TABLE 1 - Failure (or Pass/Fail) N-Channel Device Vds Voltages for the Indicated Ion Beams																
BVds	**Mfr.**	**Mfr. No.**	**Gen. No.**	**Chan. Type**	**Samp.**	**Vgs (off) [-V]**	**Low Z Ions**	**Cu = 16: Fe, Ni, Co LET = 27:**	**Br, Kr LET = 38**	**Hi Z Ions**	**Hi-Energy Beams***	**Fail mode**	**Test Org.**	**Date**	**Test Fac.**	**Remarks**
	Rated Vds = 100 V															
100	GEC	IRF150	2N6764	n	2	10	>95(Ne) 70(Ar)	70(Cu)				SEB	Rock/ Aero	1990	UCB	
100	**HAR**	**FRK150**		**n**	**3**	**0**		**80/100(Ni)**				**SEGR**	**Rock**	**12/92**	**BNL**	**T = 90° C**
100	**HAR**	**FRK150**		**n**	**2**	**0**		**100(Ni)**				**none**	**Rock**	**12/92**	**BNL**	**T = 90° C**
100	HAR	FRK150R	2N7291	n	5	0		80/100(Ni)				SEGR	Rock	12/92	BNL	WP-04. T = 90° C.
100	**HAR**	**FRK160**		**n**	**2**	**0**			**70/80(Br)**			**SEGR**	**JPL**	**12/91**	**BNL**	**T = 25° C**
100	HAR	FRK160D	2N7299	n	2	0			70/80(Br)			SEGR	JPL	91/92	BNL	
100	**HAR**	**FRL130D1**		**n**	**1**	**0**				**50/52.5(I)**		**SEGR**	**JPL**	**6/97**	**BNL**	**Selva/Swift**
100	**HAR**	**FRM140**		**n**	**1**	**0**		**80/90(Fe)**				**SEGR**	**JPL**	**12/91**	**BNL**	**T = 25° C**
100	**HAR**	**FRM140**		**n**	**2**	**0**			**70/80(Br)**			**SEGR**	**JPL**	**12/91**	**BNL**	**T = 25° C**
100	**HAR**	**FRM140**		**n**	**2**	**0**			**60/80(Br)**			**SEGR**	**JPL**	**12/91**	**BNL**	**T = 100° C**
100	HAR	FRM140D1	2N7283	n	2	0			70/80(Br)			SEGR	JPL	91/92	BNL	Data @ T = 100° C exists for Vgs = 0 & 15 V.
100	HAR	IRF150	2N6764	n	2	0					40/50(Xe)	SEB	JPL	11/95	TAM	Nichols. LET(Xe) = 44.
100	HAR	130 family	2N6756	n		5		41(Ni?)					HAR	1993	BNL?	SSF Table
100	**HAR**	**FRK150**		**n**	**4**	**5**		**80/100(Ni)**				**SEGR**	**Rock**	**12/92**	**BNL**	**T = 90° C**
100	HAR	FRK150	2N7291	n		5		97(Ni?)					HAR	1993	BNL?	SSF Table
100	HAR	FRK150R	2N7291	n	4	5		80/100(Ni)				SEGR	Rock	12/92	BNL	WP-04. T = 90° C.
100	HAR	FRK160	2N7299	n		5		100(Ni?)				none	HAR	1993	BNL?	SSF Table
100	**HAR**	**FRL130D1**		**n**	**1**	**5**				**37.5/40(I)**		**SEGR**	**JPL**	**6/97**	**BNL**	**Selva/Swift**
100	HAR	FRM130	2N7271	n		5		100(Ni?)				none	HAR	1993	BNL?	SSF Table
100	HAR	FRM140	2N7283	n		5		98(Ni?)					HAR	1993	BNL?	SSF Table
100	HAR	IRF130	2N6796	n		5		40(Co)				SEB	BREL	4/93	UCB	WP-01. D/C M9226. Same results @ 45 & 100° C.
100	**HAR**	**FRL130D1**		**n**	**1**	**10**				**25/27.5(I)**		**SEGR**	**JPL**	**6/97**	**BNL**	**Selva/Swift**
100	HAR		2N6764	n	1	10					45/50(Xe)	SEGR	JPL	11/95	TAM	Nichols. Note change in failure mode vs Vgs.
100	**HAR**	**FRL130D1**		**n**	**1**	**15**				**17.5/20(I)**		**SEGR**	**JPL**	**6/97**	**BNL**	**Selva/Swift**
100	HAR	FRM140D1	2N7283	n	3*	15			20/40(Kr)			SEGR	JPL	91/92	UCB	*Harris says these are their latest technology.
100	**HAR**	**FRL130D1**		**n**	**1**	**20**				**12.5/15(I)**		**SEGR**	**JPL**	**6/97**	**BNL**	**Selva/Swift**
100	**HAR**	**FSL130**		**n**	**11**	**20**		**100(Ni)**				**none**	**NSWC**	**7/93**	**BNL**	**T = 25°C**
100	HAR	IRF140		n	5	25			50?(Br)			SEGR	UA	1994	IPN	Mouret, 94IEEE TNS. RT and angle data exist.
100	**HAR**	**FSL110**		**n**	**2**	**35**		**100(Ni)**				**none**	**NSWC**	**2/95**	**BNL**	**T = 25°C**
100	**HAR**	**FSL110**		**n**	**2**	**40**		**100(Ni)**				**none**	**NSWC**	**2/95**	**BNL**	**T = 25°C**
100	HAR	FSF150R		n		<20			100(Br)	100(I)		SEGR	NWSC	1995	BNL	Titus, 95IEEE TNS. FSF = "SEE Hard"
100	HAR		2N6782	n	13	0&5		40/45(Ni)				SEB	HON	11/93	BNL	D/G 9352. Same response @ RT and 90° C. Lintz.
100	**INR**	**2N7261SH**	**130**	**n**	**5**	**0**		**100**				**none**	**BREL**	**7/97**	**88"**	
100	INR	IRF110	2N7682	n		0		70/80(Ni)	50/70(Br)			SEGR	ESA	1/94	BNL	D/C 9039B. Harwell Rept. AEA-RS-1348
100	INR	IRF120	2N6788	n		0		100(Ni)	80/90(Br)			SEB	ESA	1/94	BNL	D/C 9228G. Harwell Rept. AEA-RS-1348
100	INR	IRF130	2N6796	n		0		70/80(Ni)	60/70(Br)			SEB	ESA	1/94	BNL	D/C 8915A. Harwell Rept. AEA-RS-1348
100	INR	IRF130	2N6796	n		0		85(Cu?)				SEB	Aero	6/87	UCB	Koga
100	INR	IRF140		n		0		100(Ni)	70/80(Br)			SEB	ESA	1/94	BNL	D/C 9203E. Harwell Rept. AEA-RS-1348
100	INR	IRF150	2N6764	n		0		90/100(Ni)	70/80(Br)			SEB	ESA	1/94	BNL	D/C 9228E. Harwell Rept. AEA-RS-1348

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100	INR	IRF150	2N6764	n		0	105	75(Cu?)	75			SEB	Aero	5/92	UCB	Koga
100	INR	IRFF130	2N6796	n		0			82(Br)			SEB	SNL	1990	BNL	200 MeV Br Range = 28µ
100	INR	IRH130		n		0			100(Br)	50/60(I)		?	NWSC		BNL	
100	INR	IRH7150		n	6	0			1 failure @ 60/70(Br)			SEB	JPL	91/92	BNL	One maverick.
100	INR	IRH7150		n		0			100(Kr)			none	Aero	5/92	UCB	Koga reports no SEB up to 150 V.
100	INR	IRHF130		n		0			100(Br)			none	JPL	1991	BNL	
100	**INR**		**2N6782**	**n**	**1**	**0**				**65/70(I)**		**SEGR**	**JPL**	**6/97**	**BNL**	**Selva/Swift**
100	**INR**		**2N6782**	**n**	**4**	**0**				**58/59(I)**		**SEGR**	**JPL**	**6/97**	**BNL**	**Selva/Swift**
100	INR	IRFG6110		n & p		2		85(Fe) p-chan only				SEB	MM	5/93	BNL?	D/C 9118. WP-02. No SEGR, no SEB in n-channel devices.
100	INR	IRHF7110		n		2		100(Ni)	100(Br)			none	Rock	7/92	BNL	T = 90° C.
100	INR	IRHF7130	2N7261	n		2		100(Ni)	<100(Br)			SEGR	Rock	7/92	BNL	T = 90° C.
100	INR	IRF120	2N6788	n		5		90				SEB	BREL	12/92	UW	Oberg. T = 23° C. Note failure mode versus temperature
100	INR	IRF120	2N6788	n		5		80				SEGR	BREL	12/92	UW	Oberg. T = 80° C.
100	INR	IRF130	2N6796	n		5		100(Cu?)				none	BREL	3/93	UCB	D/C 9236. Oberg. WP-01
100	INR	IRHM7130		n		5		80				SEGR	SEGR	1/93	UW	D/C 9112. WP-01. T = 100° C.
100	**INR**		**2N6782**	**n**	**3**	**5**				**55/60(I)**		**SEGR**	**JPL**	**6/97**	**BNL**	**Selva/Swift**
100	INR	IRHF130		n		7.5			<100(Br)			SEGR	JPL	1991	BNL	
100	INR	1RFF110	2N7682	n		10	100(N) 100(Ne) 90(Ar)	60(Cu)				SEGR	Rock/ Aero	1990	UCB	
100	INR	IRF130	2N6756	n	3	10	100(N) 100(Ne) 90(Ar)	60(Cu)				SEB	Rock/ Aero	1990	UCB	
100	INR	IRF150	2N6764	n	3	10	100(Ne) 70(Ar)	50(Cu)			40/60 (La)	SEB	Rock/ Aero/ JPL	1990	UCB	JPL used 12 GeV La Bevalac ion, LET = 30. 6/88
100	INR	IRFF130	2N6796	n	5	10	100(N) 100(Ne) 90(Ar)	60(Cu)				SEB	Rock/ Aero	1990	UCB	Compare to SIL part.
100	INR	IRH130		n		10			100(Br)			none	NWSC		BNL	
100	INR	IRH150	2N6764	n		10		100(Cu) 100(Fe)	100(Kr)		60/100 (La)	SEB	JPL/ Rock	1990	UCB	JPL, 12 GeV @ Bevalac, 6/88
100	**INR**		**2N6782**	**n**	**1**	**10**				**40(I)**		**SEGR**	**JPL**	**6/97**	**BNL**	**Selva/Swift**
100	INR	IRHF7110		n	4	12			85(Br)	41(I)		SEGR	NWSC	4/95	BNL	Titus, Rept #SEGR-003 (T = 25° C only)
100	INR	IRH7150		n	4	15			60/70(Br)			SEGR	JPL	91/92	BNL	Data @ T = 100° C exists for Vgs = 15 V only.
100	INR	IRHF130		n		15			<100(Br)			SEGR	JPL	1991	BNL	
100	INR	IRHF7110		n		15		100(Ni)	70(Br)			SEGR	Rock	7/92	BNL	T = 90° C.
100	INR	IRHF7130	2N7261	n		15		100(Ni)	60(Br)			SEGR	Rock	7/92	BNL	T = 90° C.
100	**INR**		**2N6782**	**n**	**1**	**15**				**30/32.5(I)**		**SEGR**	**JPL**	**6/97**	**BNL**	**Selva/Swift**
100	INR	IRHF7110		n		20			63(Br)	29(I)		SEGR	NWSC	4/95	BNL	Titus, Rept #SEGR-003 (T = 25° C only)
100	**INR**		**2N6782**	**n**	**1**	**20**				**22.5/25(I)**		**SEGR**	**JPL**	**6/97**	**BNL**	**Selva/Swift**

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100	INR	IRH7150		n	2/3	0?		100(Ni)			>80(Xe)	none	CNES	11/90	GANIL	Used 3 GANIL ions. Tastet, RADECS91
100	INR	IRF150	2N6764	n	3	0?0	100(Cl)	70(Ni)	65(Br)	55(I)	50(Fe)	SEB	CNES	11/90	BNL	Used 1-4 GeV GANIL ions. Tastet, RADECS91
100	INR	IRF120	2N6788	n		2?	95(Ar)	<55(Cu)				SEB	Rock	1990	UCB	
100	INR	IRFF120	2N6788	n	1	2?		<60(Cu)				SEB	Rock	1990	UCB	
100	INR	IRH150	2N6764	n				100(Cu)	90/100(Kr)				Rock	1990	UCB	Waskiewicz & Groniger, DNA Rept 2/90
100	PHL	ECG2392		n	1	0					60 (Xe)	SEGR SEB	JPL	11/94	TAM	Nichols. Igs & Ids mA. At LET = 80, >50mA
100	RCA	IRF150	2N6764	n		10	100(N) 100(Ne) 50(Ar)	<50(Cu)				SEB	Rock	1990	UCB	
100	SIL	IRFF130	2N6796	n		5		50(Co)				SEB	BREL	7/95	UCB	
100	SIL	IRF150	2N6764	n	1	10	80(Ne) <50(Ar)	40(Cu)				SEB	Rock/ Aero	1990	UCB	
100	SIL	IRFF130	2N6796	n	2	10	100(N) 100(Ne) 70(Ar)	50(Cu)				SEB	Rock/ Aero	1990	UCB	