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With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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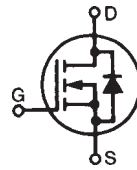
# HiPerRF™ Power MOSFETs

F-Class: MegaHertz Switching

Single MOSFET Die

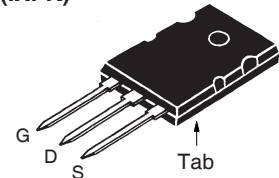
N-Channel Enhancement Mode  
Avalanche Rated, Low  $Q_g$ , Low Intrinsic  $R_g$   
High  $dV/dt$ , Low  $t_{rr}$

## IXFK44N50F IXFX44N50F

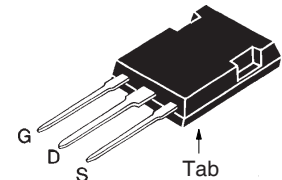


$V_{DSS} = 500V$   
 $I_{D25} = 44A$   
 $R_{DS(on)} \leq 120m\Omega$   
 $t_{rr} \leq 250ns$

TO-264 (IXFK)



PLUS247 (IXFX)



G = Gate      D = Drain  
S = Source      Tab = Drain

Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ C$ to $150^\circ C$	500	V
$V_{DGR}$	$T_J = 25^\circ C$ to $150^\circ C$ , $R_{GS} = 1M\Omega$	500	V
$V_{GSS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ C$	44	A
$I_{DM}$	$T_C = 25^\circ C$ , Pulse Width Limited by $T_{JM}$	184	A
$I_{AR}$	$T_C = 25^\circ C$	44	A
$E_{AR}$	$T_C = 25^\circ C$	60	mJ
$E_{AS}$	$T_C = 25^\circ C$	2.5	J
$dV/dt$	$I_S \leq I_{DM}$ , $V_{DD} \leq V_{DSS}$ , $T_J \leq 150^\circ C$	10	V/ns
$P_D$	$T_C = 25^\circ C$	500	W
$T_J$		- 55 ... +150	$^\circ C$
$T_{JM}$		150	$^\circ C$
$T_{stg}$		- 55 ... +150	$^\circ C$
$T_L$	1.6mm (0.062 in.) from Case for 10s	300	$^\circ C$
$T_{SOLD}$	Plastic Body for 10s	260	$^\circ C$
$M_d$	Mounting Torque (TO-264)	1.13/10	Nm/lb.in.
$F_C$	Mounting Force (TO-247)	20..120/4.5..27	Nm/lb.
Weight	TO-264	10	g
	TO-247	6	g

### Features

- RF Capable MOSFETs
- Double Metal Process for Low Gate Resistance
- Avalanche Rated
- Low Package Inductance
- Fast Intrinsic Rectifier

### Advantages

- Space Savings
- High Power Density

### Applications

- DC-DC Converters
- Switch-Mode and Resonant-Mode Power Supplies, > 500kHz Switching
- DC Choppers
- 13.5 MHz Industrial Applications
- Pulse Generation
- Laser Drivers
- RF Amplifiers

Symbol	Test Conditions ( $T_J = 25^\circ C$ Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$BV_{DSS}$	$V_{GS} = 0V$ , $I_D = 250\mu A$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 4mA$	3.0		5.5 V
$I_{GSS}$	$V_{GS} = \pm 20V$ , $V_{DS} = 0V$			$\pm 100$ nA
$I_{DSS}$	$V_{DS} = V_{DSS}$ , $V_{GS} = 0V$ $T_J = 125^\circ C$			100 $\mu A$ 2 mA
$R_{DS(on)}$	$V_{GS} = 10V$ , $I_D = 0.5 \cdot I_{D25}$ , Note 1			120 m $\Omega$

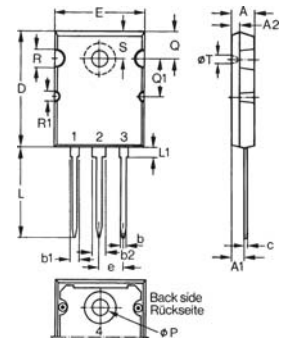
Symbol	Test Conditions	Characteristic Values			
		Min.	Typ.	Max.	
$g_{fs}$	$V_{DS} = 10V, I_D = 0.5 \cdot I_{D25}$ , Note 1	22	32		S
$C_{iss}$	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		5500		pF
$C_{oss}$			990		pF
$C_{rss}$			330		pF
$t_{d(on)}$	<b>Resistive Switching Times</b> $V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$ $R_G = 1\Omega$ (External)		23		ns
$t_r$			18		ns
$t_{d(off)}$			53		ns
$t_f$			8		ns
$Q_{g(on)}$	$V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_D = 0.5 \cdot I_{D25}$		156		nC
$Q_{gs}$			37		nC
$Q_{gd}$			90		nC
$R_{thJC}$				0.26	$^{\circ}C/W$
$R_{thCS}$		0.15			$^{\circ}C/W$

### Source-Drain Diode

Symbol	Test Conditions	Characteristic Values			
		Min.	Typ.	Max.	
$I_S$	$V_{GS} = 0V$			44	A
$I_{SM}$	Repetitive, Pulse Width Limited by $T_{JM}$			164	A
$V_{SD}$	$I_F = I_S, V_{GS} = 0V$ , Note 1			1.5	V
$t_{rr}$	$I_F = 22A, -di/dt = 100A/\mu s$		1.1	250	ns
$Q_{RM}$					$\mu C$
$I_{RM}$	$V_R = 100V, V_{GS} = 0V$		12.0		A

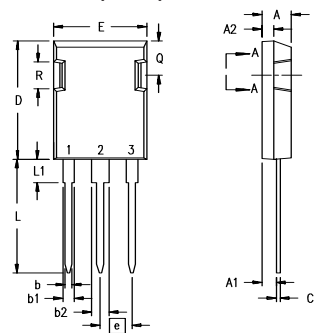
Note 1. Pulse test,  $t \leq 300\mu s$ ; duty cycle,  $d \leq 2\%$ .

### TO-264 AA Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.82	5.13	.190	.202
A1	2.54	2.89	.100	.114
A2	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b1	2.39	2.69	.094	.106
b2	2.90	3.09	.114	.122
c	0.53	0.83	.021	.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	.780	.786
e	5.46 BSC		.215 BSC	
J	0.00	0.25	.000	.010
K	0.00	0.25	.000	.010
L	20.32	20.83	.800	.820
L1	2.29	2.59	.090	.102
P	3.17	3.66	.125	.144
Q	6.07	6.27	.239	.247
Q1	8.38	8.69	.330	.342
R	3.81	4.32	.150	.170
R1	1.78	2.29	.070	.090
S	6.04	6.30	.238	.248
T	1.57	1.83	.062	.072

### PLUS 247™ (IXFX) Outline



Terminals: 1 - Gate  
2 - Drain (Collector)  
3 - Source (Emitter)  
4 - Drain (Collector)

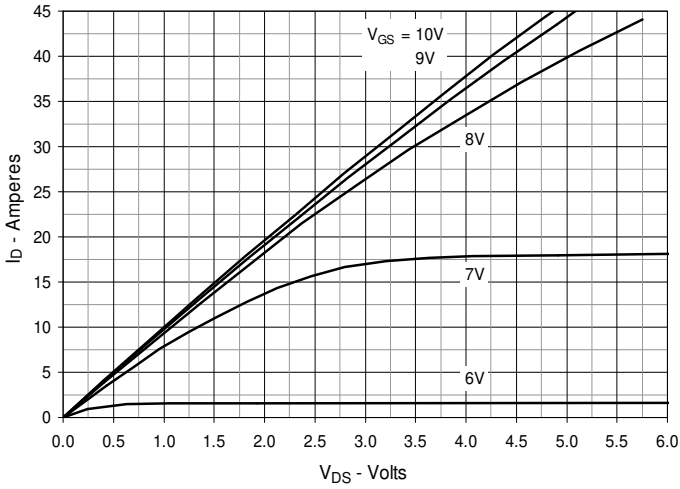
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	.190	.205
A1	2.29	2.54	.090	.100
A2	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b1	1.91	2.13	.075	.084
b2	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	0.244
R	4.32	4.83	.170	.190

IXYS Reserves the Right to Change Limits, Test Conditions, and Dimensions.

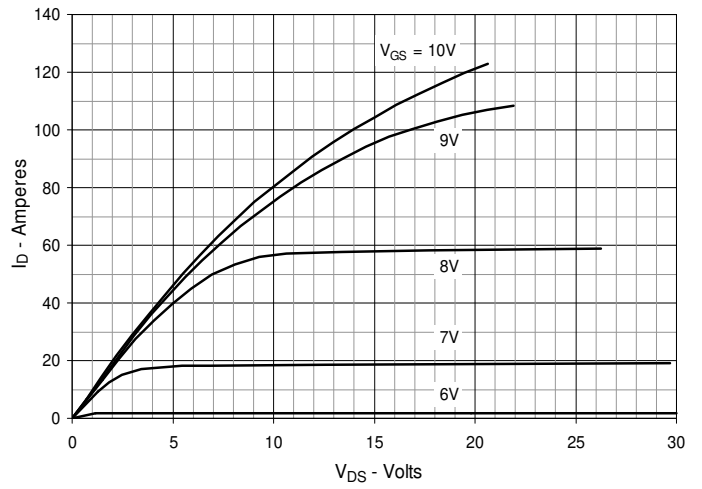
IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents:

4,835,592	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065 B1	6,683,344	6,727,585	7,005,734 B2	7,157,338B2
4,850,072	5,017,508	5,063,307	5,381,025	6,259,123 B1	6,534,343	6,710,405 B2	6,759,692	7,063,975 B2	
4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	6,771,478 B2	7,071,537	

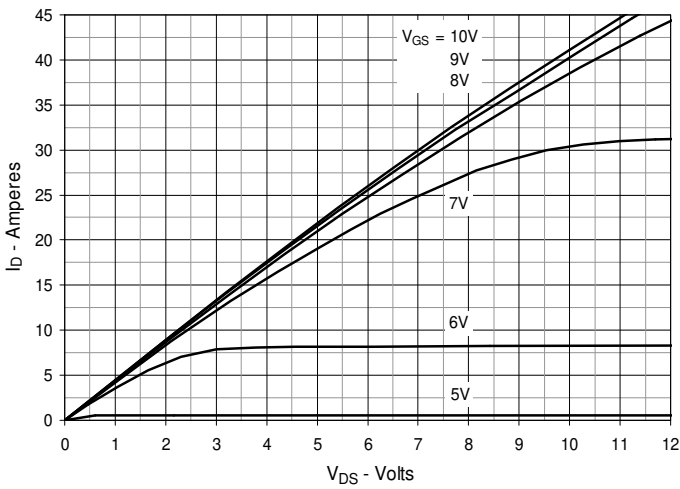
**Fig. 1. Output Characteristics @  $T_J = 25^\circ\text{C}$**



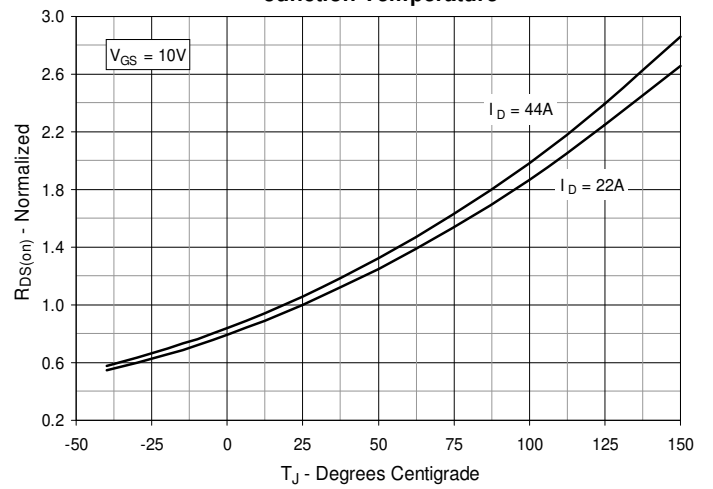
**Fig. 2. Extended Output Characteristics @  $T_J = 25^\circ\text{C}$**



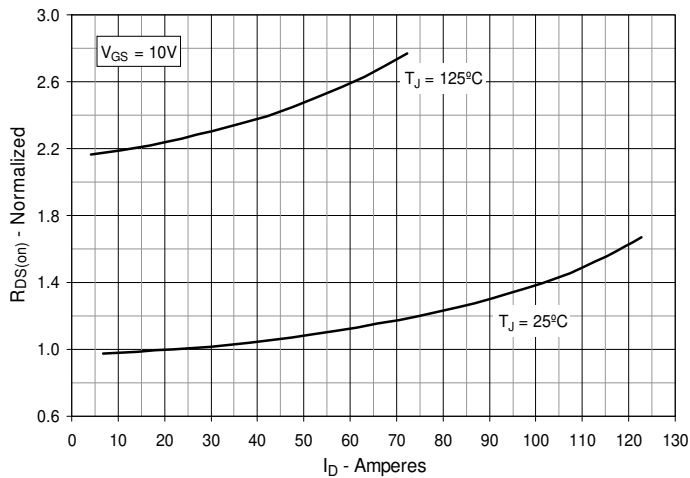
**Fig. 3. Output Characteristics @  $T_J = 125^\circ\text{C}$**



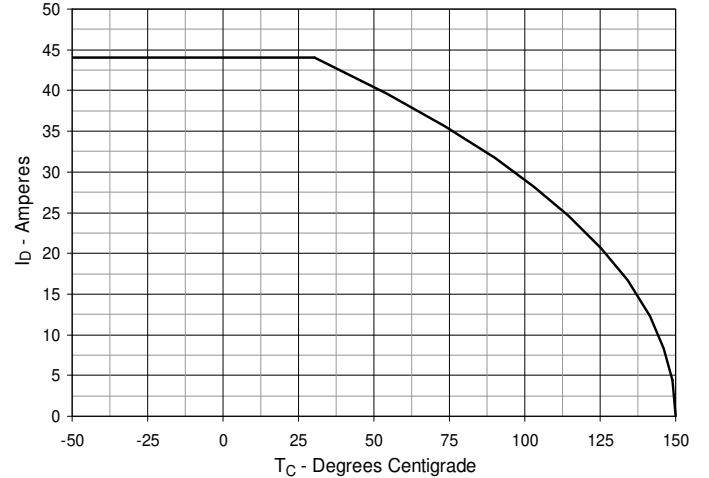
**Fig. 4.  $R_{DS(on)}$  Normalized to  $I_D = 22A$  Value vs. Junction Temperature**



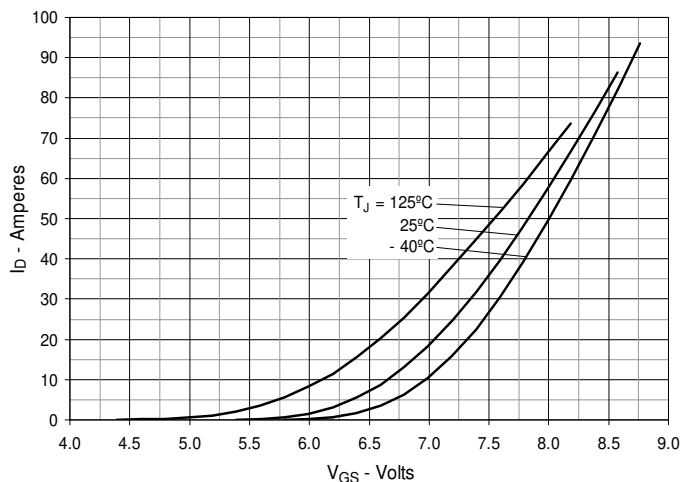
**Fig. 5.  $R_{DS(on)}$  Normalized to  $I_D = 22A$  Value vs. Drain Current**



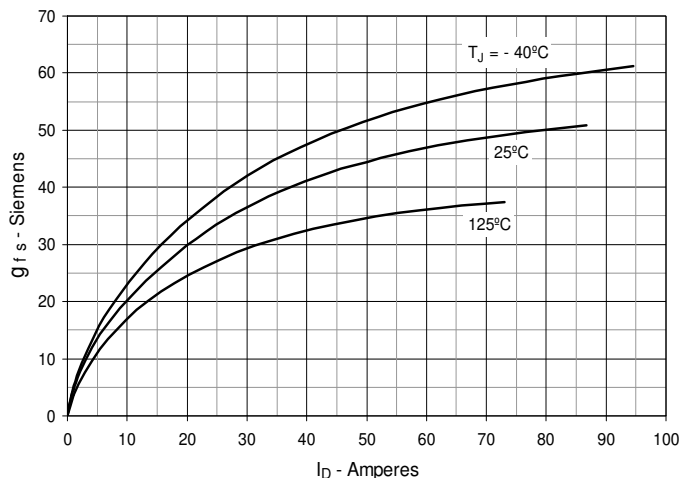
**Fig. 6. Maximum Drain Current vs. Case Temperature**



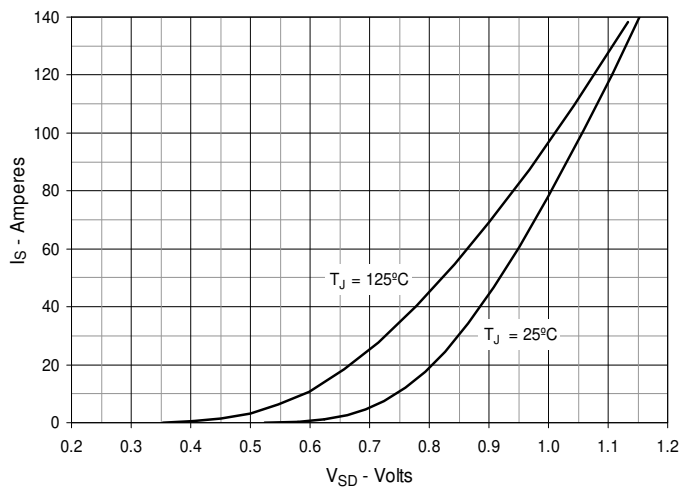
**Fig. 7. Input Admittance**



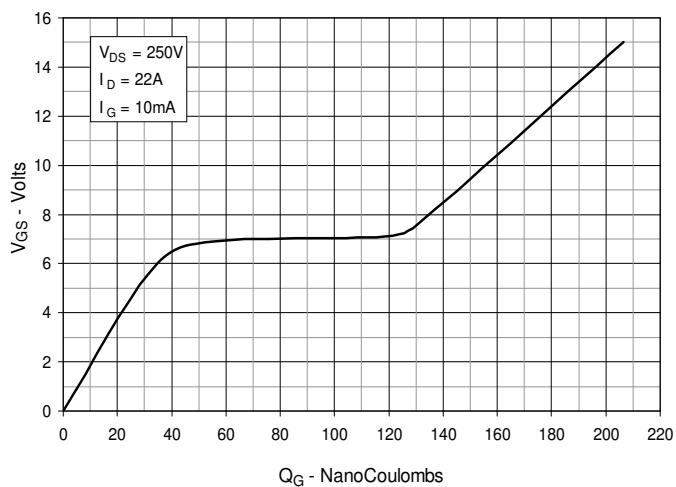
**Fig. 8. Transconductance**



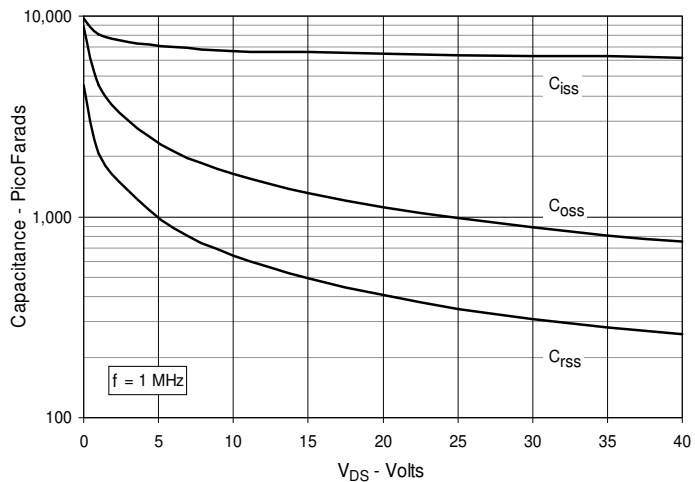
**Fig. 9. Forward Voltage Drop of Intrinsic Diode**



**Fig. 10. Gate Charge**



**Fig. 11. Capacitance**



**Fig. 12. Forward-Bias Safe Operating Area**

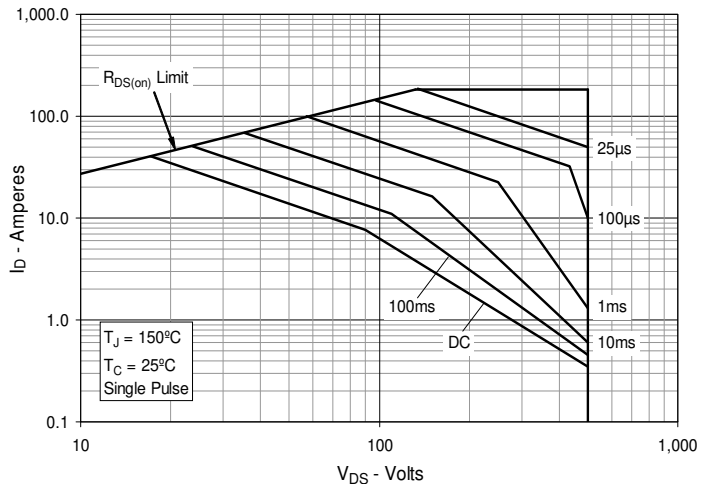


Fig. 13. Maximum Transient Thermal Impedance

