec is clear, complete and the content and format is in-line with other detail specifications for similar Part Types.

Justification:

Improve the content and clarity of the spec.

Attachments:

5203038\_Issue\_3\_-\_Draft\_A.pdf, null

Modifications:

Page 6: Original Note 2 to Maximum Ratings – add “, and any handling,” between “testing” and “performed”.

Approval signature:

Date signed:

2009-05-06



Pages 1 to 20

## TRANSISTORS, HIGH POWER, NPN

**BASED ON TYPE 2N5664, 2N5665, 2N5666 AND 2N5667**

**ESCC Detail Specification No. 5203/038**

as applicable

Issue <del>2</del> 3 - Draft A	April 2008
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Document Custodian: European Space Agency - see <https://escies.org>



as applicable

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DCR No.	CHANGE DESCRIPTION
<del>328</del>	Specification up issued to incorporate editorial and technical changes per DCR.

A handwritten note "tbd" is circled and connected by a line to the "328" in the table above.

tbd

## 1.5

**MAXIMUM RATINGS**

The maximum ratings shall not be exceeded at any time during use or storage.

Maximum ratings shall only be exceeded during testing to the extent specified in this specification and when stipulated in Test Methods and Procedures of the ESCC Generic Specification.


Characteristics	Symbols	Maximum Ratings	Unit	Remarks
Collector-Base Voltage Variants 01, 02, 05, 06, 09, 10 Variants 03, 04, 11	$V_{CBO}$	250 400	V	Over $T_{op}$
Collector-Emitter Voltage Variants 01, 02, 05, 06, 09, 10 Variants 03, 04, 11	$V_{CEO}$	200 300	V	Over $T_{op}$ Note 2
Emitter-Base Voltage	$V_{EBO}$	6	V	Over $T_{op}$
Collector Current	$I_C$	5	A	Continuous Note 2
Base Current	$I_B$	1	A	Continuous
Power Dissipation For TO-66 For TQ-5 and TO-39	$P_{tot}$	30 15	W	At $T_{case} < +100^{\circ}C$ Note 1
Operating Temperature Range	$T_{op}$	-65 to +200	$^{\circ}C$	Note 1
Storage Temperature Range	$T_{stg}$	-65 to +200	$^{\circ}C$	Note 1
Soldering Temperature	$T_{sol}$	+260	$^{\circ}C$	Note 3
Thermal Resistance Junction to Case For TO-66 For TO-5 and TQ-39	$R_{th(j-c)}$	3.3 6.7	$^{\circ}C/W$	

See attached

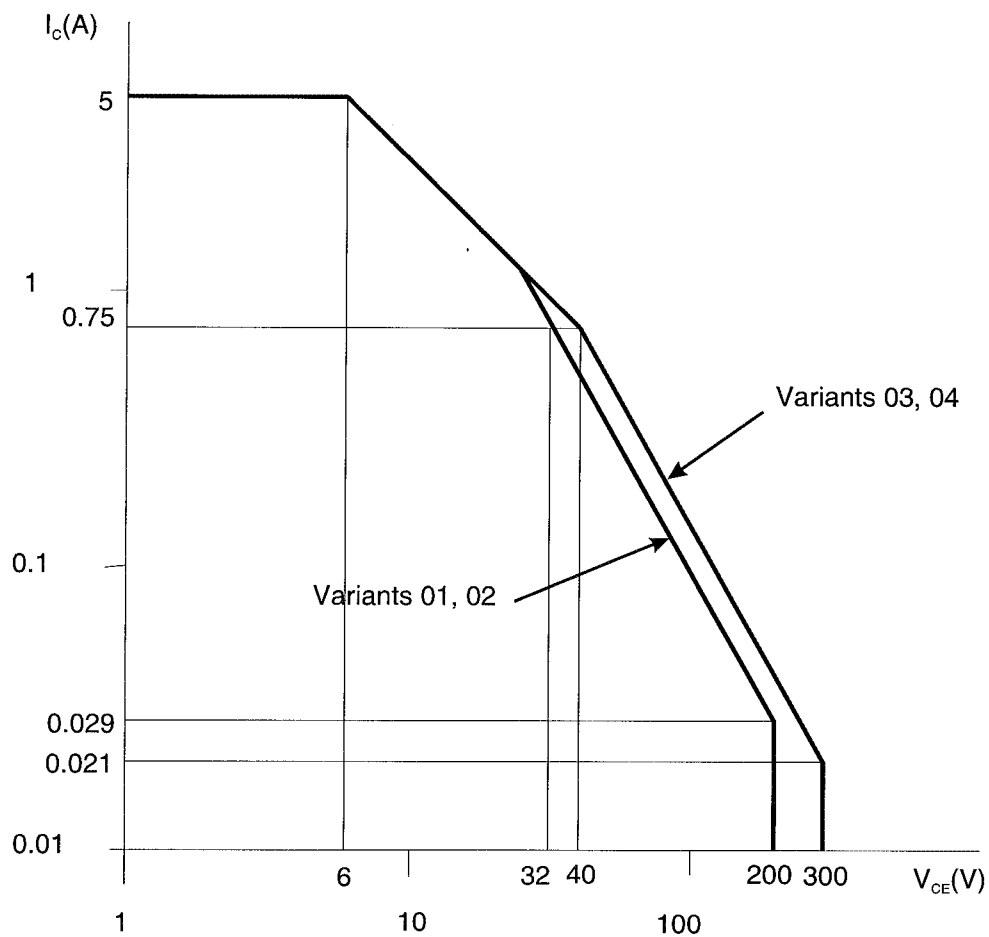
**NOTES:**

1. For  $T_{case} > +100^{\circ}C$ , derate linearly to 0W at +200 $^{\circ}C$ .
2. For Variants with tin-lead plating or hot solder dip lead finish all testing performed at  $T_{amb} > +125^{\circ}C$

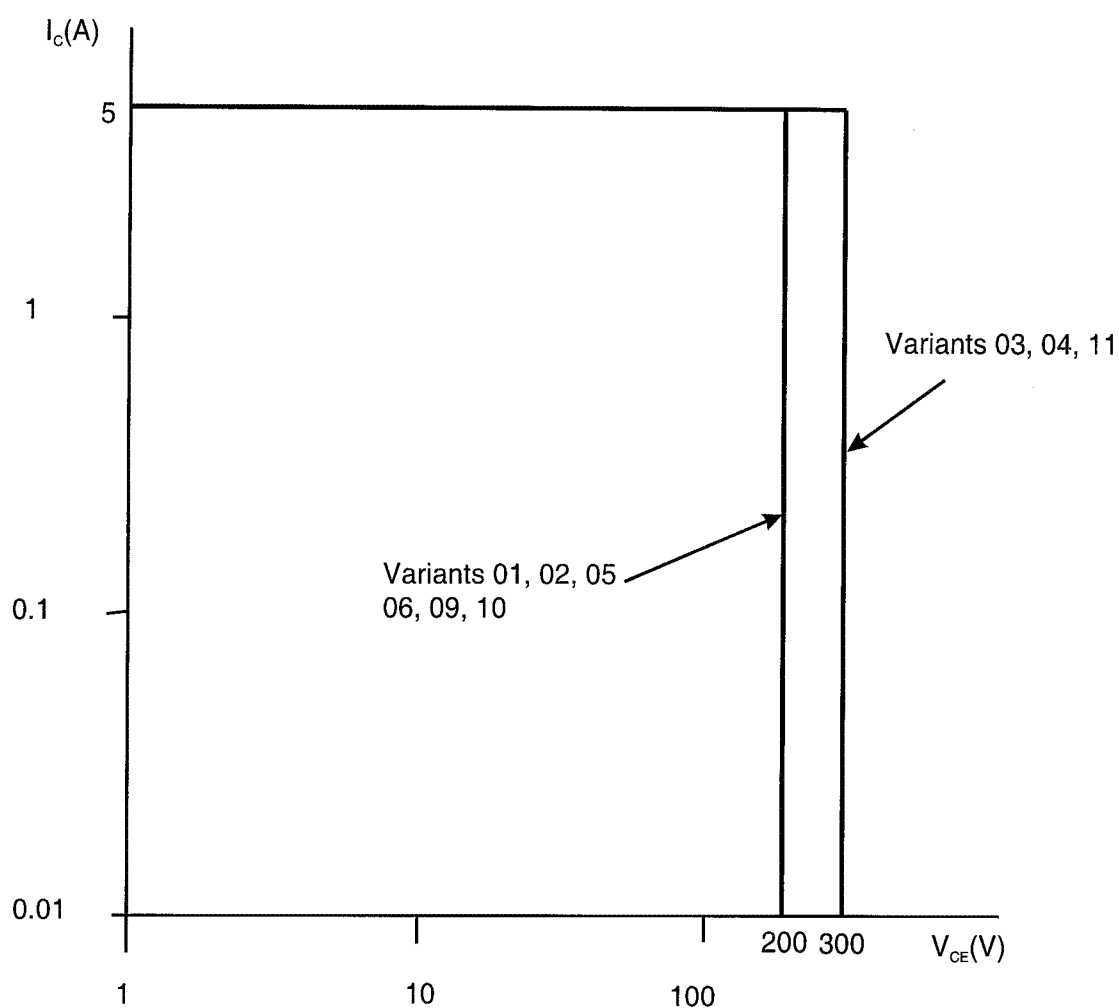
Power Dissipation For TO-66 For TO-5 and TO-39	$P_{tot1}$	2.5 1.2	W	At $T_{amb} \leq +25^{\circ}\text{C}$
	$P_{tot2}$	30 15	W	At $T_{case} \leq +100^{\circ}\text{C}$
Thermal Resistance, Junction-to-Ambient For TO-66 For TO-5 and TO-39	$R_{th(j-a)}$	70 145.8	$^{\circ}\text{C/W}$	
Thermal Resistance, Junction-to-Case For TO-66 For TO-5 and TO-39	$R_{th(j-c)}$	3.3 6.7	$^{\circ}\text{C/W}$	

2.  shall be carried out in a 100% inert atmosphere.  
Safe Operating Area applies as follows:

Maximum Safe Operating Area Graph (Continuous DC) for Variants 01 to 04



Maximum Safe Operating Area Graph (Continuous DC) for Variants 05, 06, 09, 10 and 11



3. ✖ 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.

## 1.6

### PHYSICAL DIMENSIONS AND TERMINAL IDENTIFICATION

Consolidated notes are given following the case drawings and dimensions.