



RADIATION TEST SUMMARY

PART TYPE : IRFY9140

DESCRIPTION : P-CHANNEL MOSFET

REPORT NO. : RD 178

PARAMETERS PLOTTED :

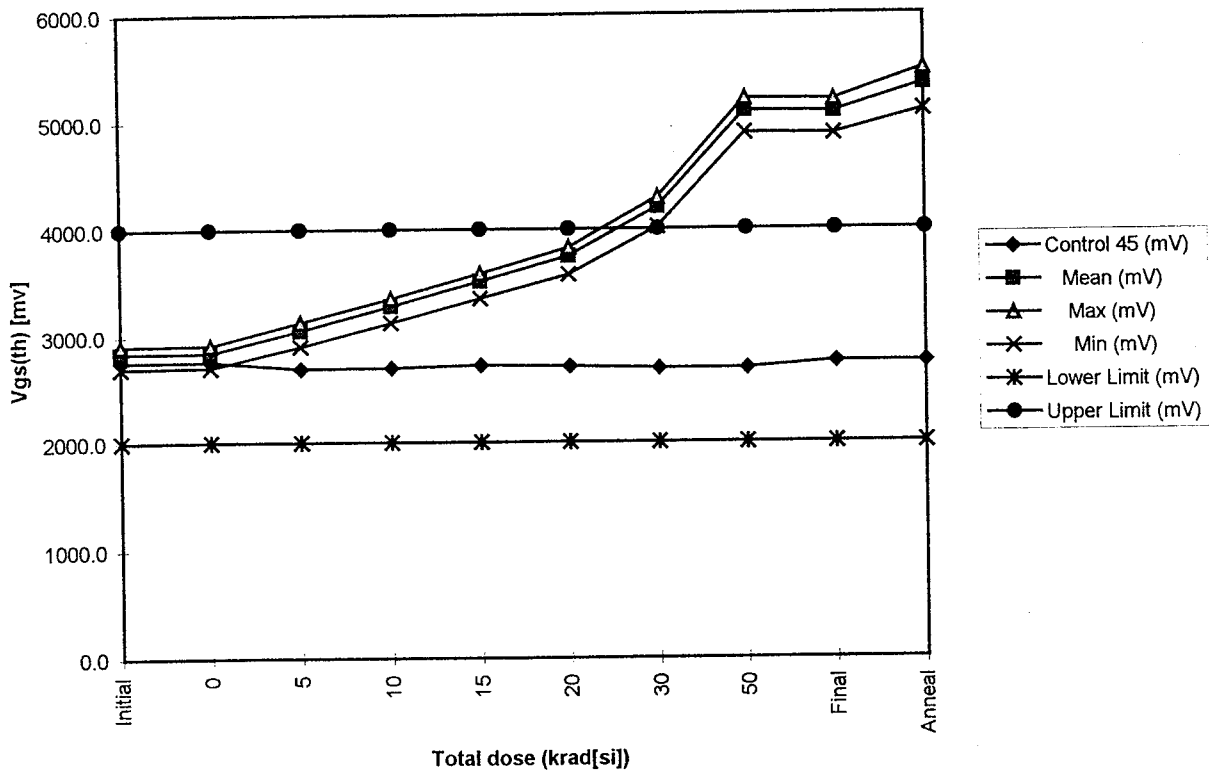
Vgs(th)
RDS(on)

NOTE :

The results for I_{gss} and I_{dss} showed no significant change and hence plots were not considered necessary.



Radiation Results for IRFY9140



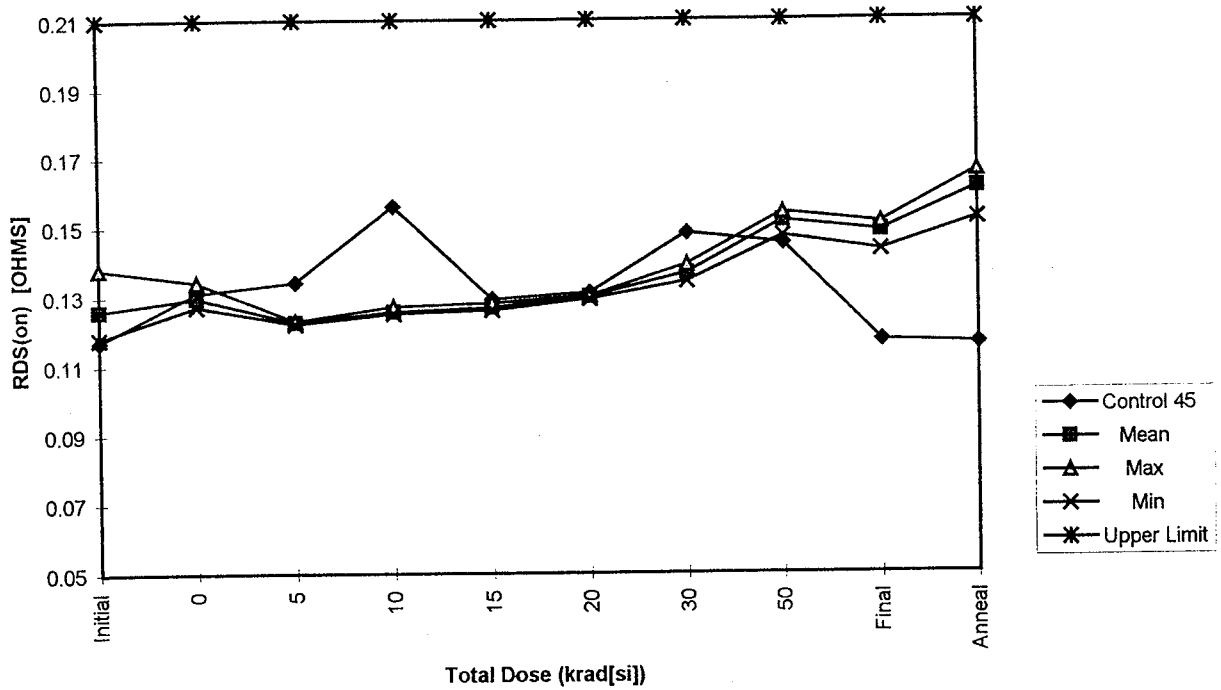
Dose (kRad)	Control 45 (mV)	Mean (mV)	Max (mV)	Min (mV)	Lower Limit (mV)	Upper Limit (mV)	Std.Dev.
Initial	2757.2	2839.3	2909.4	2699.5	2000	4000	95.68
0	2754.6	2840.7	2912.8	2704.2	2000	4000	93.72
5	2693.2	3050.6	3128.7	2903.1	2000	4000	102.54
10	2696.6	3279.9	3352.7	3123.6	2000	4000	106.94
15	2719.4	3510.9	3583.1	3351.3	2000	4000	109.62
20	2710.6	3743.4	3822.8	3575.1	2000	4000	114.98
30	2691.4	4199.5	4292.3	4018.2	2000	4000	123.60
50	2690.9	5093.3	5207.1	4890.9	2000	4000	139.13
Final	2748.3	5081.6	5196.1	4879.8	2000	4000	138.85
Anneal	2753.8	5342.2	5487.4	5101.6	2000	4000	168.85

Lot size for statistics : 4 devices

RD 178 Date code 9529C



Radiation Results for IRFY9140



Dose (kRad)	Control 45 (ohms)	Mean (ohms)	Max (ohms)	Min (ohms)	Upper Limit (ohms)	Lower Limit (ohms)	Std.Dev.
Initial	0.117	0.126	0.138	0.118	0.210	0	0.01
0	0.131	0.130	0.134	0.127	0.210	0	0.00
5	0.134	0.123	0.123	0.122	0.210	0	0.00
10	0.156	0.126	0.127	0.125	0.210	0	0.00
15	0.129	0.127	0.128	0.126	0.210	0	0.00
20	0.131	0.130	0.130	0.129	0.210	0	0.00
30	0.148	0.137	0.139	0.134	0.210	0	0.00
50	0.145	0.152	0.154	0.147	0.210	0	0.00
Final	0.117	0.149	0.151	0.143	0.210	0	0.00
Anneal	0.116	0.161	0.166	0.152	0.210	0	0.01

Lot size for statistics : 4 devices

RD 178 Date code 9529C

SZ-TESTSYSTEME Family Testadaptor TA07F 24.04.92 / 08:45:13

IRFY9140 PO-PL-IGG-PL-0017 ISS.2 / V1.0 15/1/96 SMR

Socket adapter type: SA 07-01

Fets per device : 1 (P)

Pin assignment : 1

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=====
1. -VGS                2000.0 ... 4000.0 mV
Switch : off          | Pin assignment : 1
-ID                1.000 mA |
-----
2. -IGSS (FWD)        ( 0.0 )... 100.0 nA
Switch : off          | Pin assignment : 1
-VGS                20.000 V | Add. time      0 ms |
-----
3. -IGSS (REV)        ( 0.0 )... 100.0 nA
Switch : off          | Pin assignment : 1
-VGS                20.000 V | Add. time      0 ms |
-----
4. -IDSS              ( 0 )... 250 uA
Switch : off          | Pin assignment : 1
-VDS                100.000 V | Add. time      0 ms |
-----
5. RDS on             ( 0.000)... 0.210 Ohm
Switch : off          | Pin assignment : 1
-VGS                10.000 V | -ID            10000.000 mA |
-----
6. -V(BR)DSS         100.0 ... 700.0 V
Switch : off          | Pin assignment : 1
-ID                0.250 mA |
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Results file : IRFY9140_RD178_INIT @_I66 from: 07.03.70 / 21:09:16
Operator : Steve Young.
Part number : IRFY 9140.
Lot number : RIR 64223.
Order number : Date Code 9529C.
Vendor : IR.
: S/No's 46,47,48,49. + Control = S/No 45
: TEST#3 INIT @ I66
: IRFY9140 PO-PL-I66-PL-0017 ISS.2 / V1.0 15/1/96 SMR
=====

Test steps

1. -VGS 2000.0 ... 4000.0 mV
2. -IGSS (FWD) (0.0)... 100.0 nA
3. -IGSS (REV) (0.0)... 100.0 nA
4. -IDSS (0)... 250 uA
5. RDS on (0.000)... 0.210 Ohm
6. -V(BR)DSS 100.0 ... 700.0 V

	45	46	47	48	49
1.1 [mV]	2757.2	2699.5	2909.4	2856.9	2891.2
2.1 [nA]	0.2	0.1	0.0	0.0	0.1
3.1 [nA]	0.1	0.1	0.2	0.2	0.1
4.1 [uA]	0	0	0	0	0
5.1 [Ohm]	0.117	0.124	0.124	0.138	0.118
6.1 [V]	116.6	116.6	119.6	117.2	119.2

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
IRFY9140_RD178_INIT @_I66 / 1.1 SMR 11/12/95

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Results file : IRFY9140_RD178_INIT @_ERA from: 07.03.70 / 21:11:42
Operator : Steve Young.
Part number : IRFY 9140.
Lot number : RIR 64223.
Order number : Date Code 9529C.
Vendor : IR.
: S/No's 46,47,48,49. + Control = S/No 45
: TEST#4 INIT @ ERA
: IRFY9140 PO-PL-I66-PL-0017 ISS.2 / V1.0 15/1/96 SMR
=====

Test steps

1. -VGS	2000.0	...	4000.0	mV
2. -IGSS (FWD)	(0.0)	...	100.0	nA
3. -IGSS (REV)	(0.0)	...	100.0	nA
4. -IDSS	(0)	...	250	uA
5. RDS on	(0.000)	...	0.210	Ohm
6. -V(BR)DSS	100.0	...	700.0	V

	45	46	47	48	49
1.1 [mV]	2754.6	2704.2	2912.8	2858.1	2887.8
2.1 [nA]	0.5	0.7	0.7	0.7	0.8
3.1 [nA]	0.6	0.7	0.8	0.8	0.8
4.1 [uA]	0	0	0	0	0
5.1 [Ohm]	0.131	0.127	0.128	0.134	0.129
6.1 [V]	116.8	116.6	119.6	117.2	119.4

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
IRFY9140_RD178_INIT_IGG / 1.1 SMR 11/12/95

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Results file   : IRFY140_RD178_EMS_@_5_KRADS.   from: 07.03.70 / 21:21:54
Operator      : Steve Young.
Part number   : IRFY 9140.
Lot number    : RIR 64223.
Order number  : Date Code 95290.
Vendor       : IR.
              : S/No's 46,47,48,49. + Control = S/No 45
              : TEST #7(i) EMS @ 5 KRADs.
              : IRFY9140 PO-PL-IGG-PL-0017 ISS.2 / V1.0 15/1/96 SMR
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Test steps

1. -VGS	2000.0	...	4000.0	mV
2. -IGSS (FWD)	(0.0)	...	100.0	nA
3. -IGSS (REV)	(0.0)	...	100.0	nA
4. -IDSS	(0)	...	250	uA
5. RDS on	(0.000)	...	0.210	Ohm
6. -V(BR)DSS	100.0	...	700.0	V

	45	46	47	48	49
1.1 [mV]	2693.2	2903.1	3128.7	3060.1	3110.6
2.1 [nA]	1.5	1.4	1.4	1.4	1.4
3.1 [nA]	1.4	1.3	1.3	1.3	1.3
4.1 [uA]	0	0	0	0	0
5.1 [Ohm]	0.134	0.123	0.122	0.122	0.123
6.1 [V]	119.3	117.5	120.2	117.9	120.1

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
IRFY9140_RD178_INIT@_I66 / 1.1 SMR 11/12/95

=====
Results file : IRFY9140_RD178_EMS@_10_KRADS from: 07.03.70 / 21:52:24
Operator : Steve Young.
Part number : IRFY 9140.
Lot number : RIR 64223.
Order number : Date Code 95290.
Vendor : IR.
: S/No's 46,47,48,49. + Control = S/No 45
: TEST #7(ii) EMS @ 10 KRADs.
: IRFY9140 P0-PL-I66-PL-0017 ISS.2 / V1.0 15/1/96 SMR
=====

Test steps

1. -VGS	2000.0	...	4000.0	mV
2. -IGSS (FWD)	(0.0)	...	100.0	nA
3. -IGSS (REV)	(0.0)	...	100.0	nA
4. -IDSS	(0)	...	250	uA
5. RDS on	(0.000)	...	0.210	Ohm
6. -V(BR)DSS	100.0	...	700.0	V

=====

	45	46	47	48	49
1.1 [mV]	2696.6	3123.6	3352.7	3298.3	3345.0
2.1 [nA]	1.6	1.5	1.5	1.5	1.5
3.1 [nA]	1.5	1.4	1.4	1.4	1.4
4.1 [uA]	0	1	1	0	1
5.1 [Ohm]	0.156	0.125	0.127	0.125	0.125
6.1 [V]	119.2	117.5	120.3	117.6	119.9

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
IRFY9140_RD178_INIT_@_IG6 / 1.1 SMR 11/12/95

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Results file   : IRFY9140_RD178_EMS_@_15_KRADS   from: 07.03.70 / 22:46:01
Operator      : Steve Young.
Part number   : IRFY 9140.
Lot number    : RIR 64223.
Order number  : Date Code 9529C.
Vendor       : IR.
              : S/No's 45,47,48,49. + Control = S/No 45
              : TEST #7(iii) EMS @ 15 KRADs.
              : IRFY9140 PO-PL-IG6-PL-0017 ISS.2 / VI.0 15/1/96 SMR
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Test steps

1. -VGS	2000.0	...	4000.0	mV
2. -IGSS (FWD)	(0.0)	...	100.0	nA
3. -IGSS (REV)	(0.0)	...	100.0	nA
4. -IDSS	(0)	...	250	uA
5. RDS on	(0.000)	...	0.210	Ohm
6. -V(BR)DSS	100.0	...	700.0	V

	45	46	47	48	49
1.1 [mV]	2719.4	3351.3	3582.4	3526.7	3583.1
2.1 [nA]	1.5	1.5	1.5	1.5	1.5
3.1 [nA]	1.5	1.4	1.4	1.4	1.4
4.1 [uA]	0	1	1	1	1
5.1 [Ohm]	0.129	0.126	0.128	0.126	0.127
6.1 [V]	118.0	117.5	120.4	118.0	119.8

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
IRFY9140_RD178_INIT@_IGG / 1.1 SMR 11/12/95

=====
Results file : IRFY9140_RD178_EMS@_20_KRADS from: 07.03.70 / 23:20:07
Operator : Steve Young.
Part number : IRFY 9140.
Lot number : RIR 64223.
Order number : Date Code 9529C.
Vendor : IR.
: S/No's 46,47,48,49. + Control = S/No 45
: TEST #7(iv) EMS @ 20 KRADS.
: IRFY9140 PO-PL-IGG-PL-0017 ISS.2 / V1.0 15/1/96 SMR
=====

Test steps

1. -VGS	2000.0	...	4000.0	mV
2. -IGSS (FWD)	(0.0)	...	100.0	nA
3. -IGSS (REV)	(0.0)	...	100.0	nA
4. -IDSS	(0)	...	250	uA
5. RDS on	(0.000)	...	0.210	Ohm
6. -V(BR)DSS	100.0	...	700.0	V

	45	46	47	48	49
1.1 [mV]	2710.6	3575.1	3811.1	3764.6	3822.8
2.1 [nA]	1.5	1.5	1.6	1.5	1.5
3.1 [nA]	1.5	1.4	1.5	1.5	1.5
4.1 [uA]	0	2	1	1	1
5.1 [Ohm]	0.131	0.129	0.130	0.130	0.130
6.1 [V]	118.4	117.5	120.5	117.8	120.0

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
 IRFY9140_RD178_INIT@_IG6 / 1.1 SMR 11/12/95

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Results file : IRFY9140_RD178_EMS@_30_KRADS from: 07.03.70 / 23:23:40
 Operator : Steve Young.
 Part number : IRFY 9140.
 Lot number : RIR 64223.
 Order number : Date Code 95290.
 Vendor : IR.
 : S/No's 46,47,48,49. + Control = S/No 45
 : TEST #7(v) EMS @ 30 KRADS.
 : IRFY9140 PO-PL-IG6-PL-0017 ISS.2 / V1.0 15/1/96 SMR

Test steps

1. -VGS	2000.0	...	4000.0	mV
2. -IGSS (FWD)	(0.0)	...	100.0	nA
3. -IGSS (REV)	(0.0)	...	100.0	nA
4. -IDSS	(0)	...	250	uA
5. RDS on	(0.000)	...	0.210	Ohm
6. -V(BR)DSS	100.0	...	700.0	V

	45	46	47	48	49
1.1 [mV]	2691.4	4018.2	4258.6	4228.8	4292.3
2.1 [nA]	1.6	1.5	1.5	1.6	1.6
3.1 [nA]	1.6	1.5	1.5	1.5	1.5
4.1 [uA]	0	3	2	2	2
5.1 [Ohm]	0.148	0.134	0.138	0.135	0.139
6.1 [V]	119.3	117.5	120.4	117.9	120.0

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
IRFY9140_RD178_INIT@_IG6 / 1.1 SMR 11/12/95

=====
Results file : IRFY9140_RD178_EMS@_50_KRADS from: 08.03.70 / 00:21:56
Operator : Steve Young.
Part number : IRFY 9140.
Lot number : RIR 64223.
Order number : Date Code 95290.
Vendor : IR.
: S/No's 46,47,48,49. + Control = S/No 45
: TEST #7(vi) EMS @ 50 KRADS.
: IRFY9140 PO-PL-IG6-PL-0017 ISS.2 / V1.0 15/1/96 SMR
=====

Test steps

1. -VGS	2000.0	...	4000.0	mV
2. -IGSS (FWD)	(0.0)	...	100.0	nA
3. -IGSS (REV)	(0.0)	...	100.0	nA
4. -IDSS	(0)	...	250	uA
5. RDS on	(0.000)	...	0.210	Ohm
6. -V(BR)DSS	100.0	...	700.0	V

	45	46	47	48	49
1.1 [mV]	2690.9	4890.9	5148.1	5127.2	5207.1
2.1 [nA]	1.6	1.5	1.5	1.5	1.5
3.1 [nA]	1.5	1.4	1.5	1.4	1.5
4.1 [uA]	0	5	3	3	3
5.1 [Ohm]	0.145	0.147	0.154	0.152	0.153
6.1 [V]	119.3	117.2	120.4	117.5	119.8

SZ-TESTSYSTEME Statistics 03 Vers. 2.15 for TA07F
RIR64223_RD178_POST_24HR_ANNEAL / V1.0 15/1/96 SMR

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Results file : RIR64223_RD178_POST_24HR_ANNEAL from: 20.01.96 / 10:37:03
Operator : I ROBINS
Part number : IRFY9140
Lot number : RIR 64223
Order number : D/C 9529C
Vendor : IR
: SERIAL NUMBERS 46,47,48,49 CONTROL SERIAL NUMBER=45
: TEST ROOM TEMP POST RAD 24HR ANNEAL EMS TA07B SA07.01
: IRFY9140 PO-PL-IG6-PL-0017 ISS2 / V1.0 15/1/96
=====

Test steps

1. -VGS	2000.0	...	4000.0	mV
2. -IGSS (FWD)	(0.0)	...	100.0	nA
3. -IGSS (REV)	(0.0)	...	100.0	nA
4. -IDSS	(0)	...	250	uA
5. RDS on	(0.000)	...	0.210	Ohm
6. -V(BR)DSS	100.0	...	700.0	V

=====

	45	46	47	48	49
1.1 [mV]	2748.3	4879.8	5135.4	5114.9	5196.1
2.1 [nA]	1.5	1.5	1.6	1.6	1.6
3.1 [nA]	1.4	1.4	1.5	1.5	1.5
4.1 [uA]	0	3	2	3	3
5.1 [Ohm]	0.117	0.143	0.151	0.149	0.151
6.1 [V]	116.8	117.2	120.1	117.8	119.6

Results file : RIR64223_RD178_POST_RAD_FINAL from: 27.01.96 / 08:08:52
Operator : I ROBINS
Part number : IRFY9140
Lot number : RIR 64223 RD178
Order number : D/C 9529C
Vendor : IR
: SERIAL NUMBERS 46,47,48,49 CONTROL SERIAL NUMBER=45
: TEST POST RAD FINAL ROOM TEMP EMS TA07B SA07.03
: IRFY9140 P0-PL-IG6-PL-0017 ISS.2 / V1.0 15/1/96 SMR

Test steps

1. -VGS	2000.0	...	4000.0	mV
2. -IGSS (FWD)	(0.0)	...	100.0	nA
3. -IGSS (REV)	(0.0)	...	100.0	nA
4. -IDSS	(0)	...	250	uA
5. RDS on	(0.000)	...	0.210	Ohm
6. -V(BR)DSS	100.0	...	700.0	V

	45	46	47	48	49	45
1.1 [mV]	2753.8	5101.6	5358.3	5487.4	5421.6	2751.2
2.1 [nA]	1.1	1.5	1.5	1.5	1.5	1.5
3.1 [nA]	1.3	1.4	1.4	1.4	1.4	1.4
4.1 [uA]	0	2	2	2	2	0
5.1 [Ohm]	0.116	0.152	0.162	0.166	0.164	0.117
6.1 [V]	116.9	116.8	119.6	117.3	119.3	116.8