HiPerFET™ Power MOSFETs

N-Channel Enhancement Mode
Avalanche Rated, High dv/dt, Low t_{rr}

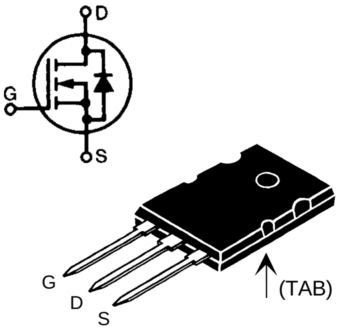
	V_{DSS}	I_{D25}	$R_{DS(on)}$
IXFK 110 N06	**60 V**	**110 A**	**6 mΩ**
IXFK 105 N07	**70 V**	**105 A**	**7 mΩ**
IXFK 110 N07	**70 V**	**110 A**	**6 mΩ**

$t_{rr} \le 250$ ns

Symbol	Test Conditions		Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	N07	70	V
		N06	60	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ	N07	70	V
		N06	60	V
V_{GS}	Continuous		±20	V
V_{GSM}	Transient		±30	V
I_{D25}	T_C = 25°C, die capability		110	A
I_{D130}	T_C = 130°C, limited by external leads		76	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}		600	A
I_{AR}	T_C = 25°C		100	A
E_{AR}	T_C = 25°C		30	mJ
E_{AS}	T_C = 25°C		2	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \le V_{DSS}$, $T_J \le 150$°C, R_G = 2 Ω		5	V/ns
P_D	T_C = 25°C		500	W
T_J			-55 ... +150	°C
T_{JM}			150	°C
T_{stg}			-55 ... +150	°C
T_L	1.6 mm (0.063 in) from case for 10 s		300	°C
M_d	Mounting torque		0.9/6	Nm/lb.in.
	Terminal connection torque		-	Nm/lb.in.
Weight			10	g

Symbol	Test Conditions			Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_{DSS}	V_{GS}	= 0 V, I_D = 1 mA	N06	60			V
			N07	70			V
$V_{GS\,(th)}$	V_{DS}	= V_{GS}, I_D = 8 mA		2		4	V
I_{GSS}	V_{GS}	= ±20 V_{DC}, V_{DS} = 0				±200	nA
I_{DSS}	V_{DS}	= 0.8 • V_{DSS}	T_J = 25°C			400	µA
	V_{GS}	= 0 V	T_J = 125°C			2	mA
$R_{DS(on)}$	V_{GS}	= 10 V, I_D = 0.5 • I_{D25}	110N06/110N07			6	mΩ
	Note 2		105N07			7	mΩ

TO-264 AA (IXFK)



Features

- International standard packages
- JEDEC TO-264 AA, epoxy meet UL 94 V-0, flammability classification
- Low $R_{DS\,(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
- Fast intrinsic Rectifier

Applications

- DC-DC converters
- Synchronous rectification
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- Temperature and lighting controls
- Low voltage relays

Advantages

- Easy to mount
- Space savings
- High power density

IXYS reserves the right to change limits, test conditions, and dimensions.

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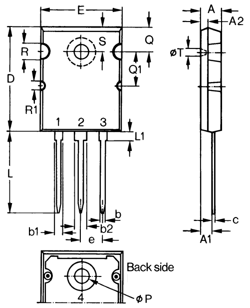
Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 • I_{D25}, Note 2	60	80		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		9000		pF
C_{oss}			4000		pF
C_{rss}			2400		pF
$t_{d(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25} R_G = 1 Ω (External),		30		ns
t_r			60		ns
$t_{d(off)}$			100		ns
t_f			60		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 • V_{DSS}, I_D = 0.5 • I_{D25}		480		nC
Q_{gs}			60		nC
Q_{gd}			240		nC
R_{thJC}	TO-264 AA			0.25	K/W
R_{thCK}	TO-264 AA		0.15		K/W

Source-Drain Diode

Symbol	Test Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V	110N06/110N07		110	A
		105N07		105	A
I_{SM}	Repetitive; pulse width limited by T_{JM}	110N06/110N07		440	A
		105N07		420	A
V_{SD}	I_F = 100 A, V_{GS} = 0 V, Note 2			1.7	V
t_{rr}	I_F = 25 A -di/dt = 100 A/µs, V_R = 50 V		150	250	ns
Q_{RM}				0.7	µC
I_{RM}				9	A

Note: 1. Pulse width limited by T_{JM}
2. Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %

TO-264 AA Outline



Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches 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

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IXYS MOSFETS and IGBTs are covered by one or more of the following U.S. patents:
4,835,592 4,881,106 5,017,508 5,049,961 5,187,117 5,486,715
4,850,072 4,931,844 5,034,796 5,063,307 5,237,481 5,381,025

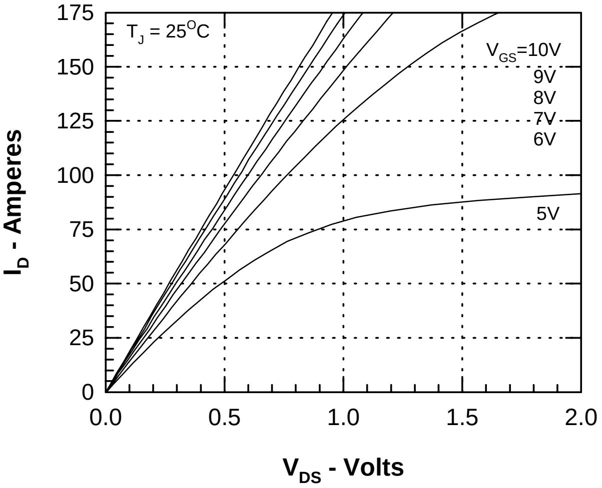

Figure 1. Output Characteristics at 25^{O}C

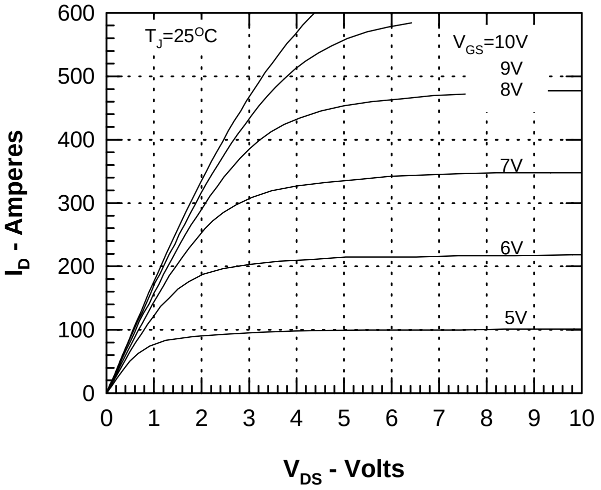

Figure 2. Extended Output Characteristics

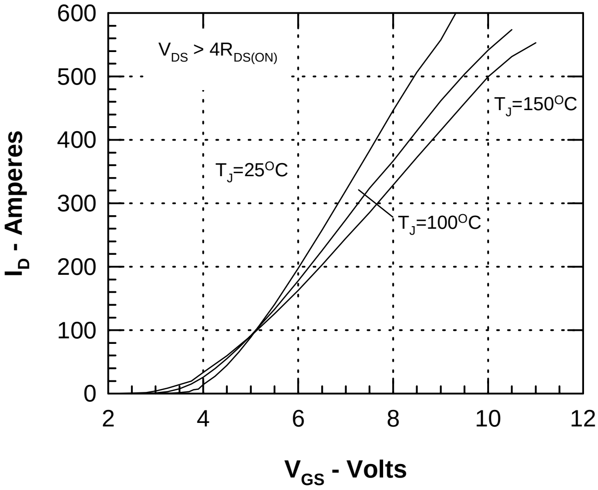

Figure 3. Admittance Curves

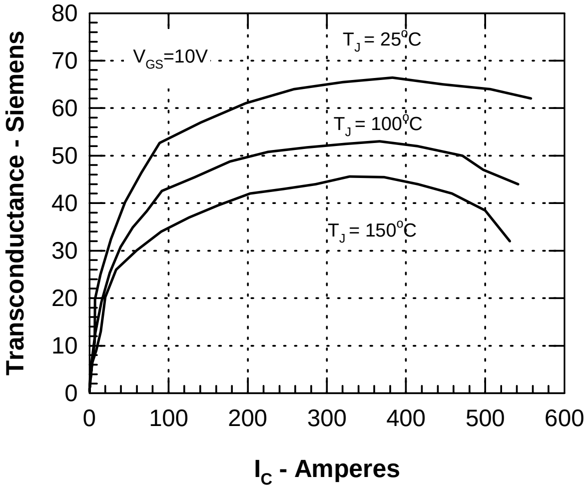

Figure 4. Transconductance vs. Drain Current

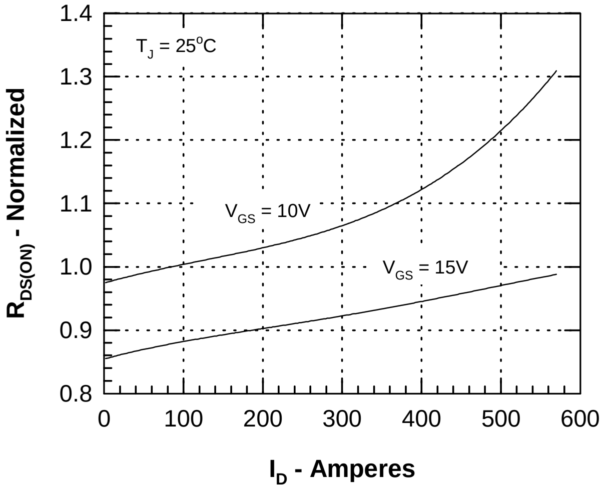

Figure 5. $R_{DS(on)}$ normalized to 0.5 I_{D25} value

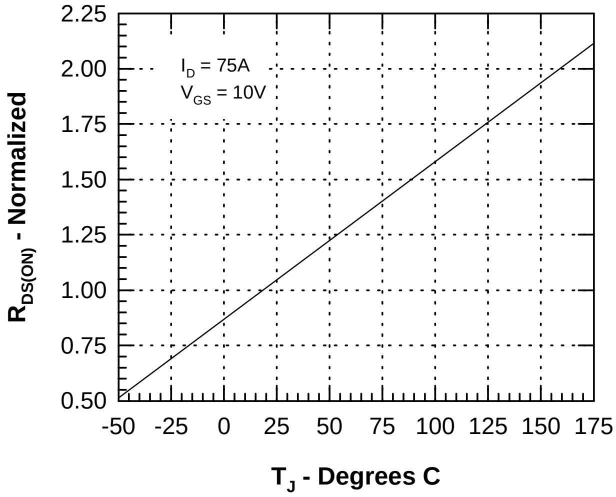

Figure 6. Normalized $R_{DS(on)}$ vs. Junction Temperature

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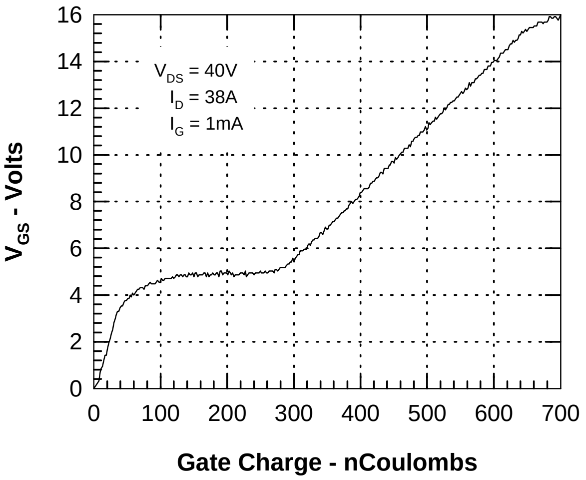

Figure 7. Gate Charge

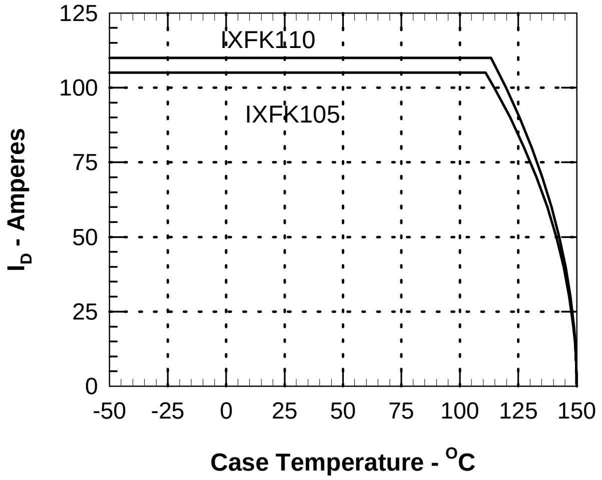

Figure 8. Drain Current vs. Case Temperature

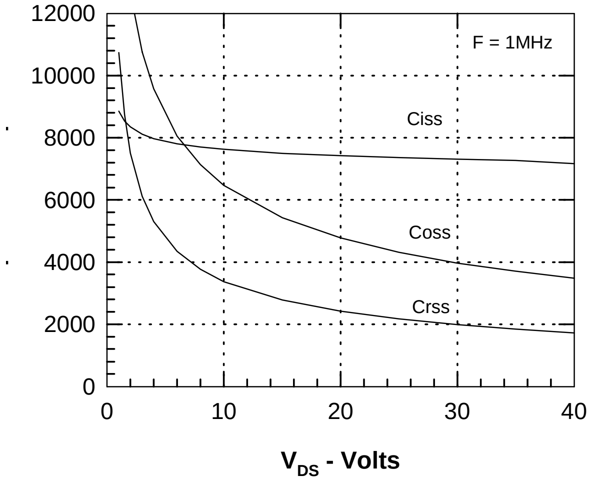

Figure 9. Capacitance Curves

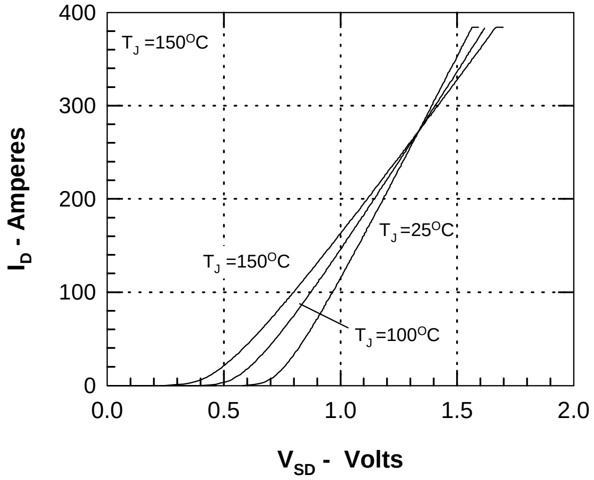

Figure 10. Source-Drain Voltage vs. Source Current

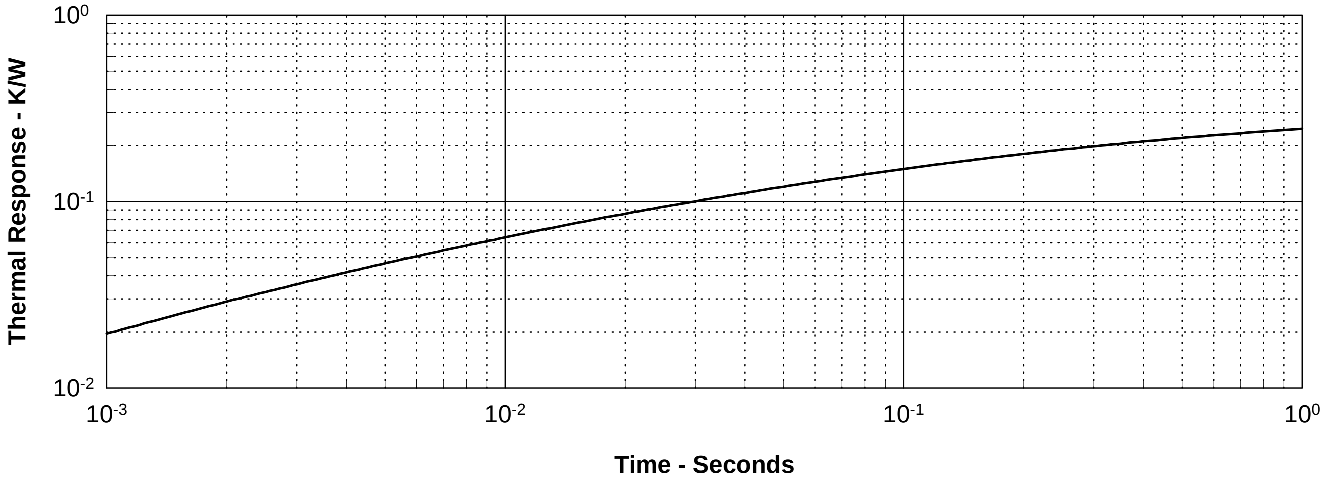

Figure 11. Transient Thermal Resistance

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