



RADIATION TEST SUMMARY

PART TYPE : 2N7237

DESCRIPTION : P-CHANNEL MOSFET

REPORT NO. : RD203

PARAMETERS PLOTTED :

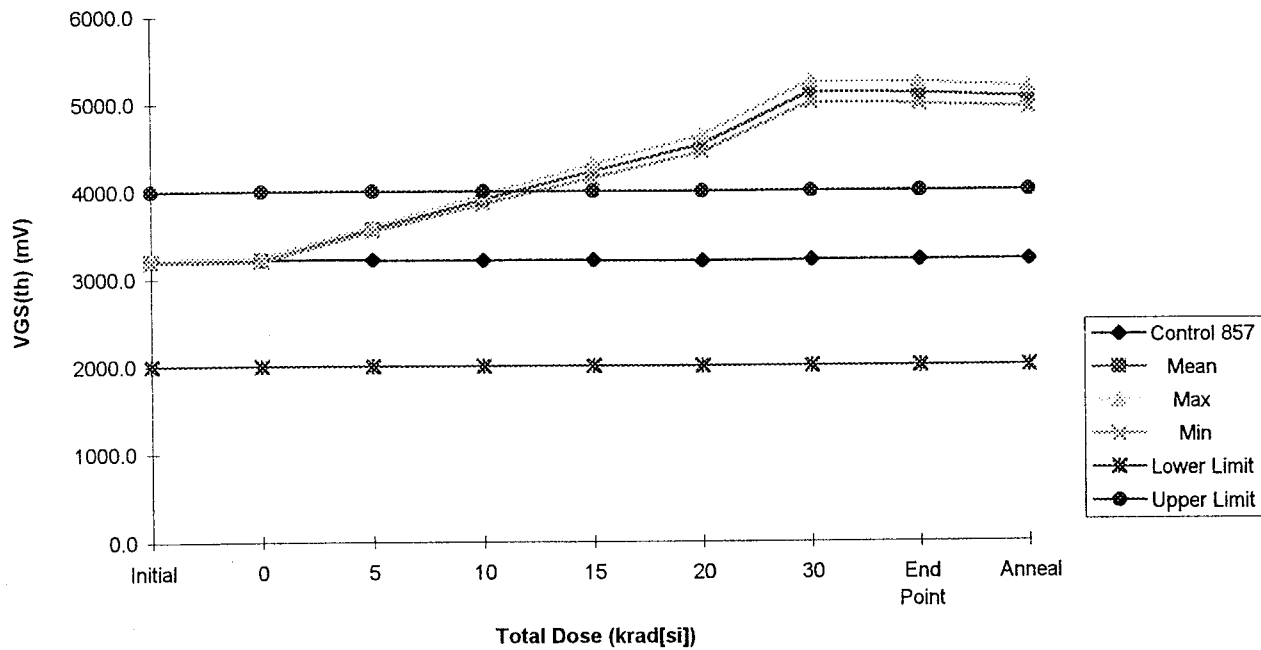
VGS(th)

NOTE :

The results for the remaining parameters showed no significant change and hence plots were not considered necessary.



Radiation Results for VGS(th)



| Dose (kRad) | Control 857 (mV) | Mean (mV) | Max (mV) | Min (mV) | Lower Limit (mV) | Upper Limit (mV) | Std.Dev. |
|-------------|------------------|-----------|----------|----------|------------------|------------------|----------|
| Initial | 3214.6 | 3204.2 | 3227.5 | 3187.9 | 2000 | 4000 | 16.83 |
| 0 | 3222.4 | 3217.2 | 3241.2 | 3200.1 | 2000 | 4000 | 17.59 |
| 5 | 3216.6 | 3567.8 | 3609.3 | 3539.9 | 2000 | 4000 | 29.88 |
| 10 | 3214.1 | 3906.4 | 3966.9 | 3853.8 | 2000 | 4000 | 49.29 |
| 15 | 3210.6 | 4225.7 | 4306.8 | 4155.3 | 2000 | 4000 | 66.92 |
| 20 | 3207.6 | 4535.3 | 4633.9 | 4443.3 | 2000 | 4000 | 84.73 |
| 30 | 3211.4 | 5125.3 | 5248.4 | 5004.0 | 2000 | 4000 | 113.06 |
| End Point | 3214.0 | 5109.4 | 5231.9 | 4987.3 | 2000 | 4000 | 112.80 |
| Anneal | 3212.1 | 5057.3 | 5178.2 | 4938.9 | 2000 | 4000 | 110.86 |

Lot size for statistics : 4 devices

RD 203 Date Code: 9451

=====
Results file : RD203_2N7237_INIT_EMS@_IGG from: 03.09.96 / 09:11:08
Operator : PAUL RUSSELL
Part number : 2N7237
Lot number : RD203
Order number : D/C 9451
Vendor : IR
: CONTROL S/No 857 ; RAD SAMPLE S/NoS 858-861
: INITIAL EMS @ IGG
: 2N7237 PO-PL-IGG-PL-0028 ISS 1 / V1.0 15/8/96 PAR
=====

Test steps

| | | | | |
|----------------|-----------|-----|--------|-----|
| 1. -V(BR)DSS | 200.0 | ... | 700.0 | V |
| 2. -VGS | 2000.0 | ... | 4000.0 | mV |
| 3. -IGSS (FWD) | (0.0) | ... | 100.0 | nA |
| 4. -IGSS (REV) | (0.0) | ... | 100.0 | nA |
| 5. -IDSS | (0.0) | ... | 25.0 | uA |
| 6. RDS on | (0.000) | ... | 0.510 | Ohm |
| 7. RDS on | (0.000) | ... | 0.520 | Ohm |

| | 857 | 858 | 859 | 860 | 861 |
|-----------|--------|--------|--------|--------|--------|
| 1.1 [V] | 238.7 | 242.2 | 235.8 | 235.1 | 216.3 |
| 2.1 [mV] | 3214.6 | 3197.8 | 3203.6 | 3227.5 | 3187.9 |
| 3.1 [nA] | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| 4.1 [nA] | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| 5.1 [uA] | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 |
| 6.1 [Ohm] | 0.374 | 0.389 | 0.361 | 0.365 | 0.330 |
| 7.1 [Ohm] | 0.386 | 0.401 | 0.372 | 0.378 | 0.341 |

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
 RD203_2N7237_INIT_EMS@_ERA / V1.0 15/8/96 PAR

 Results file : RD203_2N7237_INIT_EMS@_ERA from: 04.09.96 / 10:20:10
 Operator : PAUL RUSSELL
 Part number : 2N7237
 Lot number : RD203
 Order number : D/C 9451
 Vendor : IR
 : CONTROL S/No 857 ; RAD SAMPLE S/NoS 858-861
 : INITIAL EMS @ ERA
 : 2N7237 PO-PL-IGG-PL-0028 ISS 1 / V1.0 15/8/96 PAR

Test steps

| | | | | |
|----------------|-----------|-----|--------|-----|
| 1. -V(BR)DSS | 200.0 | ... | 700.0 | V |
| 2. -VGS | 2000.0 | ... | 4000.0 | mV |
| 3. -IGSS (FWD) | (0.0) | ... | 100.0 | nA |
| 4. -IGSS (REV) | (0.0) | ... | 100.0 | nA |
| 5. -IDSS | (0.0) | ... | 25.0 | uA |
| 6. RDS on | (0.000) | ... | 0.510 | Ohm |
| 7. RDS on | (0.000) | ... | 0.520 | Ohm |

| | 857 | 858 | 859 | 860 | 861 |
|-----------|--------|--------|--------|--------|--------|
| 1.1 [V] | 237.9 | 241.1 | 234.7 | 234.0 | 215.3 |
| 2.1 [mV] | 3222.4 | 3209.5 | 3218.1 | 3241.2 | 3200.1 |
| 3.1 [nA] | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 |
| 4.1 [nA] | 1.4 | 1.4 | 1.5 | 1.5 | 1.5 |
| 5.1 [uA] | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 |
| 6.1 [Ohm] | 0.363 | 0.374 | 0.347 | 0.351 | 0.317 |
| 7.1 [Ohm] | 0.376 | 0.387 | 0.359 | 0.364 | 0.329 |

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
RD203_2N7237_EMS_@_5_KRAD / V1.0 15/8/96 PAR

=====
Results file : RD203_2N7237_EMS_@_5_KRAD from: 04.09.96 / 10:28:16
Operator : PAUL RUSSELL
Part number : 2N7237
Lot number : RD203
Order number : D/C 9451
Vendor : IR
: CONTROL S/No 857 ; RAD SAMPLE S/NoS 858-861
: EMS @ 5 KRAD
: 2N7237 PO-PL-IG6-PL-0028 ISS 1 / V1.0 15/8/96 PAR
=====

Test steps

| | | | | |
|----------------|-----------|-----|--------|-----|
| 1. -V(BR)DSS | 200.0 | ... | 700.0 | V |
| 2. -VGS | 2000.0 | ... | 4000.0 | mV |
| 3. -IGSS (FWD) | (0.0) | ... | 100.0 | nA |
| 4. -IGSS (REV) | (0.0) | ... | 100.0 | nA |
| 5. -IDSS | (0.0) | ... | 25.0 | uA |
| 6. RDS on | (0.000) | ... | 0.510 | Ohm |
| 7. RDS on | (0.000) | ... | 0.520 | Ohm |

| | 857 | 858 | 859 | 860 | 861 |
|-----------|--------|--------|--------|--------|--------|
| 1.1 [V] | 238.7 | 241.3 | 235.0 | 234.4 | 215.6 |
| 2.1 [mV] | 3216.6 | 3539.9 | 3554.5 | 3609.3 | 3567.4 |
| 3.1 [nA] | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| 4.1 [nA] | 1.4 | 1.3 | 1.4 | 1.4 | 1.4 |
| 5.1 [uA] | 0.0 | 0.3 | 0.1 | 0.2 | 0.1 |
| 6.1 [Ohm] | 0.372 | 0.378 | 0.354 | 0.359 | 0.323 |
| 7.1 [Ohm] | 0.384 | 0.391 | 0.366 | 0.371 | 0.335 |

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
RD203_2N7237_EMS_@_10_KRAD / V1.0 15/8/96 PAR

=====
Results file : RD203_2N7237_EMS_@_10_KRAD from: 04.09.96 / 11:08:18
Operator : PAUL RUSSELL
Part number : 2N7237
Lot number : RD203
Order number : D/C 9451
Vendor : IR
: CONTROL S/No 857 ; RAD SAMPLE S/NoS 858-861
: EMS @ 10 KRAD
: 2N7237 PO-PL-IG6-PL-0028 ISS 1 / V1.0 15/8/96 PAR

Test steps

| | | | | |
|----------------|-----------|-----|--------|-----|
| 1. -V(BR)DSS | 200.0 | ... | 700.0 | V |
| 2. -VGS | 2000.0 | ... | 4000.0 | mV |
| 3. -IGSS (FWD) | (0.0) | ... | 100.0 | nA |
| 4. -IGSS (REV) | (0.0) | ... | 100.0 | nA |
| 5. -IDSS | (0.0) | ... | 25.0 | uA |
| 6. RDS on | (0.000) | ... | 0.510 | Ohm |
| 7. RDS on | (0.000) | ... | 0.520 | Ohm |

| | 857 | 858 | 859 | 860 | 861 |
|-----------|--------|--------|--------|--------|--------|
| 1.1 [V] | 238.8 | 241.0 | 234.9 | 234.4 | 215.7 |
| 2.1 [mV] | 3214.1 | 3853.8 | 3882.1 | 3966.9 | 3922.9 |
| 3.1 [nA] | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| 4.1 [nA] | 1.4 | 1.3 | 1.4 | 1.4 | 1.4 |
| 5.1 [uA] | 0.0 | 0.4 | 0.3 | 0.4 | 0.3 |
| 6.1 [Ohm] | 0.375 | 0.379 | 0.357 | 0.364 | 0.328 |
| 7.1 [Ohm] | 0.387 | 0.392 | 0.368 | 0.376 | 0.341 |

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
RD203_2N7237_EMS_@_15_KRAD / V1.0 15/8/96 PAR

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=====
Results file : RD203_2N7237_EMS_@_15_KRAD from: 04.09.96 / 11:35:31
Operator      : PAUL RUSSELL
Part number   : 2N7237
Lot number    : RD203
Order number  : D/C 9451
Vendor        : IR
               : CONTROL S/No 857 ; RAD SAMPLE S/NoS 858-861
               : EMS @ 15 KRAD
               : 2N7237 PO-PL-IGG-PL-0028 ISS 1 / V1.0 15/8/96 PAR
=====

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Test steps

| | | | | |
|----------------|-----------|-----|--------|-----|
| 1. -V(BR)DSS | 200.0 | ... | 700.0 | V |
| 2. -VGS | 2000.0 | ... | 4000.0 | mV |
| 3. -IGSS (FWD) | (0.0) | ... | 100.0 | nA |
| 4. -IGSS (REV) | (0.0) | ... | 100.0 | nA |
| 5. -IDSS | (0.0) | ... | 25.0 | uA |
| 6. RDS on | (0.000) | ... | 0.510 | Ohm |
| 7. RDS on | (0.000) | ... | 0.520 | Ohm |

| | 857 | 858 | 859 | 860 | 861 |
|-----------|--------|----------|----------|----------|----------|
| 1.1 [V] | 239.1 | 241.2 | 235.1 | 234.6 | 215.8 |
| 2.1 [mV] | 3210.6 | 4155.3 F | 4189.9 F | 4306.8 F | 4250.6 F |
| 3.1 [nA] | 1.5 | 1.6 | 1.5 | 1.5 | 1.5 |
| 4.1 [nA] | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| 5.1 [uA] | 0.0 | 0.5 | 0.4 | 0.6 | 0.5 |
| 6.1 [Ohm] | 0.378 | 0.385 | 0.362 | 0.371 | 0.335 |
| 7.1 [Ohm] | 0.389 | 0.397 | 0.374 | 0.383 | 0.348 |

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
RD203_2N7237_EMS_@_20_KRAD / V1.0 15/8/96 PAR

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=====
Results file   : RD203_2N7237_EMS_@_20_KRAD   from: 04.09.96 / 12:05:30
Operator      : PAUL RUSSELL
Part number   : 2N7237
Lot number    : RD203
Order number  : D/C 9451
Vendor       : IR
              : CONTROL S/No 857 ; RAD SAMPLE S/NoS 858-861
              : EMS @ 20 KRAD
              : 2N7237 PO-PL-I66-PL-0028 ISS 1 / V1.0 15/8/96 PAR
=====

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Test steps

| | | | | | |
|----|-------------|-----------|-----|--------|-----|
| 1. | -V(BR)DSS | 200.0 | ... | 700.0 | V |
| 2. | -VGS | 2000.0 | ... | 4000.0 | mV |
| 3. | -IGSS (FWD) | (0.0) | ... | 100.0 | nA |
| 4. | -IGSS (REV) | (0.0) | ... | 100.0 | nA |
| 5. | -IDSS | (0.0) | ... | 25.0 | uA |
| 6. | RDS on | (0.000) | ... | 0.510 | Ohm |
| 7. | RDS on | (0.000) | ... | 0.520 | Ohm |

| | 857 | | 858 | | 859 | | 860 | | 861 |
|-----------|--------|--|--------|---|--------|---|--------|---|--------|
| 1.1 [V] | 239.3 | | 241.3 | | 235.1 | | 234.5 | | 215.9 |
| 2.1 [mV] | 3207.6 | | 4443.3 | F | 4491.1 | F | 4633.9 | F | 4572.7 |
| 3.1 [nA] | 1.8 | | 1.5 | | 1.6 | | 1.5 | | 1.6 |
| 4.1 [nA] | 1.4 | | 1.4 | | 1.4 | | 1.4 | | 1.4 |
| 5.1 [uA] | 0.0 | | 0.7 | | 0.5 | | 0.8 | | 0.7 |
| 6.1 [Ohm] | 0.378 | | 0.389 | | 0.368 | | 0.377 | | 0.342 |
| 7.1 [Ohm] | 0.391 | | 0.402 | | 0.379 | | 0.390 | | 0.354 |

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
 RD203_2N7237_EMS_30_KRAD / V1.0 15/8/96 PAR

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=====
Results file   : RD203_2N7237_EMS_30_KRAD   from: 04.09.96 / 12:36:04
Operator      : PAUL RUSSELL
Part number   : 2N7237
Lot number    : RD203
Order number  : D/C 9451
Vendor       : IR
              : CONTROL S/No 857 ; RAD SAMPLE S/NoS 858-861
              : EMS @ 30 KRAD
              : 2N7237 PO-PL-IGG-PL-0028 ISS 1 / V1.0 15/8/96 PAR
=====
  
```

Test steps

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=====
1. -V(BR)DSS          200.0   ...   700.0   V
2. -VGS              2000.0   ...  4000.0  mV
3. -IGSS (FWD)       (  0.0 )...  100.0  nA
4. -IGSS (REV)       (  0.0 )...  100.0  nA
5. -IDSS              (  0.0 )...   25.0  uA
6. RDS on             (  0.000 )...   0.510 Ohm
7. RDS on             (  0.000 )...   0.520 Ohm
=====
  
```

| | 857 | 858 | 859 | 860 | 861 |
|-----------|--------|----------|----------|----------|----------|
| 1.1 [V] | 238.8 | 241.5 | 235.2 | 234.7 | 215.9 |
| 2.1 [mV] | 3211.4 | 5004.0 F | 5059.2 F | 5248.4 F | 5189.4 F |
| 3.1 [nA] | 1.6 | 1.5 | 1.6 | 1.6 | 1.6 |
| 4.1 [nA] | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| 5.1 [uA] | 0.0 | 1.0 | 0.7 | 1.0 | 0.9 |
| 6.1 [Ohm] | 0.377 | 0.403 | 0.381 | 0.393 | 0.357 |
| 7.1 [Ohm] | 0.389 | 0.415 | 0.393 | 0.405 | 0.370 |

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
 RD203_2N7237_END_POINT_EMS / V1.0 15/8/96 PAR

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=====
Results file   : RD203_2N7237_END_POINT_EMS   from: 05.09.96 / 11:42:10
Operator      : PAUL RUSSELL
Part number   : 2N7237
Lot number    : RD203
Order number  : D/C 9451
Vendor       : IR
              : CONTROL S/No 857 ; RAD SAMPLE S/NoS 858-861
              : END POINT EMS
              : 2N7237 PO-PL-IGG-PL-0028 ISS 1 / V1.0 15/8/96 PAR
=====

```

Test steps

```

-----
1. -V(BR)DSS           200.0   ...   700.0   V
2. -VGS                2000.0   ...  4000.0  mV
3. -IGSS (FWD)         (  0.0 )...  100.0  nA
4. -IGSS (REV)         (  0.0 )...  100.0  nA
5. -IDSS                (  0.0 )...   25.0  uA
6. RDS on               ( 0.000 )...  0.510  Ohm
7. RDS on               ( 0.000 )...  0.520  Ohm
-----

```

| | 857 | 858 | 859 | 860 | 861 |
|-----------|--------|--------|--------|--------|--------|
| 1.1 [V] | 238.5 | 242.2 | 235.6 | 235.0 | 215.9 |
| 2.1 [mV] | 3214.0 | 4987.3 | 5045.0 | 5231.9 | 5173.5 |
| 3.1 [nA] | 1.5 | 1.5 | 1.5 | 1.6 | 1.6 |
| 4.1 [nA] | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| 5.1 [uA] | 0.0 | 1.2 | 0.8 | 1.1 | 0.9 |
| 6.1 [Ohm] | 0.371 | 0.412 | 0.387 | 0.397 | 0.361 |
| 7.1 [Ohm] | 0.384 | 0.424 | 0.399 | 0.411 | 0.373 |