



# DOCUMENT CHANGE REQUEST

DCR number 514 Changes required for: General

Date: 2009/05/06

Date sent: 2009/05/06

Originator: S Jeffery - ESCC

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
--------------------------------	------------



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



as applicable

**LEGAL DISCLAIMER AND COPYRIGHT**

European Space Agency, Copyright © 2008. All rights reserved.

The European Space Agency disclaims any liability or responsibility, to any person or entity, with respect to any loss or damage caused, or alleged to be caused, directly or indirectly by the use and application of this ESCC publication.

This publication, without the prior permission of the European Space Agency and provided that it is not used for a commercial purpose, may be:

- copied in whole, in any medium, without alteration or modification.
- copied in part, in any medium, provided that the ESCC document identification, comprising the ESCC symbol, document number and document issue, is removed.



**DOCUMENTATION CHANGE NOTICE**

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

DCR No.	CHANGE DESCRIPTION
<del>329</del>	Specification up issued to incorporate editorial and technical changes per DCR.

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 TQ-5 and TO-39	$R_{th(j-c)}$	3.3 6.7	$^{\circ}C/W$	

See attached

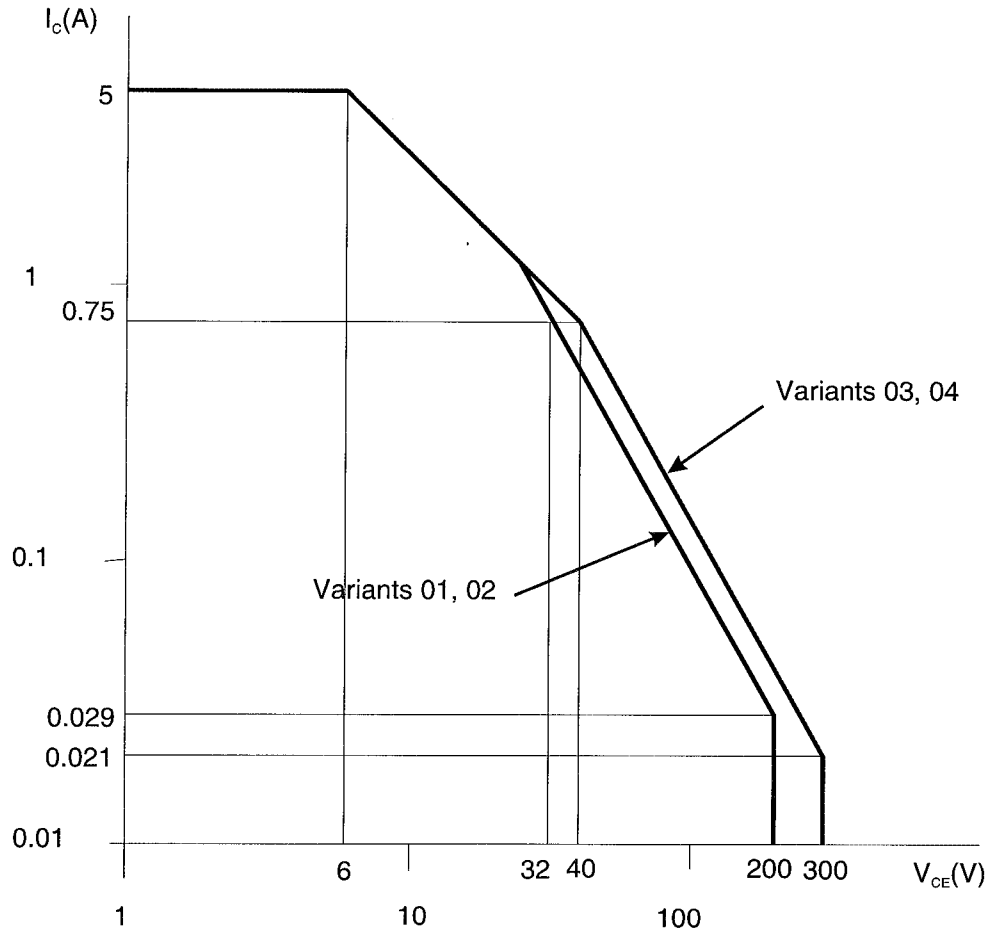
**NOTES:**

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  $T_{amb} > +125^{\circ}C$

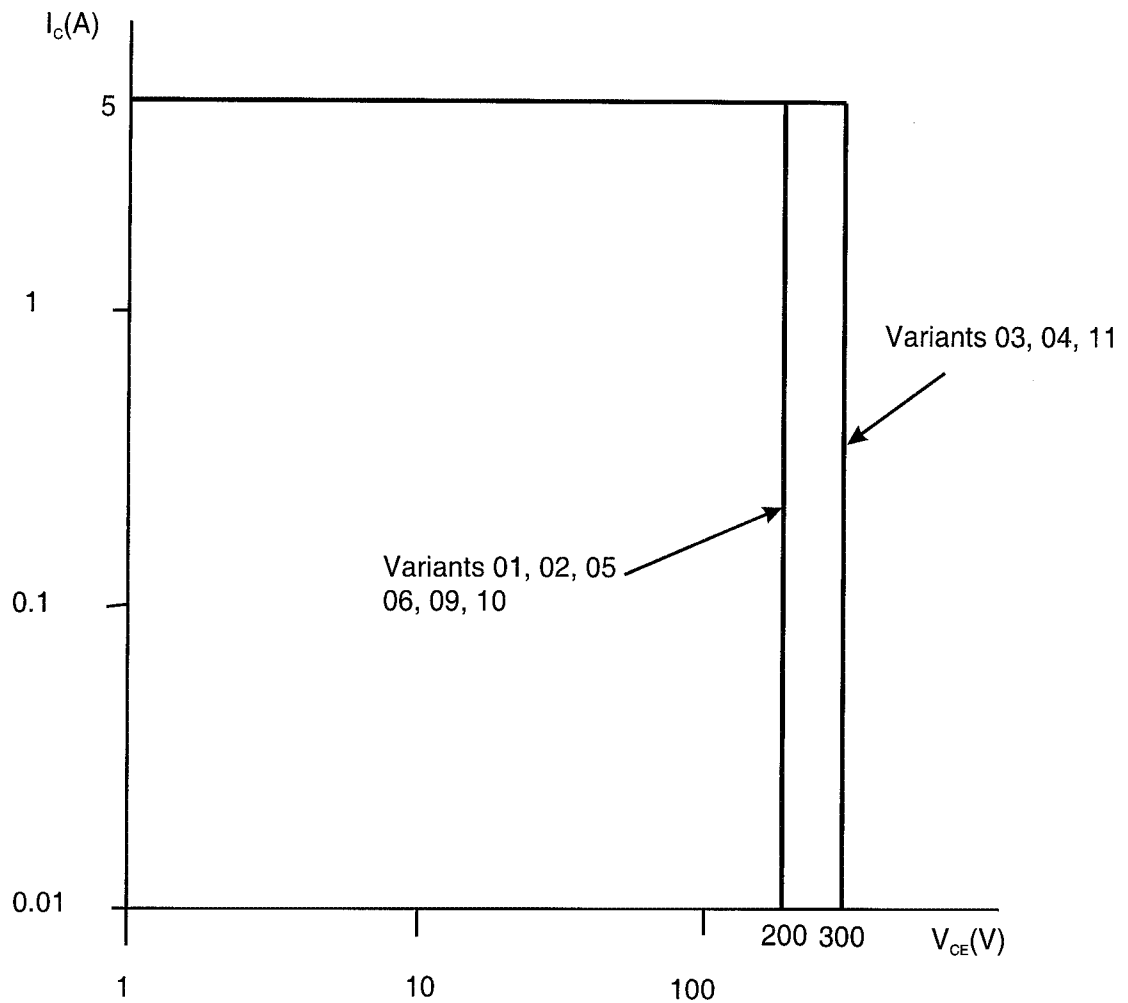
Power Dissipation For TO-66 For TO-5 and TO-39	$P_{tot1}$	2.5 1.2	W	At $T_{amb} \leq +25^{\circ}\text{C}$
	$P_{tot2}$	30 15	W	At $T_{case} \leq +100^{\circ}\text{C}$
Thermal Resistance, Junction-to-Ambient For TO-66 For TO-5 and TO-39	$R_{th(j-a)}$	70 145.8	$^{\circ}\text{C}/\text{W}$	
Thermal Resistance,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

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.