DOCUMENT CHANGE REQUEST

DCR number 429	Changes required for: N/A	Originator: Aissa Nehdi
Date: 2008/08/08	Date sent: 2008/08/08	Organisation: CNES
Status: IMPLEMENTED		

Title:	Transistors High Power NPN, based on type 2N5154		
Number:	5203/010	Issue:	3

Other documents affected:

Page:

1.4.2
1.5 note 5 (SOA graph)
1.7.3 Note 1 (Add configuration for Variant 07)
1.8 (Add configuration for Variant 07)

Paragraph:

1.4.2
1.5 note 5 (SOA graph)
1.7.3 Note 1 (Add configuration for Variant 07)
1.8 (Add configuration for Variant 07)

Original wording:

Proposed wording:

Variant 07 added (SMD.5) emitter-base inverted versus variant 06

Justification:

In conformity with Mil-PRF-19500/545F

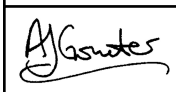
Attachments:
DCR429att.pdf, null
Modifications:
N/A
Approval signature:

Date signed:
2008-08-08

Table1(a)

Table 1 (a) Component Type Variants

VARIANT	BASED ON TYPE	CASE	FIGURE	LEAD MATERIAL AND FINISH
01	2N5154	TO39	2(a)	D2
02	2N5154	TO39	2(a)	D3 or D4
03	2N5154	TO39	2(a)	D7
04	2N5154	TO254	2(b)	H2
05	2N5154	TO254	2(b)	H4
06	2N5154	SMD.5	2(c)	Q14
07	2N5154	SMD.5	2(c)	Q14

TABLE 1(b) - MAXIMUM RATINGS

No.	CHARACTERISTICS	SYMBOL	MAXIMUM RATING	UNIT	REMARKS
1	Collector-Base Voltage	Vcbo	100	V	
2	Collector-Emitter Voltage	Vceo	80	V	
3	Emitter-Base Voltage	Vebo	6.0	V	
4	Collector Current (Continuous)	Ic	5.0	A	
5	Power Dissipation1 Variant 01 to 03 Variant 04 to 07	Ptot1	 1.0 3.3	W	Tamb = +25℃ See Note1
6	Power Dissipation2 Variant 01 to 03 Variant 04 to 07	Ptot2	 8.75 35	W	Tamb = +25℃ See Note1
7	Operating Temperature Range	Top	-65 to +200	℃	Ta mb or Tcase
8	Storage Temperature Range	T_{stg}	-65 to +200	℃	
9	Soldering Temperature Variant 01 to 05 Variant 06 & 07	T_{sol}	 +260 +245	℃	Note 2
10	Thermal Resistance (junction to Case) Variant 01 to 03 Variant 04 to 07	$R_{TH(J-C)}$	 20 5	℃/W	

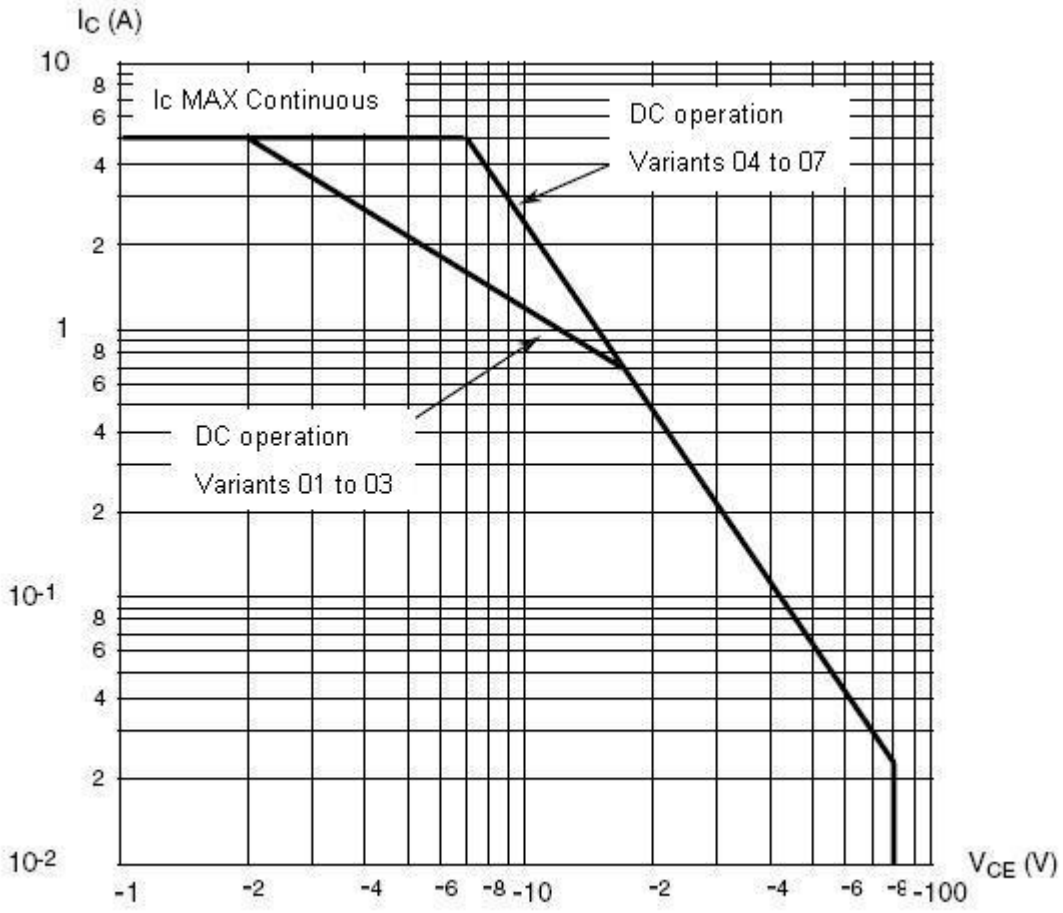
NOTES

1. For derating at Tamb or Tcase > +25℃, See figur e 1
2. For Variants 01 to 05, 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.

   For Variant 06 & 07, duration 5 seconds maximum, the same package shall not be resoldered until 3 minutes have elapsed.

5. Safe Operating Area applies as follows:

Maximum Safe Operating Area Graph

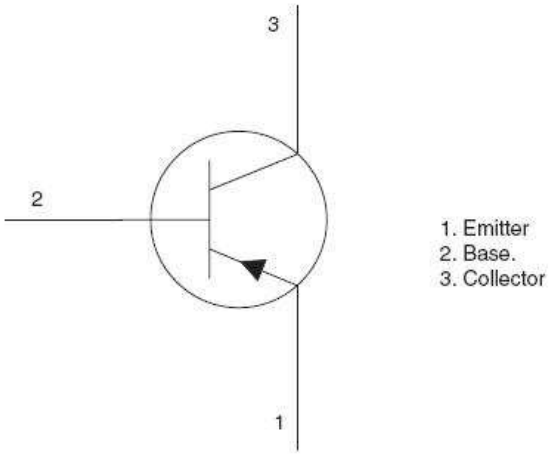


1. Terminal identification is specified by the components geometry where :

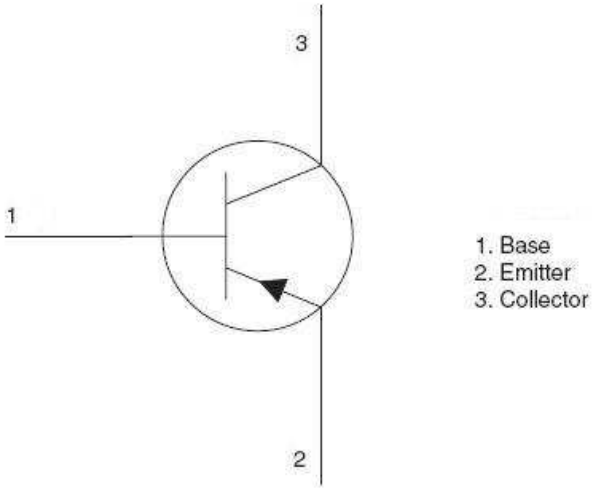
Variante 06 Terminal 1 = emitter, Terminal 2 = base and Terminal 3 = collector.
Variante 07 Terminal 1 = base, Terminal 2 = emitter and Terminal 3 = collector.

1.8 FUNCTIONAL DIAGRAM

Variants 01 to 06



Variant 07



NOTES

For Variants 01 to 03, the collector is internally connected to the case.
For Variants 04 to 07, the collector is isolated from the case.

4.2.4 Deviations from Qualification Tests (Chart IV)

Terminal strength : Not applicable for variants 06 & 07

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

Terminal strength : Not applicable for variants 06 & 07.

4.3.2 Weight

The maximum weight of the transistor specified herein shall be 1.5 grammes for Variants 01 to 03, 5.0 grammes for variants 04 to 05 and 2.0 grammes for variant 06 & 07

4.4.1 Case

For Variants 01 to 03, the case shall be hermetically sealed and have a metal body with hard glass seals and the lid shall be welded, brazed, perform soldered or glass frit sealed.

For Variant 04 to 05, the case shall be hermetically sealed and have a metal body, the Fe/Ni copper core pin shall pass through a ceramic eyelet brazed into the frame and the lid shall be welded.

For Variant 06 & 07, the case shall be hermetically sealed and have a ceramic body with Kovar lid.

4.4.2 Lead Material and Finish

For Variants 01 to 03, the lead material shall be Type 'D' with either '2', Type '3 or 4' or Type '7' finish in accordance with the requirements of ESA/SCC Basic Specification N°23500. (See Table 1(a) for Typing Variants).

For Variants 04 to 05, the lead material shall be Type 'H' with either '2 or 4' finish in accordance with the requirements of ESA/SCC Basic Specification N°23500. (See Table 1(a) for Typing Variants).

For Variant 06 & 07 the lead material shall be Type 'Q' with Type '14' finish in accordance with the requirements of ESA/SCC Basic Specification No. 23500.

4.7.6 Verification Of Safe Operating Area

The requirement for the verification of the Safe Operating Areaare specified in section 9 of ESCC Generic Specification N°5000. The test meth od shall be as follows:

Maximum continous d.c In accordancewith MIL-STD-750, Mathod 3052 and figure 1 (b) of this specification , at Tcase = +25°C and for an operating time of 50ms maximum.

For variants 01 to 07 : Ic = 0.35A, Vce = 25V

TABLE 5(b) – CONDITION FOR POWER BURN.IN AND OPERATING LIFE TESTS

VARIANT 04 TO 07

No.	CHARACTERISTICS	SYMBOL	CONDITIONS	UNIT
1	Case Temperature	Tcase	+100 (+0 -5)	C°
2	Power Dissipation 2	P_{tot2}	Maximun rating at T_{amb} according to derating curve (See figure 1(a)	W
3	Collecter-Emitter Voltage	Vce	20	V