



IRFY Series Data Sheet

The IRFY Data Sheet describes 12 devices, 8 N-Channel and 4 P-Channel, all contained in the TO-257AB package. This data sheet is arranged to show common tabular and graphical information between devices.

Absolute maximum ratings and parametric data are presented in tabular format with devices grouped according to generically shared parameters. For each parametric rating, devices are categorized by N and P channel and listed in alpha-numeric order. The conditions specified for a given parametric test are provided in the right hand column of each table.

Graphical information is grouped by devices in

alphabetical order. Where the information is device specific, we have assigned a numeric character for the graph type and an alpha character to a given device. (See Table A below). Where graphs are polarity specific as in figures 10, 12, 14 and 15, we have indicated N-Channel or P-Channel. The Thermal Impedance Graph (Fig. 11) is the only exception where a graph is common to both N-Channel and P-Channel devices since the thermal impedance is only dependent on the die size and package.

In Table A below, a legend is provided cross referencing the part number to its assigned alpha code. A given device will retain this alpha code for each device specific graph.

Table A

DEVICE	ALPHA DESIGNATION
IRFY044	a
IRFY120	b
IRFY130	c
IRFY140	d
IRFY240	e
IRFY340	f
IRFY430	g
IRFY440	h
IRFY9120	i
IRFY9130	j
IRFY9140	k
IRFY9240	l

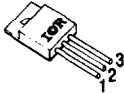
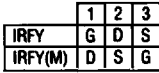


IRFF Series Devices



HEXFET, CECC Qualified — Europe

TO257/HEXFET/N-Channel

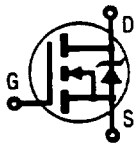
Basic Type	V _{DS} (V)	R _{DS(on)} (Ohms)	CECC Specification	Issue No.	Issue Date	Level of Quality Assessment and CECC 50 000 Screen Level Options	Case Outline
IRFY044(M)	60	0.03	50 012-062	1	10/91	E-, EA, EB, EC, ED	TO-257AA Y-PAK 
IRFY120(M)	100	0.31	50 012-060			E-, EA, EB, EC, ED	
IRFY130(M)	100	0.19	50 012-061			E-, EA, EB, EC, ED	
IRFY140(M)	100	0.092	50 012-062			E-, EA, EB, EC, ED	
IRFY240(M)	200	0.19	50 012-062			E-, EA, EB, EC, ED	
IRFY340(M)	400	0.55	50 012-062			E-, EA, EB, EC, ED	
IRFY430(M)	500	1.50	50 012-061			E-, EA, EB, EC, ED	
IRFY440(M)	500	0.85	50 012-062			E-, EA, EB, EC, ED	
TO257/HEXFET/P-Channel							
IRFY9120(M)	-100	0.60	50 012-063	1	10/91	E-, EA, EB, EC, ED	
IRFY9130(M)	-100	0.31	50 012-064			E-, EA, EB, EC, ED	
IRFY9140(M)	-100	0.21	50 012-065			E-, EA, EB, EC, ED	
IRFY9240(M)	-200	0.50	50 012-065			E-, EA, EB, EC, ED	

FOR OTHER GOVERNMENT/SPACE QUALIFIED PRODUCTS SEE SECTION E.

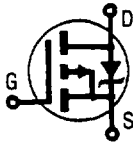


HEXFET® TRANSISTORS

IRFY SERIES



N-CHANNEL



P-CHANNEL

IRFY044 THRU IRFY440
IRFY9120 THRU IRFY9240

Description

The HEXFET® technology is the key to International Rectifier's advance line of power MOSFET transistors. The efficient geometry design achieves very low on-state resistance combined with high transconductance.

The HEXFET transistors also feature all of the well established advantages of MOSFETs such as voltage control, very fast switching, ease of paralleling and temperature stability of the electrical parameters.

They are well suited for applications such as switching power supplies and virtually any application where military and/or high reliability is required.

The totally isolated package eliminates the need for additional isolating material between the device and the heatsink, this improves the thermal efficiency and reduces drain capacitance.

FEATURES

- Isolated and Hermetically Sealed
- Alternative to TO-39 and TO-66 Packages
- Simple Drive Requirements
- Ease of Paralleling
- Ceramic eyelet package used on all space level applications or on request

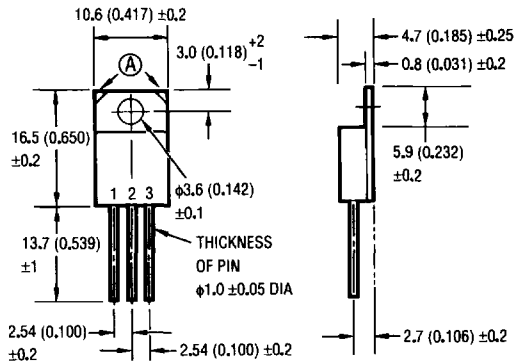
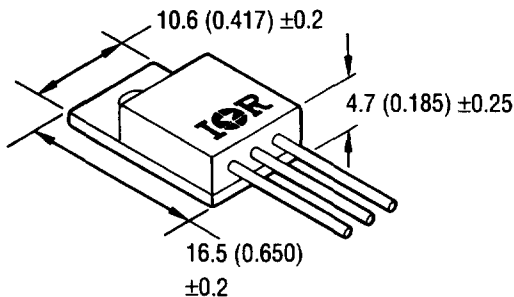
Product Summary N-Channel

Characteristic	IRFY044 thru IRFY440	Units
BV _{DSS}	60 to 500	V
R _{DS(on)}	0.035 to 1.6	Ω
I _D	3.7 to 20	A

Product Summary P-Channel

Characteristic	IRFY9120 thru IRFY9240	Units
BV _{DSS}	-100 to -200	V
R _{DS(on)}	0.21 to 0.50	Ω
I _D	-5.3 to -13	A

CASE STYLE AND DIMENSIONS



TERM	IRFY ...	IRFY ... M
1	GATE	DRAIN
2	DRAIN	SOURCE
3	SOURCE	GATE

(A) Corners removed to indicate 'M' option

Conforms to JEDEC Outline TO-257AB
Dimensions in Millimeters and (Inches)



N-CHANNEL — Absolute Maximum Ratings

Parameter	IRFY044	IRFY120	IRFY130	IRFY140	Unit
$I_D @ T_C = 25^\circ\text{C}$ Continuous Drain Current	20*	7.3	11	18	A
$I_D @ T_C = 100^\circ\text{C}$ Continuous Drain Current	20	4.6	7.0	12	A
I_{DM} Pulsed Drain Current	128	29	44	72	A
V_{GS} Gate-Source Voltage	± 20				V
$P_D @ T_C = 25^\circ\text{C}$ Maximum Power Dissipation	60	30	45	60	W
Linear Derating Factor	0.48	0.24	0.36	0.48	W/K
T_J Operating Junction Storage Temperature Range	-55 to 150				$^\circ\text{C}$
T_{stg} Temperature Range					
Weight	3.4 (typical)				g

* I_D current limited by pin diameter

N-CHANNEL — Absolute Maximum Ratings (Continued)

Parameter	IRFY240	IRFY340	IRFY430	IRFY440	Unit
$I_D @ T_C = 25^\circ\text{C}$ Continuous Drain Current	12	6.9	3.7	5.5	A
$I_D @ T_C = 100^\circ\text{C}$ Continuous Drain Current	7.8	4.4	2.4	3.5	A
I_{DM} Pulsed Drain Current	48	27	14	22	A
V_{GS} Gate-Source Voltage	± 20				V
$P_D @ T_C = 25^\circ\text{C}$ Maximum Power Dissipation	60	60	45	60	W
Linear Derating Factor	0.48	0.48	0.36	0.48	W/K
T_J Operating Junction Storage Temperature Range	-55 to 150				$^\circ\text{C}$
T_{stg} Temperature Range					
Weight	3.4 (typical)				g

P-CHANNEL — Absolute Maximum Ratings

Parameter	IRFY9120	IRFY9130	IRFY9140	IRFY9240	Unit
$I_D @ T_C = 25^\circ\text{C}$ Continuous Drain Current	-5.3	-9.3	-13	-7.7	A
$I_D @ T_C = 100^\circ\text{C}$ Continuous Drain Current	-3.4	-5.8	-8.2	-4.9	A
I_{DM} Pulsed Drain Current	-21	-37	-52	-30	V
V_{GS} Gate-Source Voltage	± 20				V
$P_D @ T_C = 25^\circ\text{C}$ Maximum Power Dissipation	30	45	60	60	W
Linear Derating Factor	0.24	0.36	0.48	0.48	W/K
T_J Operating Junction Storage Temperature Range	-55 to 150				$^\circ\text{C}$
T_{stg} Temperature Range					
Weight	3.4 (typical)				g



Electrical Characteristics @ T_C = 25°C (Unless otherwise specified)

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions	
BV _{DSS}	Drain-Source Breakdown Voltage	IRFY044	60	—	—	V	I _D = 1.0mA, V _{GS} = 0V
		IRFY120	100	—	—		
		IRFY130	100	—	—		
		IRFY140	100	—	—		
		IRFY240	200	—	—		
		IRFY340	400	—	—		
		IRFY430	500	—	—		I _D = -1.0mA, V _{GS} = 0V
		IRFY440	500	—	—		
		IRFY9120	-100	—	—		
		IRFY9130	-100	—	—		
IRFY9140	-100	—	—				
IRFY9240	-200	—	—				
ΔBV _{DSS} /ΔT _J	Temperature Coefficient of Breakdown Voltage	IRFY044	—	0.68	—	V/°C	Reference to 25°C, I _D = 1.0mA
		IRFY120	—	0.1	—		
		IRFY130	—	0.1	—		
		IRFY140	—	0.1	—		
		IRFY240	—	0.29	—		
		IRFY340	—	0.46	—		
		IRFY430	—	0.78	—		Reference to 25°C, I _D = -1.0mA
		IRFY440	—	0.78	—		
		IRFY9120	—	-0.1	—		
		IRFY9130	—	-0.1	—		
IRFY9140	—	-0.087	—				
IRFY9240	—	-0.20	—				
R _{DSON}	Static Drain-Source On-State Resistance	IRFY044	—	—	0.035	Ω	I _D = 20A
			IRFY120	—	—		0.31
		IRFY130		—	—		0.36
			IRFY140	—	—		0.19
		IRFY240		—	—		0.22
			IRFY340	—	—		0.092
		IRFY430		—	—		0.11
			IRFY440	—	—		0.19
		IRFY9120		—	—		0.22
			IRFY9130	—	—		0.55
		IRFY9140		—	—		0.63
			IRFY9240	—	—		1.6
		IRFY9120		—	—		1.84
			IRFY9130	—	—		0.85
		IRFY9140		—	—		0.98
			IRFY9240	—	—		0.60
		IRFY9120		—	—		0.69
			IRFY9130	—	—		0.31
		IRFY9140		—	—		0.36
			IRFY9240	—	—		0.21
IRFY9120	—	—		0.24	I _D = -13A		
	IRFY9130	—	—	0.50	I _D = -4.9A		
IRFY9140		—	—	0.58	I _D = -7.7A		
	V _{GS(th)}	Gate Threshold Voltage	N-Channel	2.0	—	4.0	V
P-Channel			-2.0	—	-4.0	V _{DS} = V _{GS} , I _D = -250μA	



Electrical Characteristics (Continued)

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions		
g _{fs}	Forward Transconductance	IRFY044	17	—	—	S(s)	V _{DS} ≥ 15V	
		IRFY120	1.5	—	—			I _D = 20A
		IRFY130	3.0	—	—			I _D = 4.6A
		IRFY140	9.1	—	—			I _D = 7.0A
		IRFY240	6.1	—	—			I _D = 12A
		IRFY340	4.9	—	—			I _D = 7.8A
		IRFY430	1.5	—	—		I _D = 4.4A	V _{DS} ≥ -15V
		IRFY440	4.7	—	—		I _D = 2.4A	
		IRFY9120	1.25	—	—		I _D = 3.5A	
		IRFY9130	2.5	—	—		I _D = -3.4A	
		IRFY9140	6.2	—	—		I _D = -5.8A	
		IRFY9240	4.0	—	—		I _D = -8.2A	
							I _D = -4.9A	
I _{DSS}	Zero Gate Voltage Drain Current	N-Channel	—	—	25	μA	V _{DS} = 0.8 x Max. Rating, V _{GS} = 0V	
			—	—	250		V _{DS} = 0.8 x Max. Rating, V _{GS} = 0V, T _J = 25°C	
		P-Channel	—	—	-25		V _{DS} = 0.8 x Max. Rating, V _{GS} = 0V	
			—	—	-250		V _{DS} = 0.8 x Max. Rating, V _{GS} = 0V, T _J = 125°C	
I _{GSS}	Gate-Source Leakage Forward	N-Channel	—	—	100	nA	V _{GS} = 20V	
		P-Channel	—	—	-100		V _{GS} = -20V	
I _{GSS}	Gate-Source Leakage Reverse	N-Channel	—	—	-100	nA	V _{GS} = -20V	
		P-Channel	—	—	100		V _{GS} = 20V	
Q _g	Total Gate Charge (Gate-Source plus Gate-Drain)	IRFY044	39	—	88	nC	V _{GS} = 10V, V _{DS} = 0.5 x V _{DS} max.	
		IRFY120	7.7	—	17			I _D = 20A
		IRFY130	12.8	—	28.5			I _D = 7.3A
		IRFY140	30	—	59			I _D = 11A
		IRFY240	32	—	60			I _D = 18A
		IRFY340	32	—	65			I _D = 12A
		IRFY430	19.8	—	29.5		I _D = 6.9A	V _{GS} = -10V, V _{DS} = 0.5 x V _{DS} max.
		IRFY440	27.3	—	68.5		I _D = 3.7A	
		IRFY9120	4.3	—	16.3		I _D = 5.5A	
		IRFY9130	14.7	—	30		I _D = -5.3A	
		IRFY9140	31	—	60		I _D = -9.3A	
		IRFY9240	28	—	60		I _D = -13A	
							I _D = -7.7A	
Q _{gs}	Gate Source Charge	IRFY044	6.7	—	15	nC	V _{GS} = 10V, V _{DS} = 0.5 x V _{DS} max.	
		IRFY120	0.7	—	4.0			I _D = 20A
		IRFY130	1.0	—	6.3			I _D = 7.3A
		IRFY140	2.4	—	12			I _D = 11A
		IRFY240	2.2	—	10.6			I _D = 18A
		IRFY340	2.2	—	10			I _D = 12A
		IRFY430	2.2	—	4.6		I _D = 6.9A	V _{GS} = -10V, V _{DS} = 0.5 x V _{DS} max.
		IRFY440	2.0	—	12.5		I _D = 3.7A	
		IRFY9120	1.3	—	4.7		I _D = 5.5A	
		IRFY9130	1.0	—	7.1		I _D = -5.3A	
		IRFY9140	3.7	—	13		I _D = -9.3A	
		IRFY9240	3.0	—	15		I _D = -13A	
							I _D = -7.7A	



Electrical Characteristics (Continued)

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
Q _{gd} Gate Drain ("Miller") Charge	IRFY044	18	—	52	nC	V _{GS} = 10V, V _{DS} = 0.5 x V _{DS} max.
	IRFY120	2.0	—	8.0		
	IRFY130	3.8	—	16.6		
	IRFY140	12	—	30.7		
	IRFY240	14.2	—	37.6		
	IRFY340	13.8	—	40.5		
	IRFY430	5.5	—	19.7		
	IRFY440	11.1	—	42.4		
	IRFY9120	1.0	—	9.0		
	IRFY9130	2.0	—	21		
	IRFY9140	7.0	—	35.2		
	IRFY9240	4.5	—	38		
	t _{d(on)} Turn-on Delay Time	IRFY044	—	—		
IRFY120		—	—	15		
IRFY130		—	—	30		
IRFY140		—	—	21		
IRFY240		—	—	20		
IRFY340		—	—	25		
IRFY430		—	—	35		
IRFY440		—	—	21		
IRFY9120		—	—	60		
IRFY9130		—	—	60		
IRFY9140		—	—	35		
IRFY9240		—	—	35		
t _r Rise Time		IRFY044	—	—	130	ns
	IRFY120	—	—	70		
	IRFY130	—	—	75		
	IRFY140	—	—	145		
	IRFY240	—	—	152		
	IRFY340	—	—	92		
	IRFY430	—	—	30		
	IRFY440	—	—	73		
	IRFY9120	—	—	100		
	IRFY9130	—	—	140		
	IRFY9140	—	—	85		
	IRFY9240	—	—	85		
	t _{d(off)} Turn-Off Delay Time	IRFY044	—	—	81	
IRFY120		—	—	40		
IRFY130		—	—	40		
IRFY140		—	—	64		
IRFY240		—	—	58		
IRFY340		—	—	79		
IRFY430		—	—	55		
IRFY440		—	—	72		
IRFY9120		—	—	50		
IRFY9130		—	—	140		
IRFY9140		—	—	85		
IRFY9240		—	—	85		

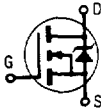
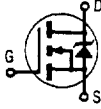
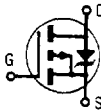
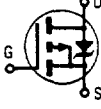
Electrical Characteristics (Continued)

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
t _f Fall Time	IRFY044 IRFY120 IRFY130 IRFY140 IRFY240 IRFY340 IRFY430 IRFY440 IRFY9120 IRFY9130 IRFY9140 IRFY9240	—	—	79	ns	V _{DD} = 30V, I _D = 20A, R _G = 9.1Ω
		—	—	70		V _{DD} = 50V, I _D = 7.3A, R _G = 7.5Ω
		—	—	45		V _{DD} = 50V, I _D = 11A, R _G = 7.5Ω
		—	—	105		V _{DD} = 50V, I _D = 18A, R _G = 9.1Ω
		—	—	67		V _{DD} = 100V, I _D = 12A, R _G = 9.1Ω
		—	—	58		V _{DD} = 200V, I _D = 6.9A, R _G = 9.1Ω
		—	—	30		V _{DD} = 250V, I _D = 3.7A, R _G = 7.5Ω
		—	—	51		V _{DD} = 250V, I _D = 5.5A, R _G = 9.1Ω
		—	—	70		V _{DD} = -50V, I _D = -5.3A, R _G = 7.5Ω
		—	—	140		V _{DD} = -50V, I _D = -9.3A, R _G = 7.5Ω
		—	—	65		V _{DD} = -50V, I _D = -13A, R _G = 9.1Ω
		—	—	65		V _{DD} = -100V, I _D = -7.7A, R _G = 9.1Ω
		L _D Internal Drain Inductance	N-Channel	—		8.7
L _S Internal Source Inductance	Measured from the source lead, 6 mm (0.25 in.) from package to center of source bonding pad					
Modified MOSFET symbol showing the internal inductances.						
L _D Internal Drain Inductance	P-Channel	—	8.7	—	nH	Measured from the drain lead, 6 mm (0.25 in.) from package to center of die
L _S Internal Source Inductance						Measured from the source lead, 6 mm (0.25 in.) from package to center of source bonding pad
Modified MOSFET symbol showing the internal inductances.						
C _{iss} Input Capacitance	IRFY044 IRFY120 IRFY130 IRFY140 IRFY240 IRFY340 IRFY430 IRFY440 IRFY9120 IRFY9130 IRFY9140 IRFY9240	—	2400	—	pF	V _{GS} = 0V, V _{DS} = 25V, f = 1.0 MHz See fig. 5
		—	350	—		
		—	650	—		
		—	1660	—		
		—	1300	—		
		—	1400	—		
		—	610	—		
		—	1300	—		
		—	380	—		
		—	800	—		
		—	1400	—		
—	1200	—				
C _{oss} Output Capacitance	IRFY044 IRFY120 IRFY130 IRFY140 IRFY240 IRFY340 IRFY430 IRFY440 IRFY9120 IRFY9130 IRFY9140 IRFY9240	—	1100	—	pF	V _{GS} = 0V, V _{DS} = 25V, f = 1.0 MHz See fig. 5
		—	150	—		
		—	240	—		
		—	550	—		
		—	400	—		
		—	350	—		
		—	135	—		
		—	310	—		
		—	170	—		
		—	350	—		
		—	600	—		
—	570	—				

Electrical Characteristics (Continued)

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
C_{rss} Reverse Transfer Capacitance	IRFY044	—	230	—	pF	V _{GS} = 0V, V _{DS} = 25V, f = 1.0 MHz See fig. 5
	IRFY120	—	24	—		
	IRFY130	—	44	—		
	IRFY140	—	120	—		
	IRFY240	—	130	—		
	IRFY340	—	230	—		
	IRFY430	—	65	—		
	IRFY440	—	120	—		
	IRFY9120	—	45	—		
	IRFY9130	—	125	—		
	IRFY9140	—	200	—		
	IRFY9240	—	81	—		

Source-Drain Diode Rating and Characteristics

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
I_S Continuous Source Current (Body Diode)	IRFY044	—	—	20	A	Modified MOSFET symbol showing the integral reverse p-n junction rectifier.  N-Channel
	IRFY120	—	—	7.3		
	IRFY130	—	—	11		
	IRFY140	—	—	18		
	IRFY240	—	—	12		
	IRFY340	—	—	6.9		
	IRFY430	—	—	3.7		
	IRFY440	—	—	5.5		
	IRFY9120	—	—	-5.3		
	IRFY9130	—	—	-9.3		
	IRFY9140	—	—	-13		
	IRFY9240	—	—	-7.7		
I_{SM} Pulsed Source Current (Body Diode)	IRFY044	—	—	128	A	Modified MOSFET symbol showing the integral reverse p-n junction rectifier.  N-Channel
	IRFY120	—	—	29		
	IRFY130	—	—	43		
	IRFY140	—	—	73		
	IRFY240	—	—	49		
	IRFY340	—	—	27		
	IRFY430	—	—	14		
	IRFY440	—	—	22		
	IRFY9120	—	—	-21		
	IRFY9130	—	—	-37		
	IRFY9140	—	—	-52		
	IRFY9240	—	—	-30		
						 P-Channel
						 P-Channel



Source-Drain Diode Ratings and Characteristics (Continued)

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions		
V _{SD} Diode Forward Voltage	IRFY044	—	—	2.5	V	I _S = 20A		
	IRFY120	—	—	1.8		I _S = 7.3A		
	IRFY130	—	—	1.5		I _S = 11A		
	IRFY140	—	—	1.5		I _S = 18A		
	IRFY240	—	—	1.5		I _S = 12A		
	IRFY340	—	—	1.5		I _S = 6.9A		
	IRFY430	—	—	1.4		I _S = 3.7A		
	IRFY440	—	—	1.5		I _S = 5.5A		
	IRFY9120	—	—	-4.8		I _S = -5.3A		
	IRFY9130	—	—	-4.7		I _S = -9.3A		
	IRFY9140	—	—	-4.2		I _S = -13A		
	IRFY9240	—	—	-4.6		I _S = -7.7A		
t _{rr} Reverse Recovery Time	IRFY044	—	—	220	ns	I _F = 20A		
	IRFY120	—	—	240		I _S = 7.3A		
	IRFY130	—	—	300		I _S = 11A		
	IRFY140	—	—	400		I _S = 18A		
	IRFY240	—	—	500		I _S = 12A		
	IRFY340	—	—	600		I _S = 6.9A		
	IRFY430	—	—	900		I _S = 3.7A		
	IRFY440	—	—	700		I _S = 5.5A		
	IRFY9120	—	—	200		I _S = -5.3A		
	IRFY9130	—	—	250		I _S = -9.3A		
	IRFY9140	—	—	280		I _S = -13A		
	IRFY9240	—	—	440		I _S = -7.7A		
							T _J = 25°C, di/dt ≤ 100A/μs V _{DD} ≤ 50V	
							T _J = 25°C, di/dt ≤ -100A/μs V _{DD} ≤ -50V	

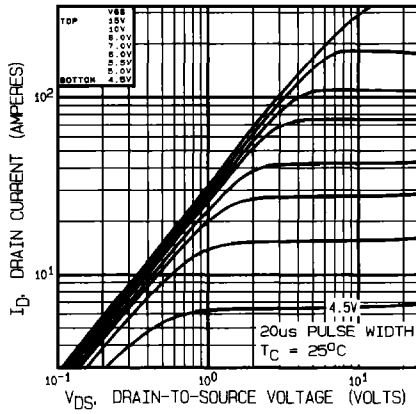


Source-Drain Diode Ratings and Characteristics (Continued)

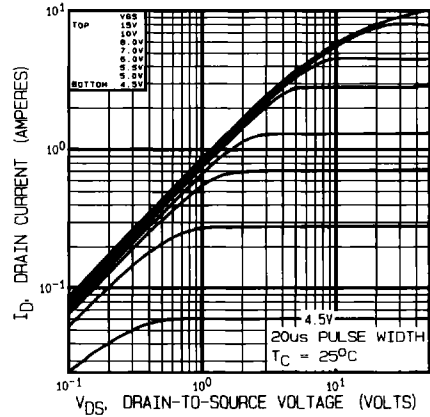
Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions		
Q _{rr} Reverse Recovered Charge	IRFY044	—	—	1.6	μC	I _S = 20A		
	IRFY120	—	—	2.0		I _S = 7.3A		
	IRFY130	—	—	3.0		I _S = 11A		
	IRFY140	—	—	2.4		I _S = 18A		
	IRFY240	—	—	5.3		I _S = 12A		
	IRFY340	—	—	5.6		I _S = 6.9A		
	IRFY430	—	—	7.0		I _S = 3.7A		
	IRFY440	—	—	8.9		I _S = 5.5A		
	IRFY9120	—	—	3.1		I _S = -5.3A		
	IRFY9130	—	—	3.0		I _S = -9.3A		
	IRFY9140	—	—	3.6		I _S = -13A		
	IRFY9240	—	—	7.2		I _S = -7.7A		
							T _J = 25°C, di/dt ≤ 100A/μs V _{DD} ≤ 50V	
							T _J = 25°C, di/dt ≤ -100A/μs V _{DD} ≤ -50V	

Thermal Resistance and Isolation

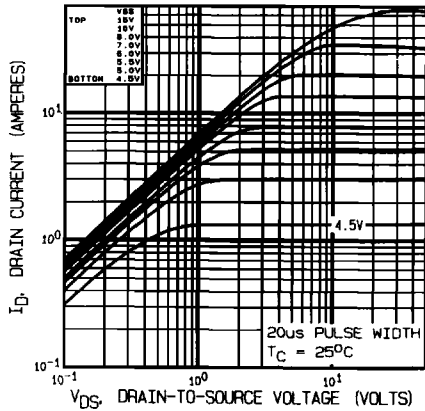
Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
R_{thJC} Junction-to-Case	IRFY044	—	—	2.1	K/W	
	IRFY120	—	—	4.1		
	IRFY130	—	—	2.8		
	IRFY140	—	—	2.1		
	IRFY240	—	—	2.1		
	IRFY340	—	—	2.1		
	IRFY430	—	—	2.8		
	IRFY440	—	—	2.1		
	IRFY9120	—	—	4.1		
	IRFY9130	—	—	2.8		
	IRFY9140	—	—	2.1		
	IRFY9240	—	—	2.1		
R_{thCS} Case-to-Sink	ALL	—	0.21	—	K/W	Mounting surface flat, smooth
R_{thJA} Junction-to-Ambient	ALL	—	—	80	K/W	Typical socket mount



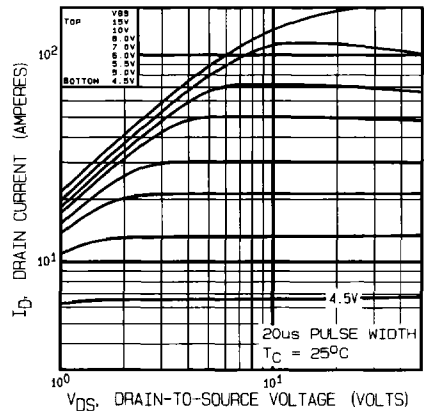
**Fig. 1a – Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY044**



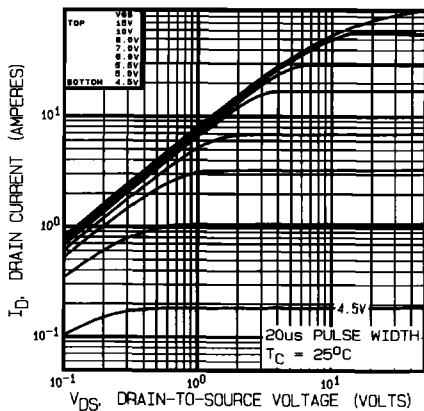
**Fig. 1b – Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY120**



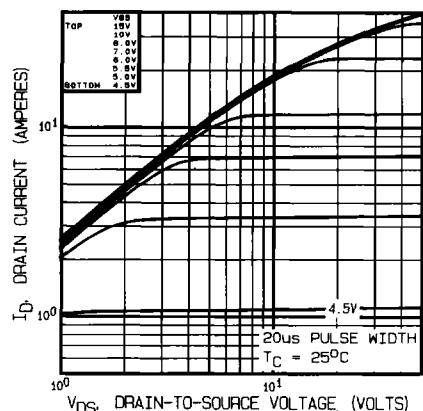
**Fig. 1c – Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY130**



**Fig. 1d – Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY140**



**Fig. 1e – Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY240**



**Fig. 1f – Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY340**

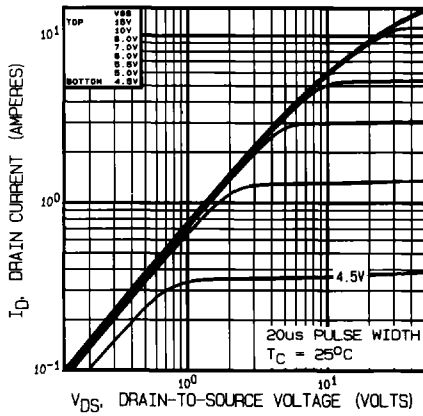


Fig. 1g - Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY430

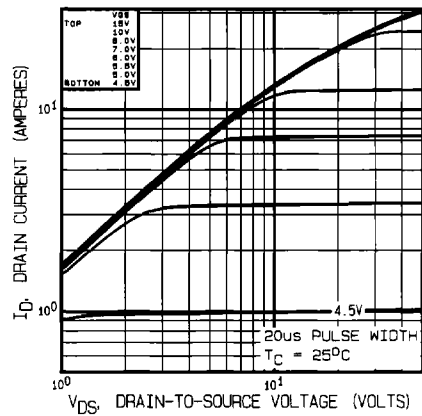


Fig. 1h - Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY440

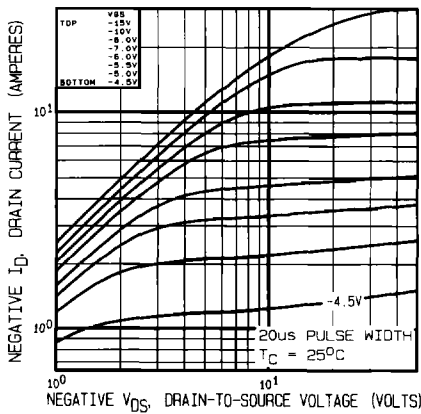


Fig. 1i - Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY9120

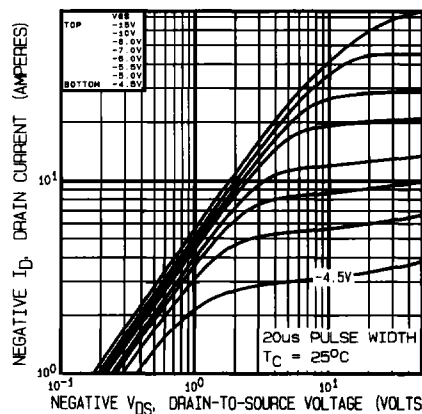


Fig. 1j - Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY9130

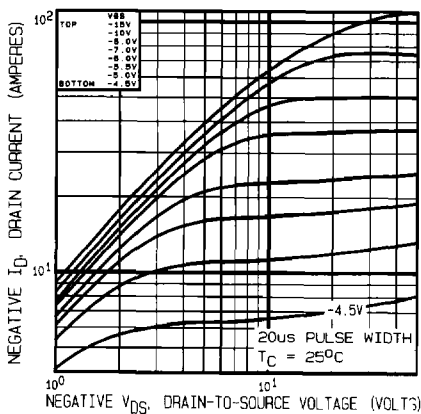


Fig. 1k - Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY9140

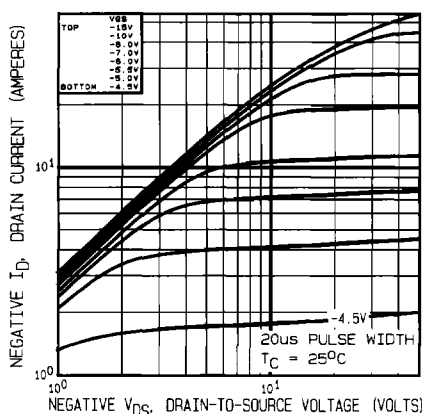


Fig. 1l - Typical Output Characteristics, $T_C = 25^\circ\text{C}$
IRFY9240

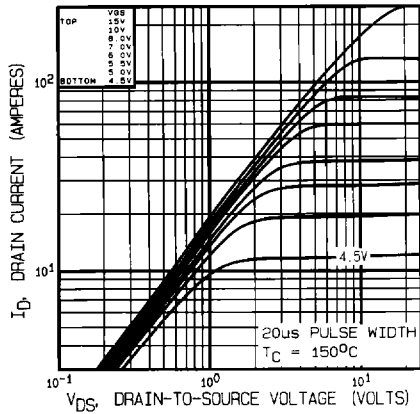


Fig. 2a - Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY044

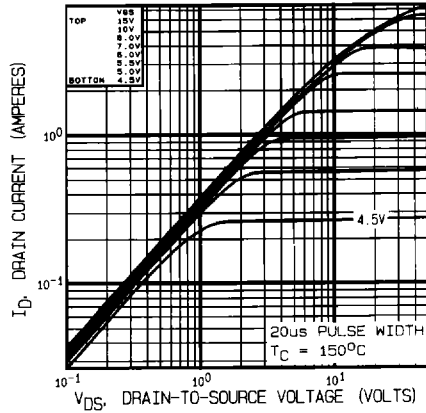


Fig. 2b - Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY120

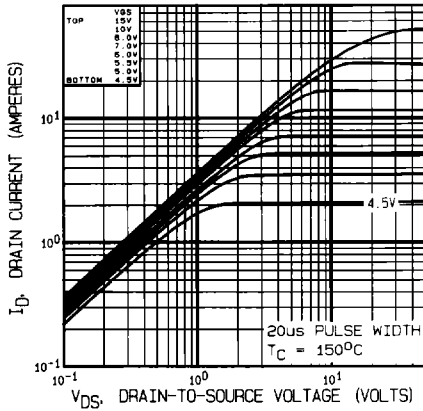


Fig. 2c - Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY130

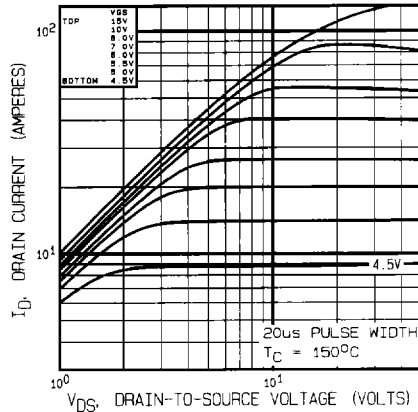


Fig. 2d - Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY140

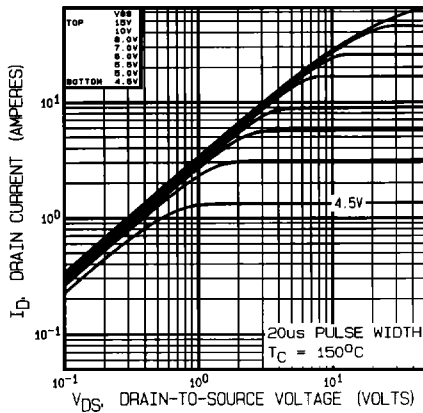


Fig. 2e - Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY240

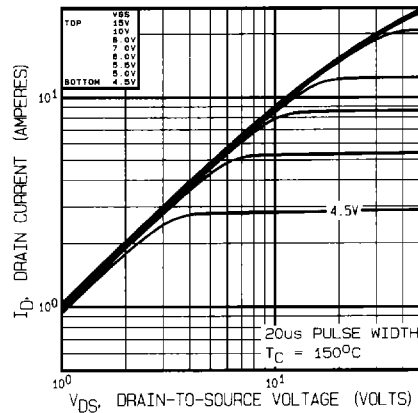


Fig. 2f - Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY340

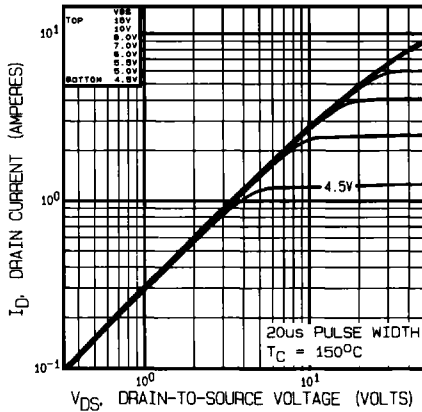


Fig. 2g – Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY430

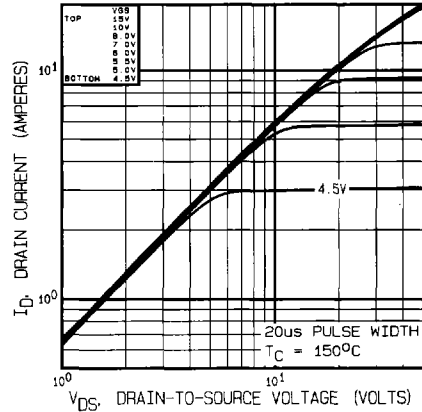


Fig. 2h – Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY440

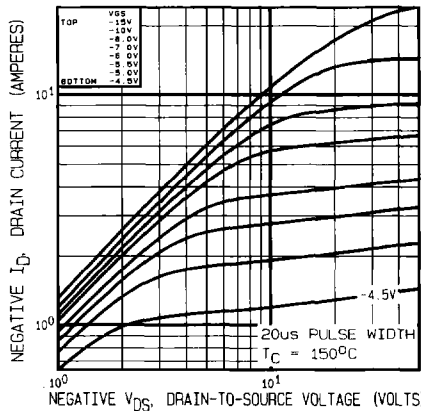


Fig. 2i – Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY9120

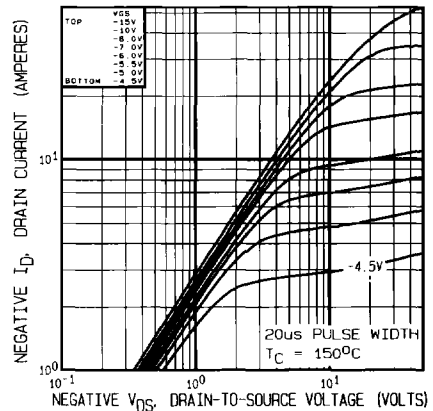


Fig. 2j – Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY9130

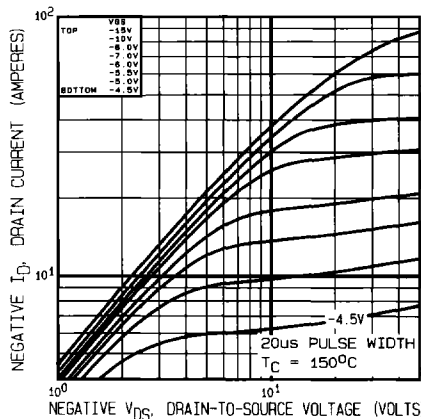


Fig. 2k – Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY9140

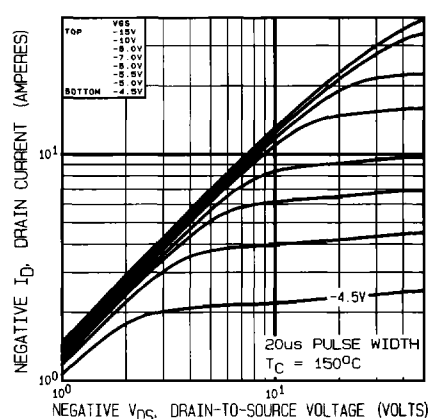
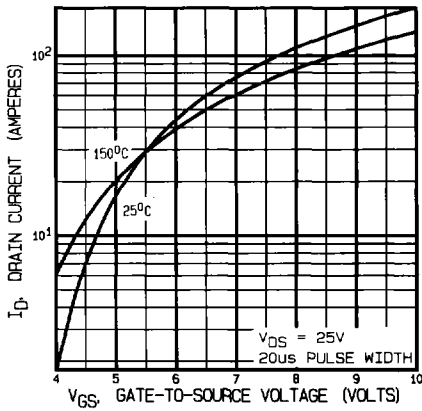
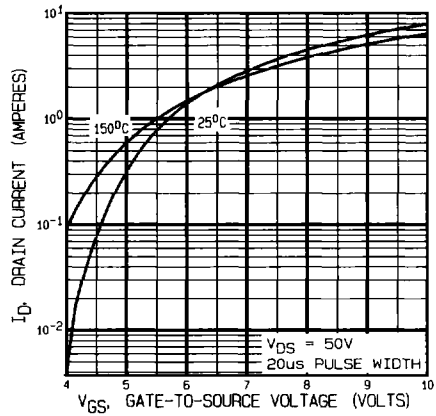


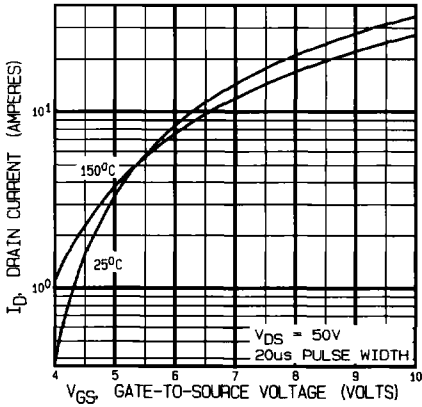
Fig. 2l – Typical Output Characteristics, $T_C = 150^\circ\text{C}$
IRFY9240



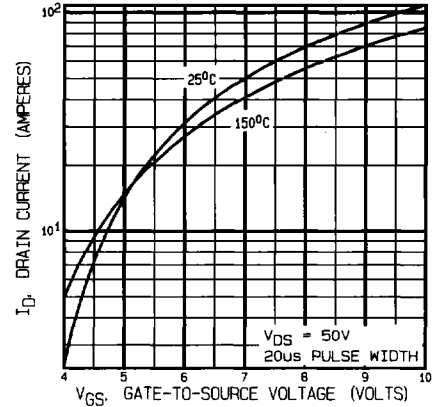
**Fig. 3a - Typical Transfer Characteristics
IRFY044**



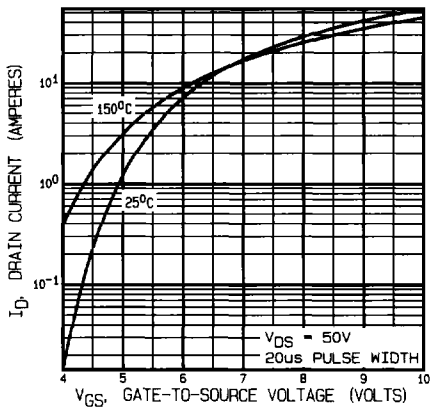
**Fig. 3b - Typical Transfer Characteristics
IRFY120**



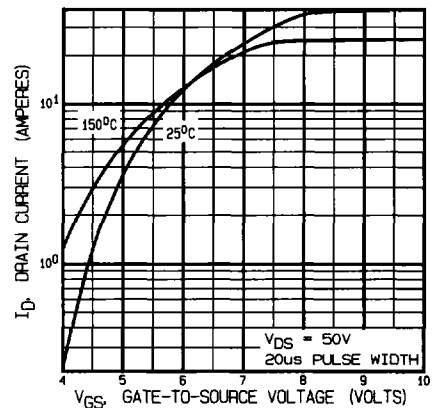
**Fig. 3c - Typical Transfer Characteristics
IRFY130**



**Fig. 3d - Typical Transfer Characteristics
IRFY140**



**Fig. 3e - Typical Transfer Characteristics
IRFY240**



**Fig. 3f - Typical Transfer Characteristics
IRFY340**

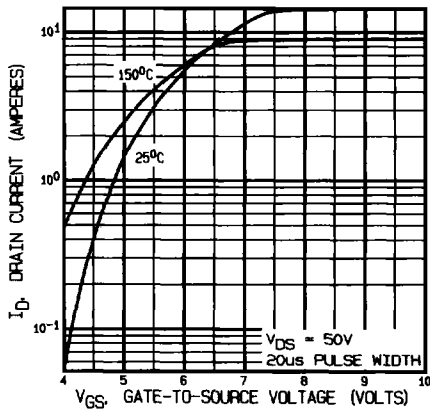


Fig. 3g - Typical Transfer Characteristics
IRFY430

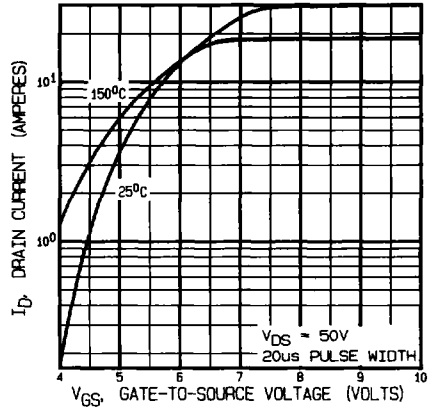


Fig. 3h - Typical Transfer Characteristics
IRFY440

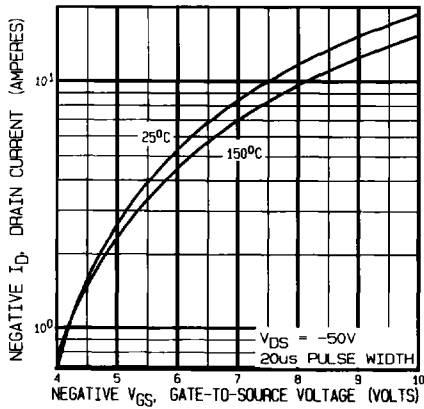


Fig. 3i - Typical Transfer Characteristics
IRFY9120

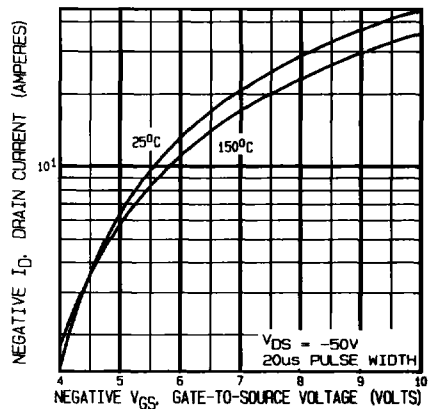


Fig. 3j - Typical Transfer Characteristics
IRFY9130

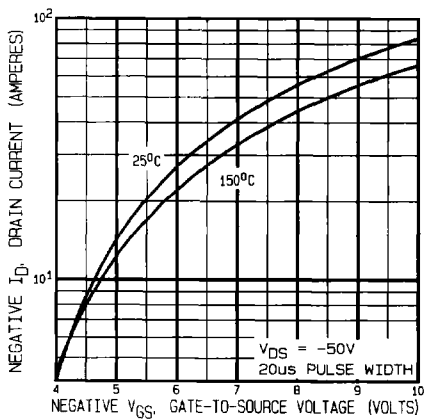


Fig. 3k - Typical Transfer Characteristics
IRFY9140

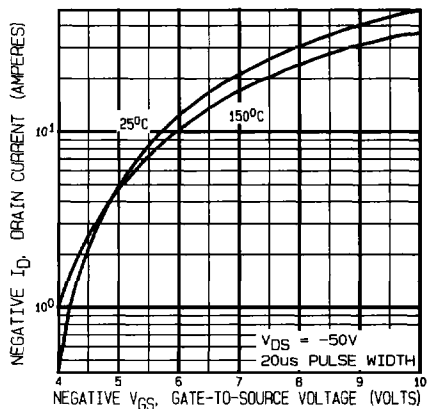


Fig. 3l - Typical Transfer Characteristics
IRFY9240

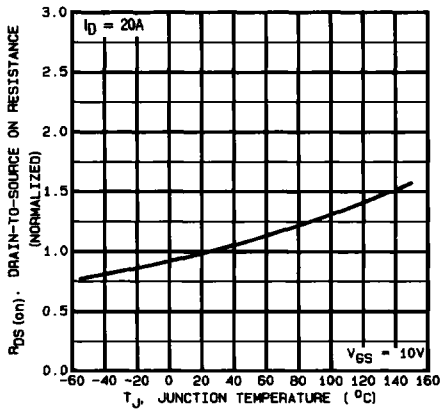


Fig. 4a – Normalized On-Resistance Vs. Temperature IRFY044

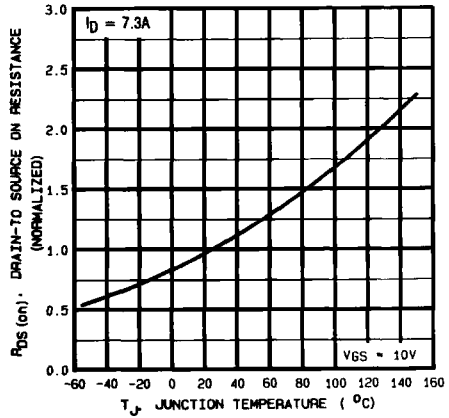


Fig. 4b – Normalized On-Resistance Vs. Temperature IRFY120

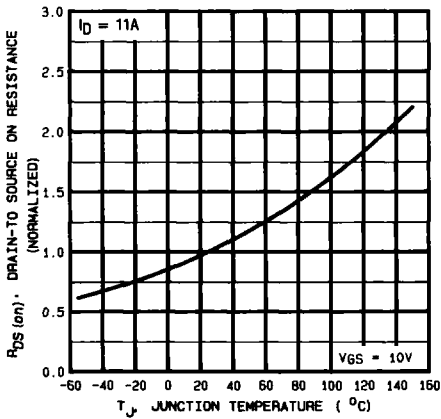


Fig. 4c – Normalized On-Resistance Vs. Temperature IRFY130

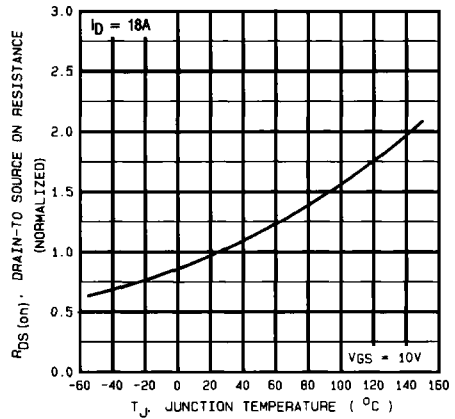


Fig. 4d – Normalized On-Resistance Vs. Temperature IRFY140

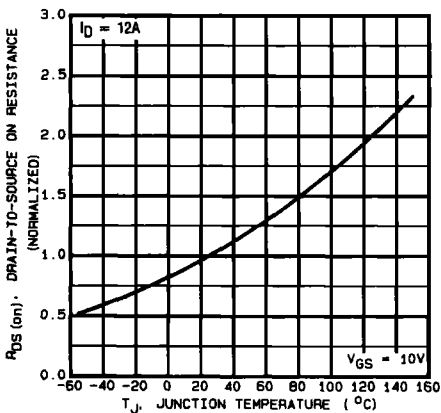


Fig. 4e – Normalized On-Resistance Vs. Temperature IRFY240

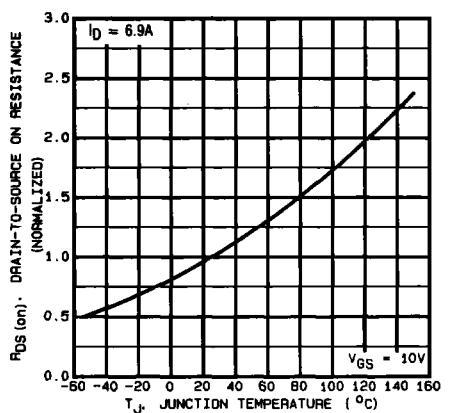


Fig. 4f – Normalized On-Resistance Vs. Temperature IRFY340

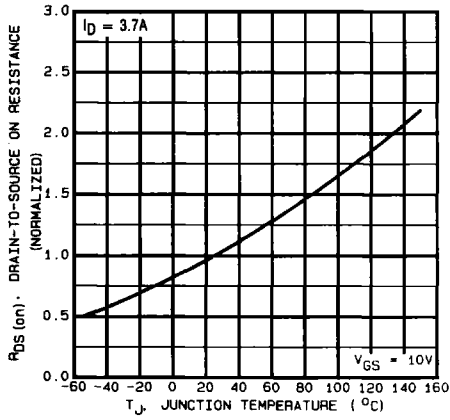


Fig. 4g – Normalized On-Resistance Vs. Temperature IRFY430

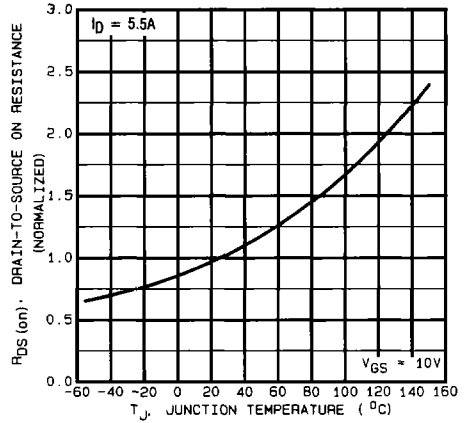


Fig. 4h – Normalized On-Resistance Vs. Temperature IRFY440

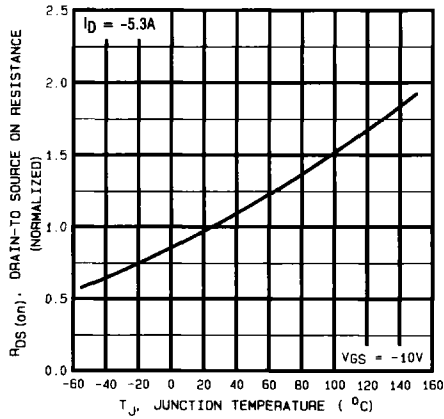


Fig. 4i – Normalized On-Resistance Vs. Temperature IRFY9120

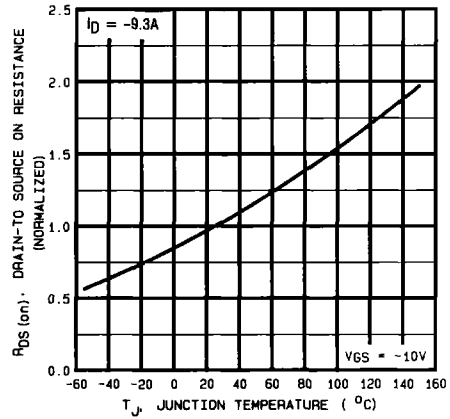


Fig. 4j – Normalized On-Resistance Vs. Temperature IRFY9130

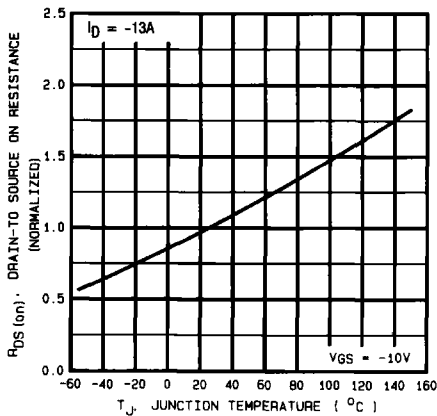


Fig. 4k – Normalized On-Resistance Vs. Temperature IRFY9140

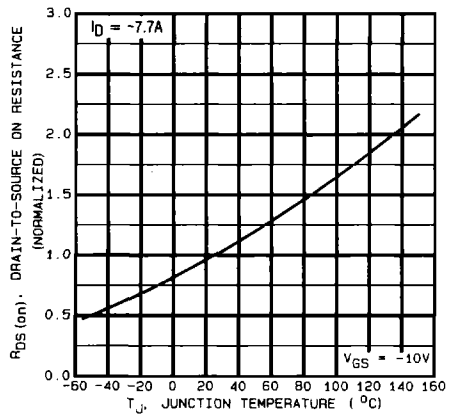


Fig. 4l – Normalized On-Resistance Vs. Temperature IRFY9240

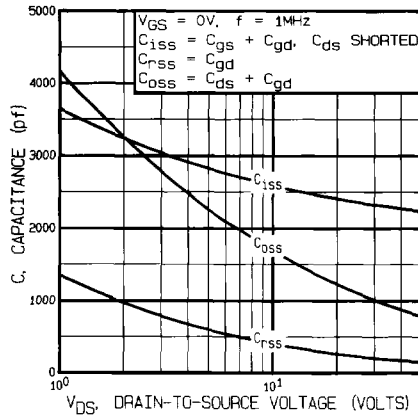


Fig. 5a - Typical Capacitance Vs. Drain-to-Source Voltage IRFY044

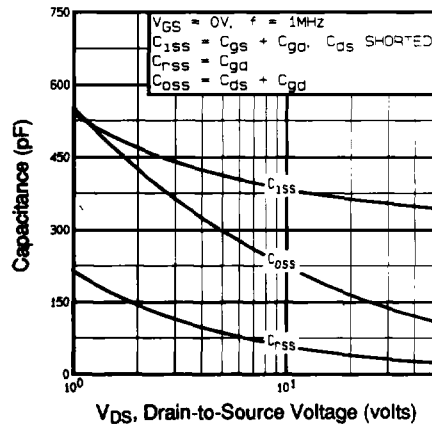


Fig. 5b - Typical Capacitance Vs. Drain-to-Source Voltage IRFY120

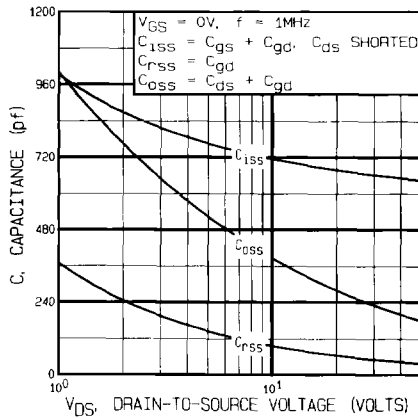


Fig. 5c - Typical Capacitance Vs. Drain-to-Source Voltage IRFY130

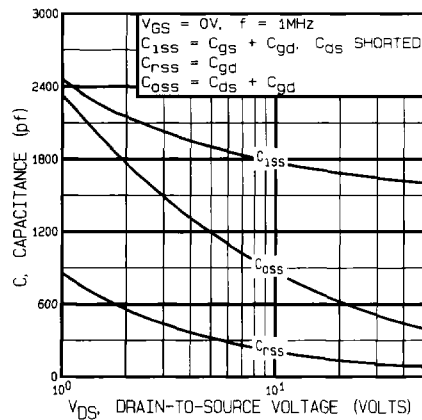


Fig. 5d - Typical Capacitance Vs. Drain-to-Source Voltage IRFY140

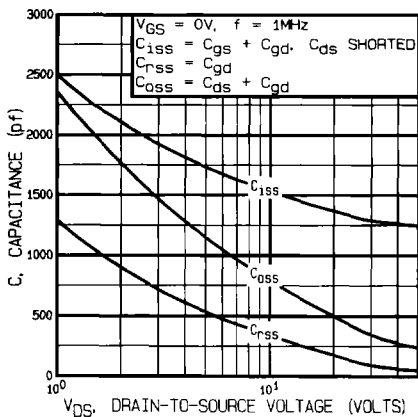


Fig. 5e - Typical Capacitance Vs. Drain-to-Source Voltage IRFY240

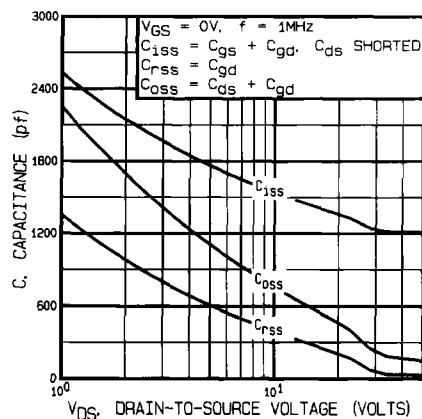


Fig. 5f - Typical Capacitance Vs. Drain-to-Source Voltage IRFY340

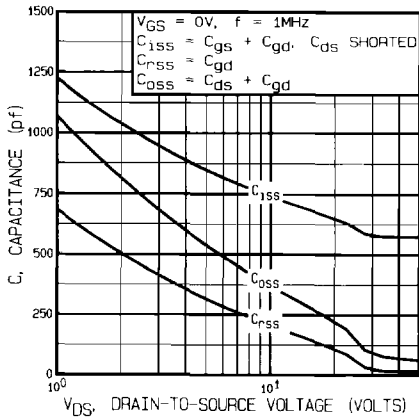


Fig. 5g – Typical Capacitance Vs. Drain-to-Source Voltage IRFY430

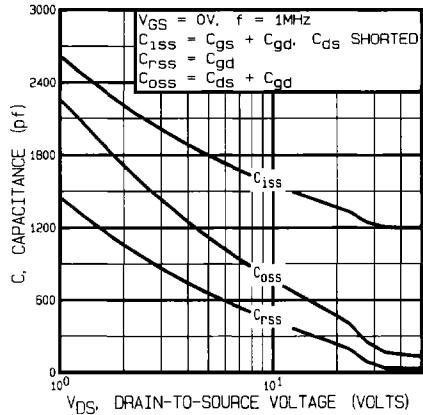


Fig. 5h – Typical Capacitance Vs. Drain-to-Source Voltage IRFY440

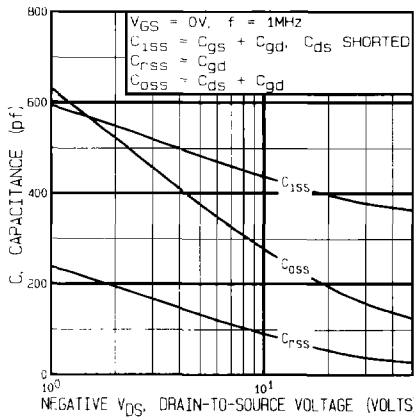


Fig. 5i – Typical Capacitance Vs. Drain-to-Source Voltage IRFY9120

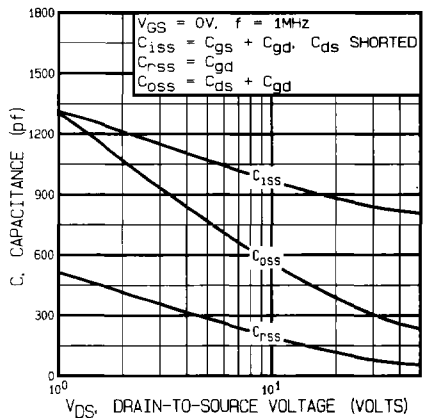


Fig. 5j – Typical Capacitance Vs. Drain-to-Source Voltage IRFY9130

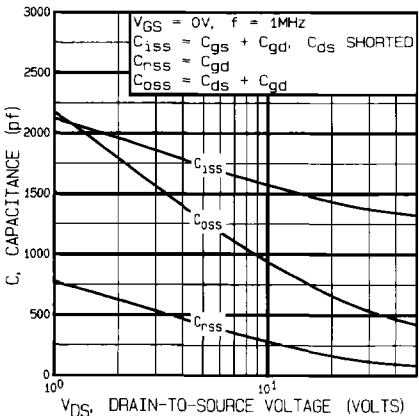


Fig. 5k – Typical Capacitance Vs. Drain-to-Source Voltage IRFY9140

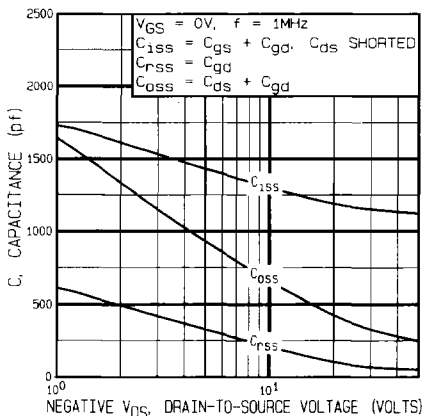


Fig. 5l – Typical Capacitance Vs. Drain-to-Source Voltage IRFY9240

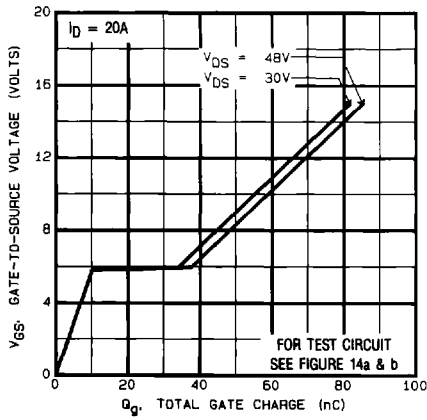


Fig. 6a - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY044

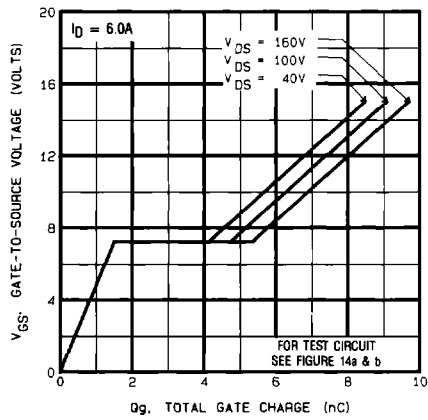


Fig. 6b - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY120

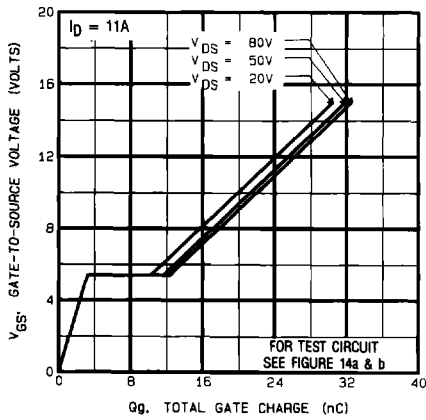


Fig. 6c - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY130

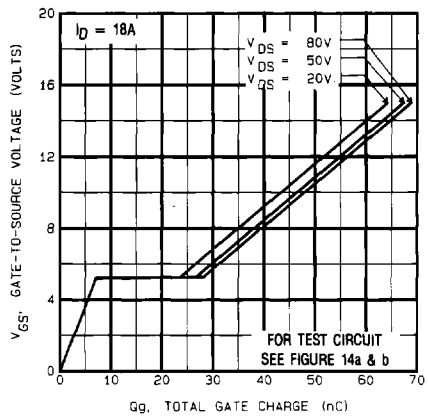


Fig. 6d - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY140

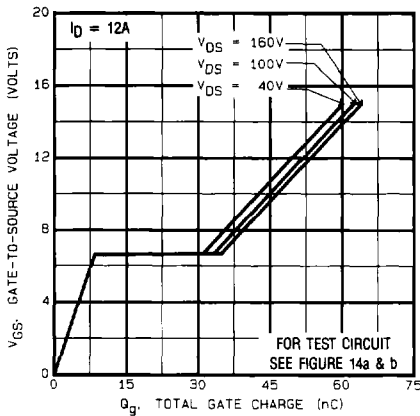


Fig. 6e - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY240

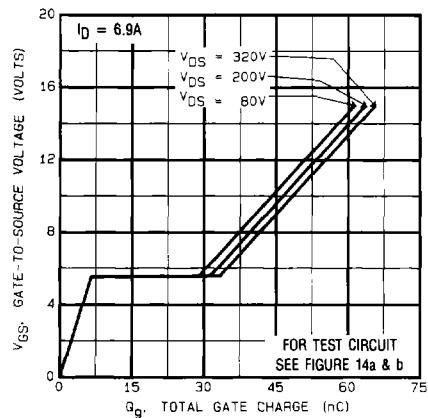


Fig. 6f - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY340

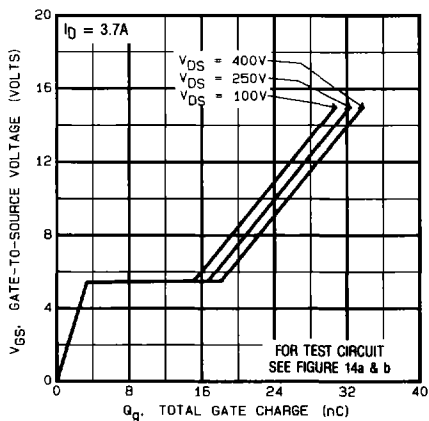


Fig. 6g - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY430

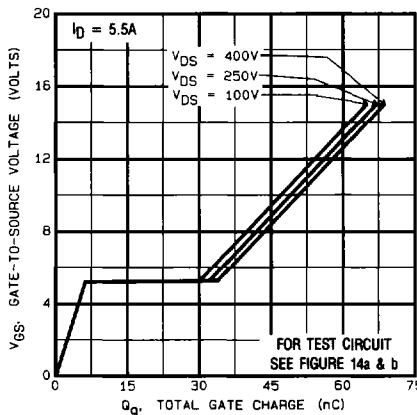


Fig. 6h - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY440

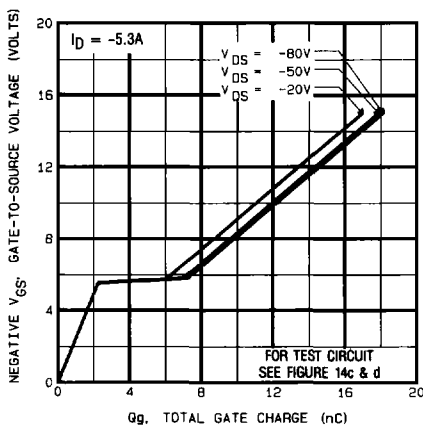


Fig. 6i - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY9120

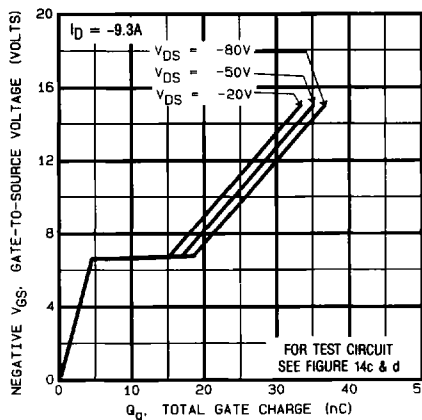


Fig. 6j - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY9130

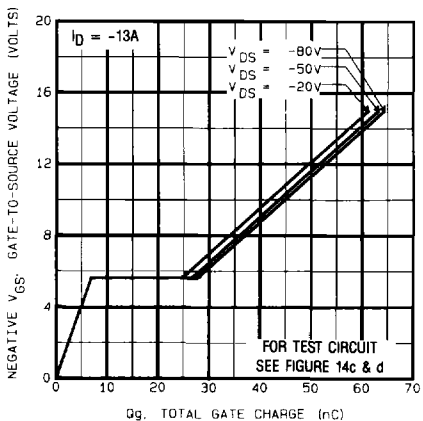


Fig. 6k - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY9140

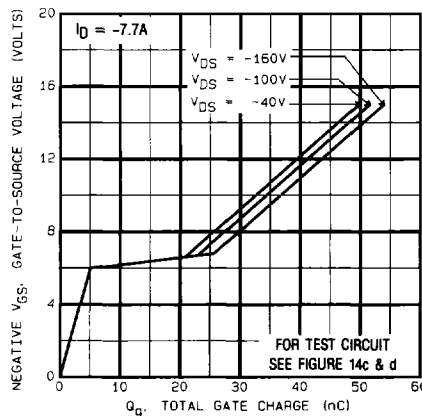


Fig. 6l - Typical Gate Charge Vs. Gate-to-Source Voltage IRFY9240

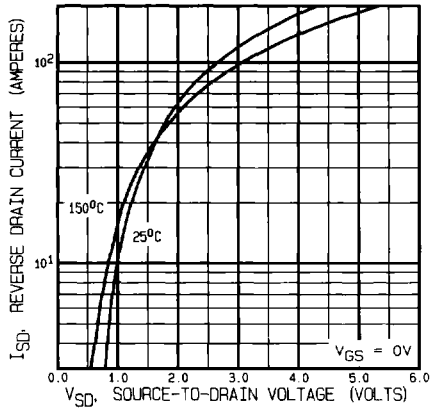


Fig. 7a – Typical Source-Drain Diode Forward Voltage
IRFY044

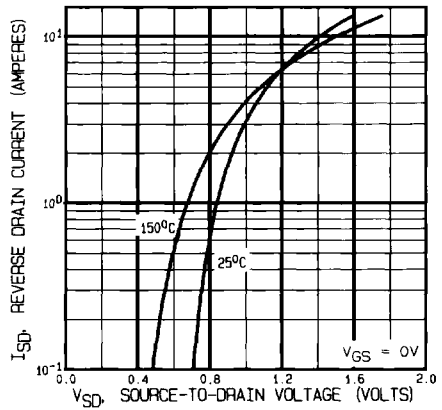


Fig. 7b – Typical Source-Drain Diode Forward Voltage
IRFY120

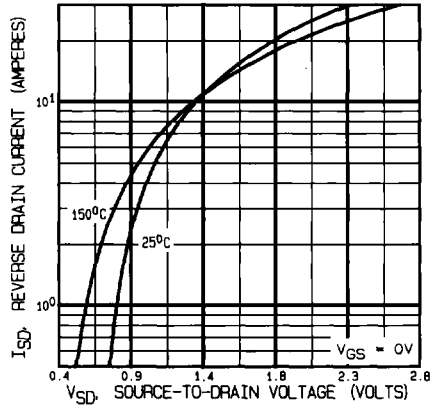


Fig. 7c – Typical Source-Drain Diode Forward Voltage
IRFY130

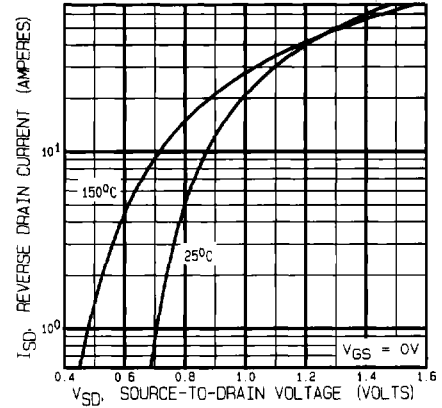


Fig. 7d – Typical Source-Drain Diode Forward Voltage
IRFY140

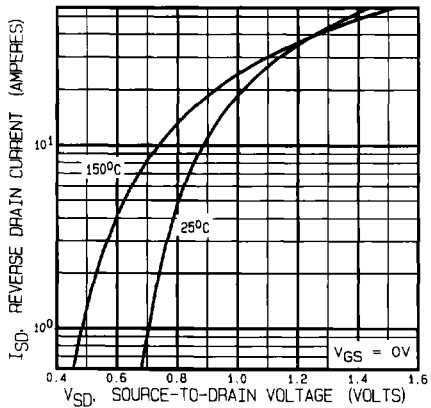


Fig. 7e – Typical Source-Drain Diode Forward Voltage
IRFY240

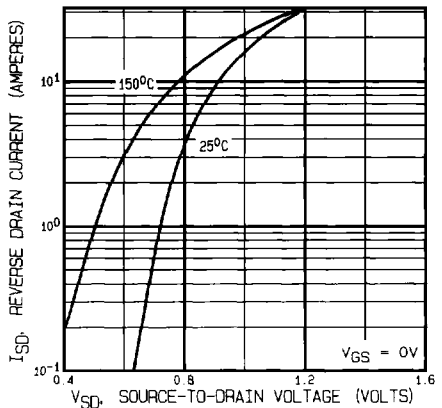
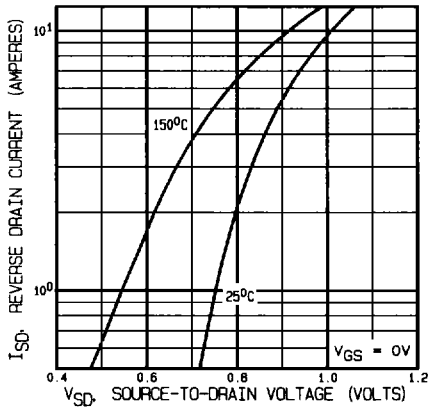
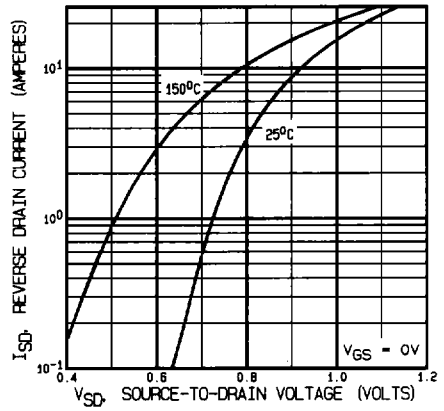


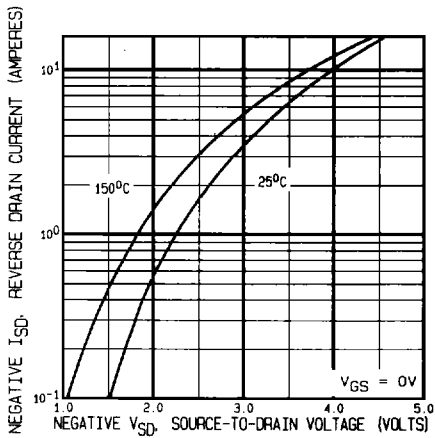
Fig. 7f – Typical Source-Drain Diode Forward Voltage
IRFY340



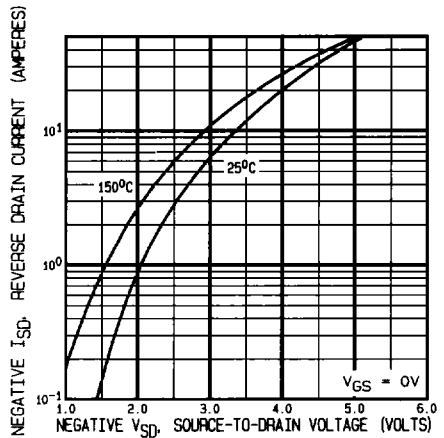
**Fig. 7g - Typical Source-Drain Diode Forward Voltage
IRFY430**



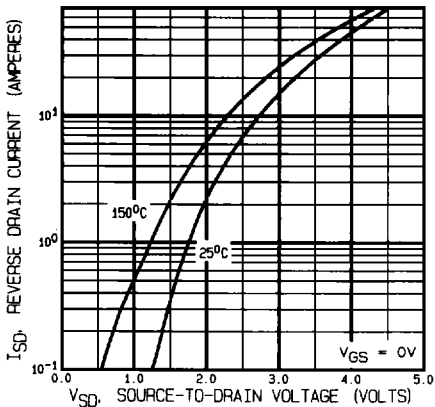
**Fig. 7h - Typical Source-Drain Diode Forward Voltage
IRFY440**



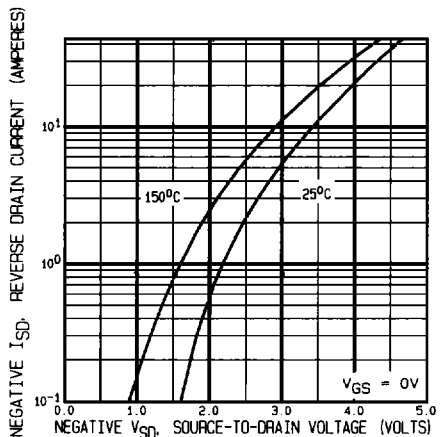
**Fig. 7i - Typical Source-Drain Diode Forward Voltage
IRFY9120**



**Fig. 7j - Typical Source-Drain Diode Forward Voltage
IRFY9130**



**Fig. 7k - Typical Source-Drain Diode Forward Voltage
IRFY9140**



**Fig. 7l - Typical Source-Drain Diode Forward Voltage
IRFY9240**

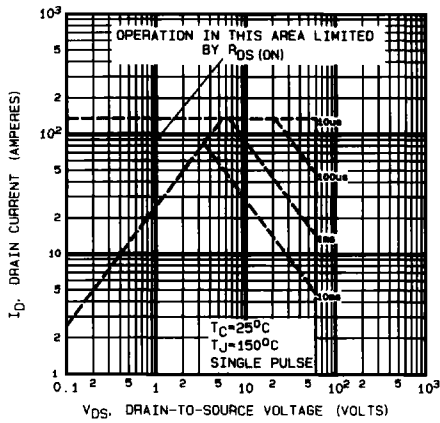


Fig. 8a - Maximum Safe Operating Area IRFY044

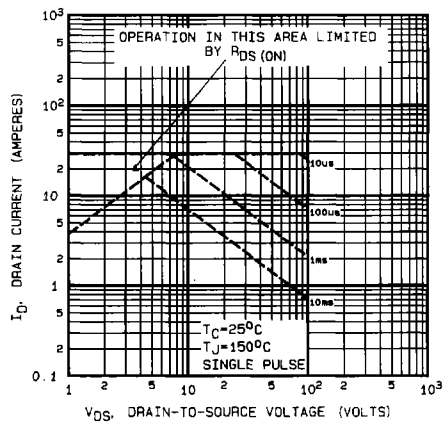


Fig. 8b - Maximum Safe Operating Area IRFY120

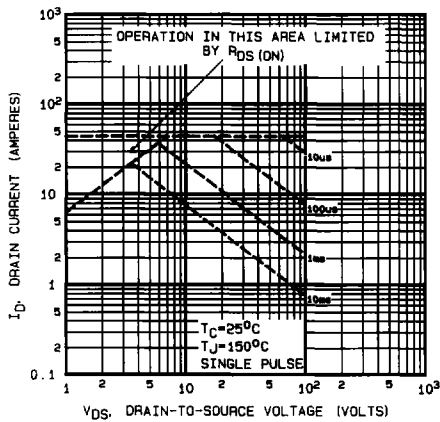


Fig. 8c - Maximum Safe Operating Area IRFY130

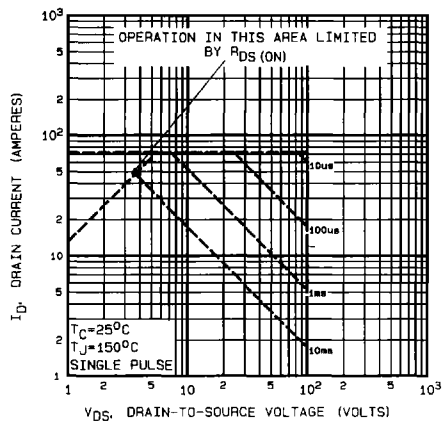


Fig. 8d - Maximum Safe Operating Area IRFY140

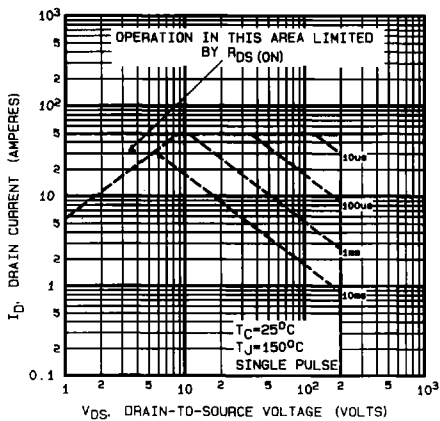


Fig. 8e - Maximum Safe Operating Area IRFY240

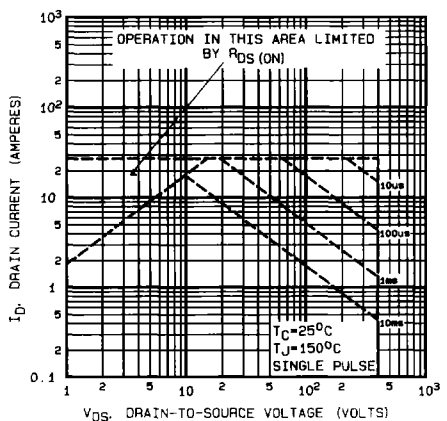


Fig. 8f - Maximum Safe Operating Area IRFY340

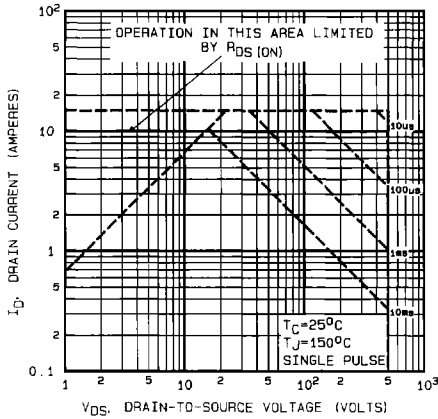


Fig. 8g – Maximum Safe Operating Area IRFY430

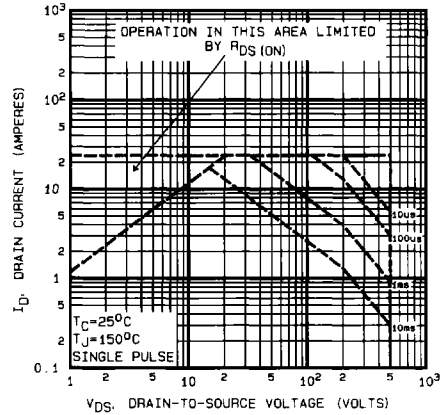


Fig. 8h – Maximum Safe Operating Area IRFY440

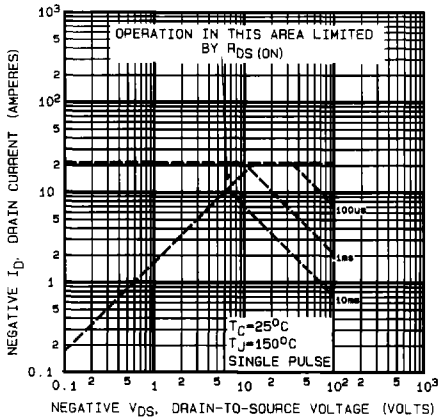


Fig. 8i – Maximum Safe Operating Area IRFY9120

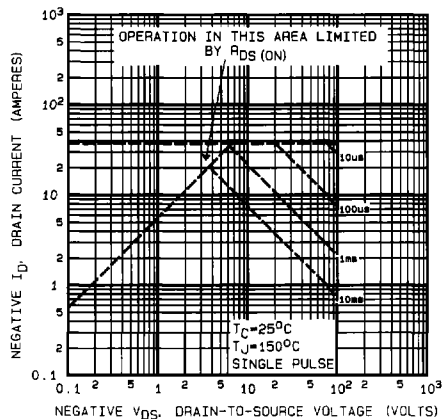


Fig. 8j – Maximum Safe Operating Area IRFY9130

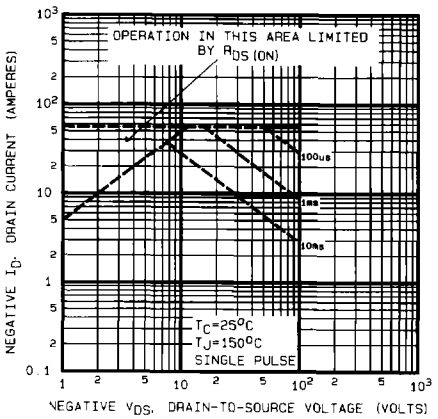


Fig. 8k – Maximum Safe Operating Area IRFY9140

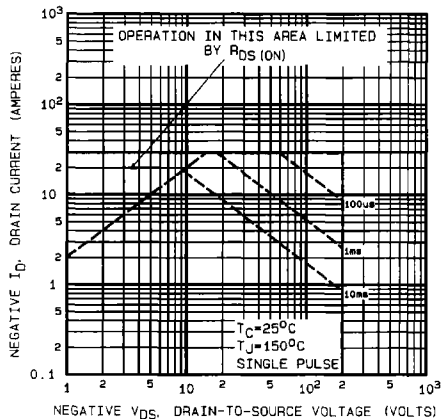


Fig. 8l – Maximum Safe Operating Area IRFY9240

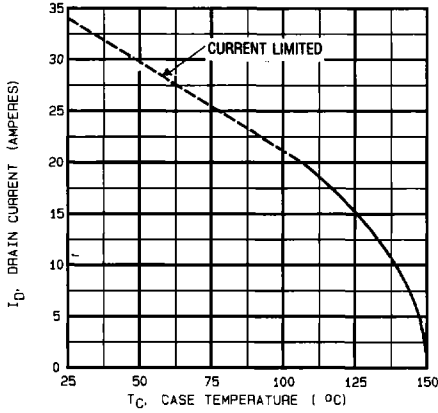


Fig. 9a – Maximum Drain Current Vs. Case Temperature IRFY044

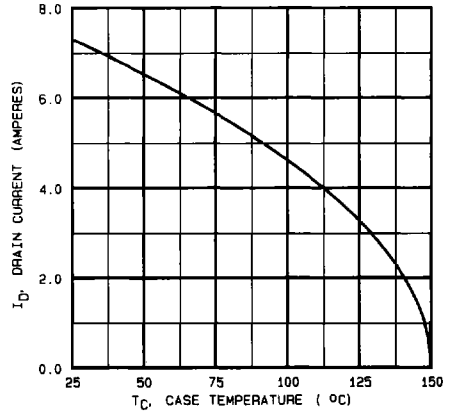


Fig. 9b – Maximum Drain Current Vs. Case Temperature IRFY120

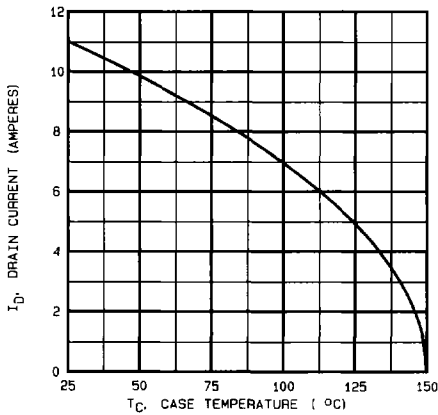


Fig. 9c – Maximum Drain Current Vs. Case Temperature IRFY140

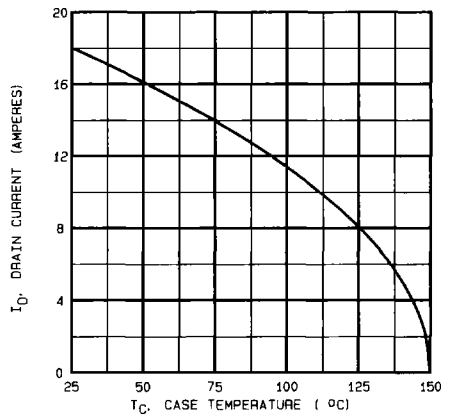


Fig. 9d – Maximum Drain Current Vs. Case Temperature IRFY240

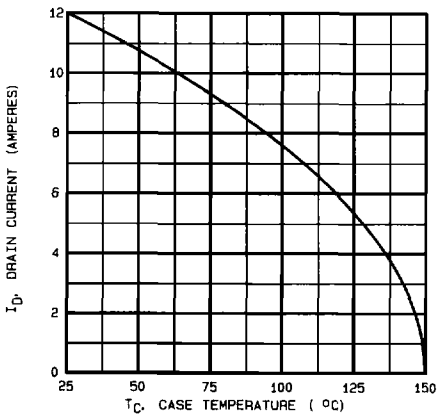


Fig. 9e – Maximum Drain Current Vs. Case Temperature IRFY240

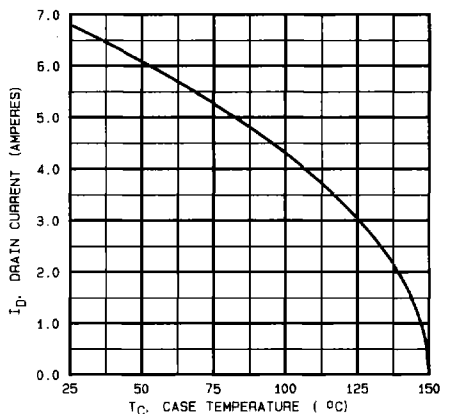


Fig. 9f – Maximum Drain Current Vs. Case Temperature IRFY340

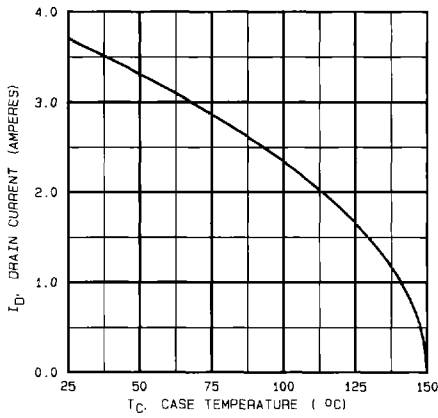


Fig. 9g – Maximum Drain Current Vs. Case Temperature IRFY430

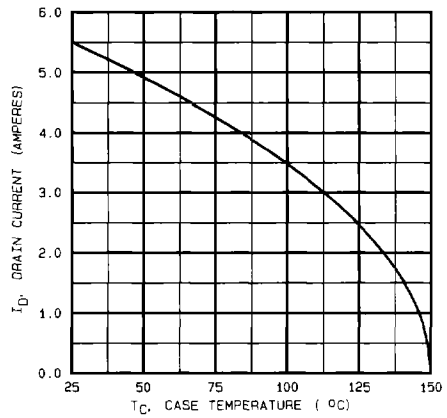


Fig. 9h – Maximum Drain Current Vs. Case Temperature IRFY440

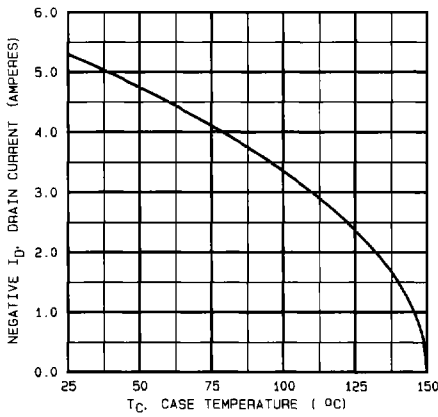


Fig. 9i – Maximum Drain Current Vs. Case Temperature IRFY9120

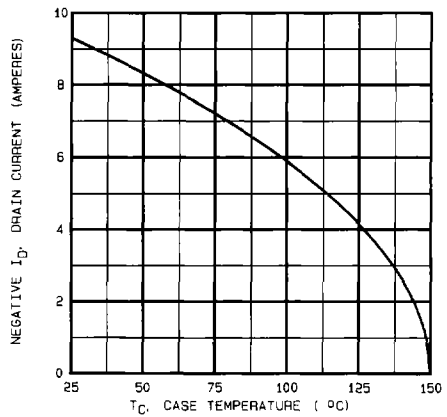


Fig. 9j – Maximum Drain Current Vs. Case Temperature IRFY9130

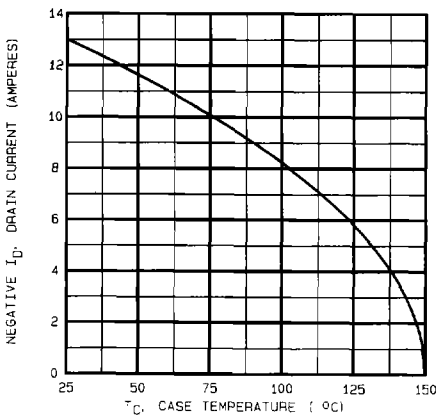


Fig. 9k – Maximum Drain Current Vs. Case Temperature IRFY9140

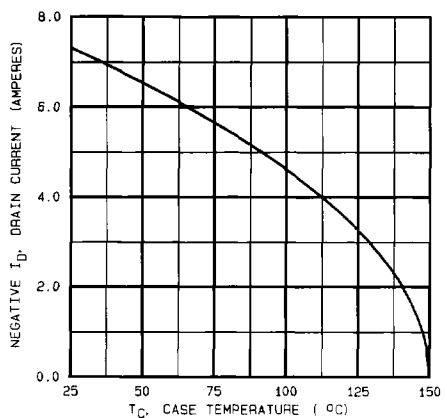


Fig. 9l – Maximum Drain Current Vs. Case Temperature IRFY9240

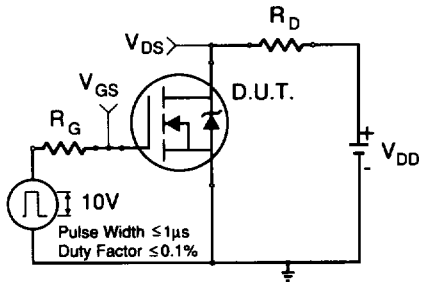


Fig. 10a - Switching Time Test Circuit N-Channel

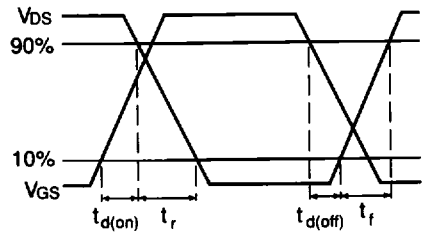


Fig. 10b - Switching Time Waveforms N-Channel

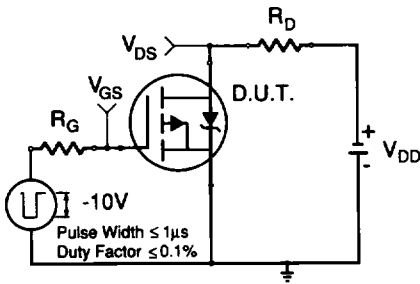


Fig. 10c - Switching Time Test Circuit P-Channel

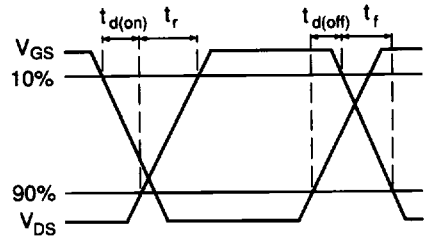


Fig. 10d - Switching Time Waveforms P-Channel

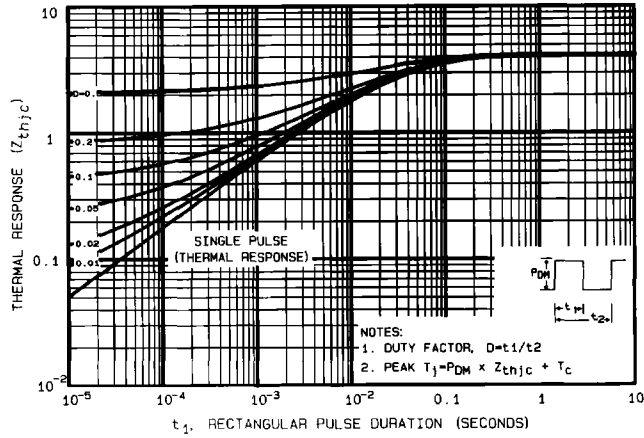


Fig. 11a – Maximum Effective Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration IRFY120, IRFY9120

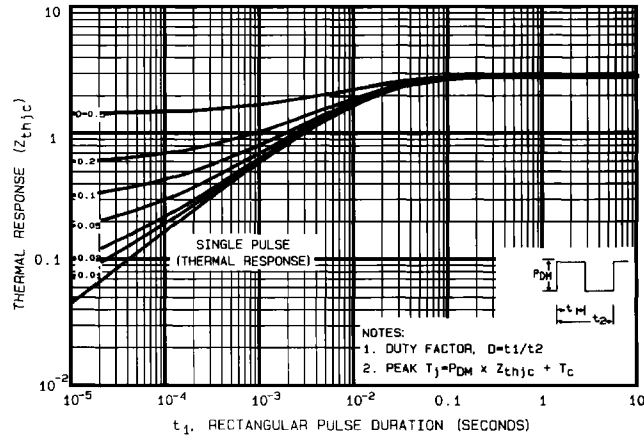


Fig. 11b – Maximum Effective Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration IRFY130, IRFY9130

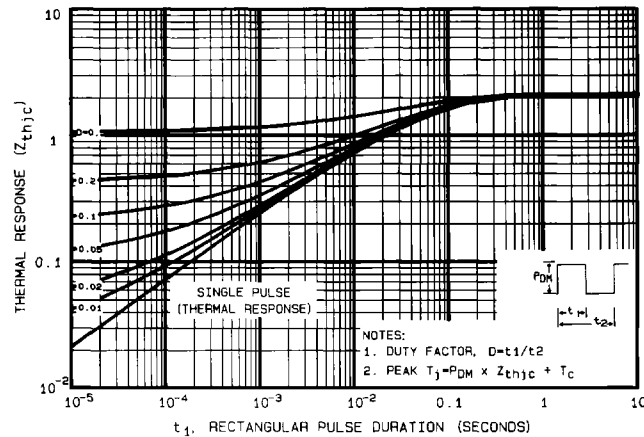


Fig. 11c — Maximum Effective Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration IRFY044, IRFY140, IRFY240, IRFY340, IRFY440, IRFY9140, IRFY9240

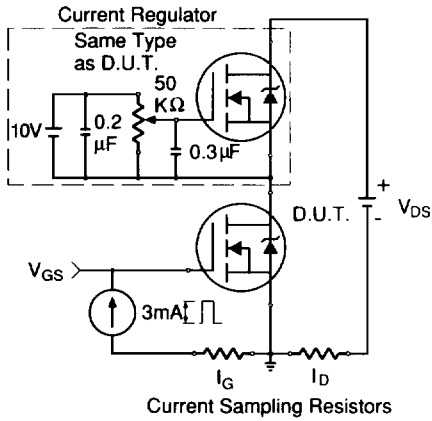


Fig. 12a — Gate Charge Test Circuit
N-Channel

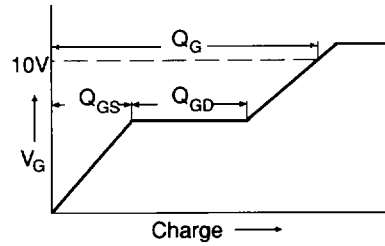


Fig. 12b — Basic Gate Charge Waveform
N-Channel

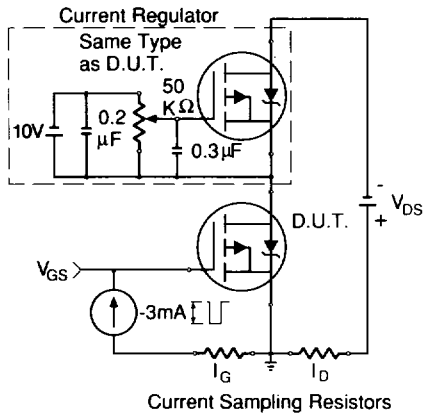


Fig. 12c — Gate Charge Test Circuit
P-Channel

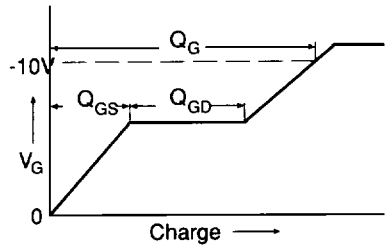


Fig. 12d — Basic Gate Charge Waveform
P-Channel