IXYS

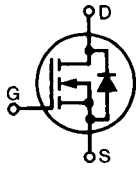
High Current MegaMOS™FET

IXTK 33N50

V_{DSS} = 500 V
$I_{D(cont)}$ = 33 A
$R_{DS(on)}$ = 0.17 Ω

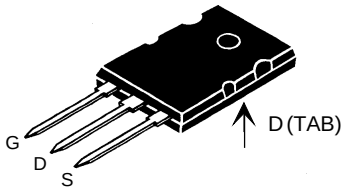
N-Channel Enhancement Mode

Preliminary data



Symbol	Test conditions	Maximum ratings	
V_{DSS}	T_J = 25°C to 150°C	500	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1.0 MΩ	500	V
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	V
I_{D25}	T_C = 25°C	33	A
I_{DM}	T_C = 25°C, pulse width limited by T_{JM}	132	A
P_D	T_C = 25°C	416	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
Md	Mounting torque	1.13/10	Nm/lb.in.
Weight		10	g
Max lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	°C

TO-264 AA



G = Gate D = Drain
S = Source TAB = Drain

Symbol	Test Conditions (T_J = 25°C unless otherwise specified)		Characteristic Values Min.	Typ.	Max.	
V_{DSS}	V_{GS} = 0 V, I_D = 5 mA		500			V
	BV_{DSS} temperature coefficient			0.087		%/K
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA		2.0		4.0	V
	$V_{GS(th)}$ temperature coefficient			-0.25		%/K
I_{GSS}	V_{GS} = ±20 V DC, V_{DS} = 0				±100	nA
I_{DSS}	V_{DS} = 0.8 V_{DSS}	T_J = 25°C			200	µA
	V_{GS} = 0 V	T_J = 125°C			3	mA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 0.5 I_{D25}				0.17	Ω

Features

- Low $R_{DS\ (on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- International standard package
- Fast switching times

Applications

- Motor controls
- DC choppers
- Uninterruptable Power Supplies (UPS)
- Switch-mode and resonant-mode

Advantages

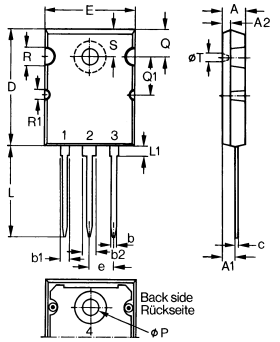
- Easy to mount with one screw (isolated mounting screw hole)
- Space savings
- High power density

Symbol	Test Conditions (T_J = 25°C unless otherwise specified)	Characteristic values Min.	Typ.	Max.	
g_{fs}	V_{DS} = 10 V; I_D = 0.5 I_{D25}, pulse test		24		S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		4900		pF
C_{oss}			690		pF
C_{rss}			300		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)		53		ns
t_r			30		ns
$t_{d(off)}$			140		ns
t_f			40		ns
$Q_{g(on)}$	V_{GS} = 10 V, V_{DS} = 0.5 V_{DSS}, I_D = 0.5 I_{D25}		250		nC
Q_{gs}			30		nC
Q_{gd}			115		nC
R_{thJC}				0.30	K/W
R_{thCK}			0.15		K/W

Source-Drain Diode — **Ratings and Characteristics** (T_J = 25°C unless otherwise specified)

Symbol	Test Conditions	Min.	Typ.	Max.	
I_S	V_{GS} = 0 V			33	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			132	A
V_{SD}	I_F = I_S, V_{GS} = 0 V, Pulse test, t ≤ 300 µs, duty cycle d ≤ 2 %			1.5	V
t_{rr}	I_F = I_S, -di/dt = 100 A/µs, V_R = 100 V		850		ns

TO-264 AA Outline



Dim.	Millimeter Min.	Max.	Inches 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

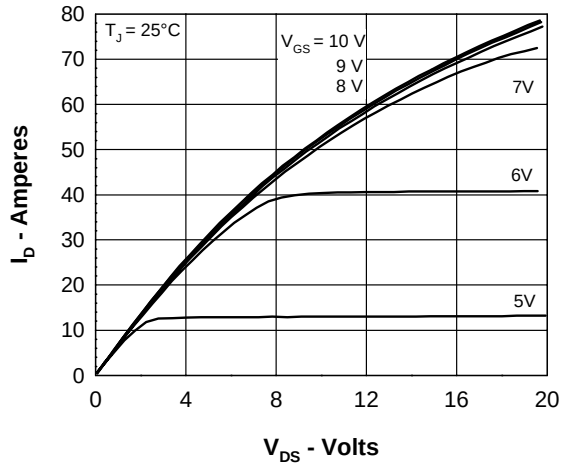


Figure 1. Output Characteristics at 25°C

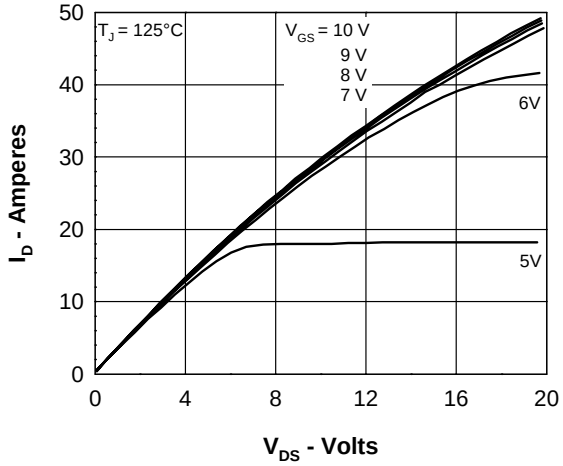


Figure 2. Output Characteristics at 125°C

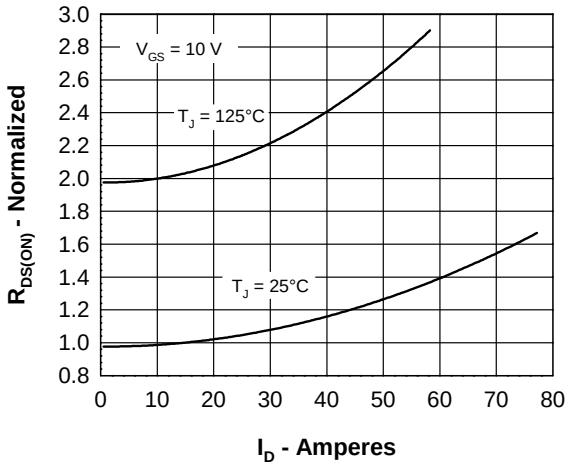


Figure 3. $R_{DS(on)}$ normalized to 16.5A/25°C vs. I_D

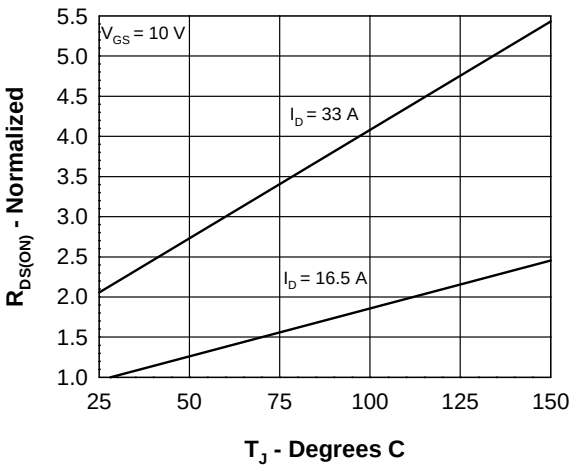


Figure 4. $R_{DS(on)}$ normalized to 16.5A/25°C vs. T_J

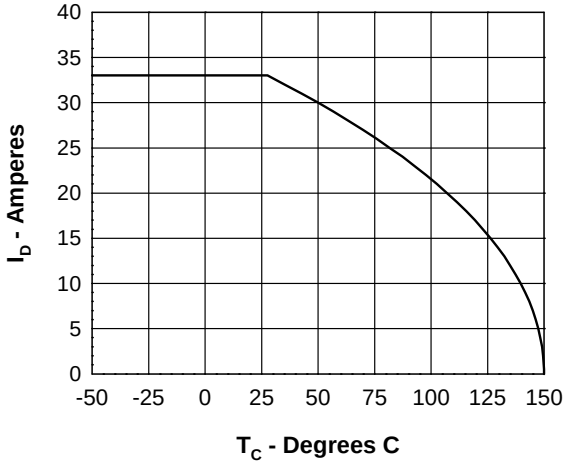


Figure 5. Drain Current vs. Case Temperature

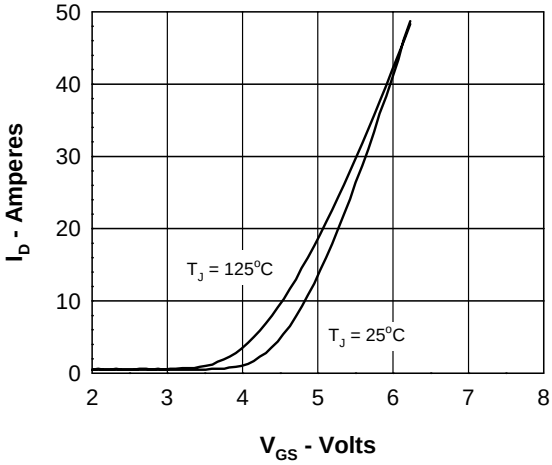


Figure 6. Admittance Curves

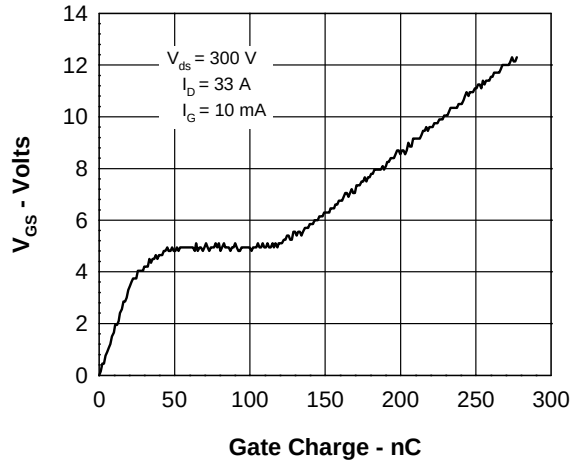


Figure 7. Gate Charge

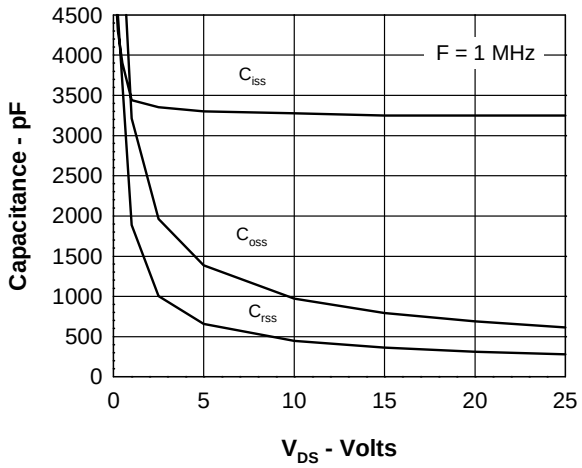


Figure 8. Capacitance Curves

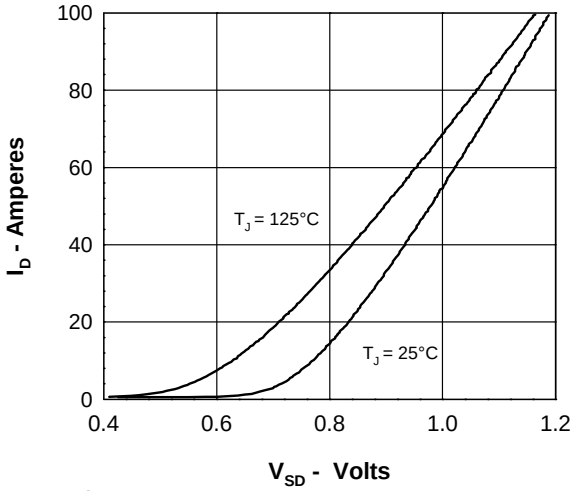


Figure 9. Source Current vs. Source-to-Drain Voltage

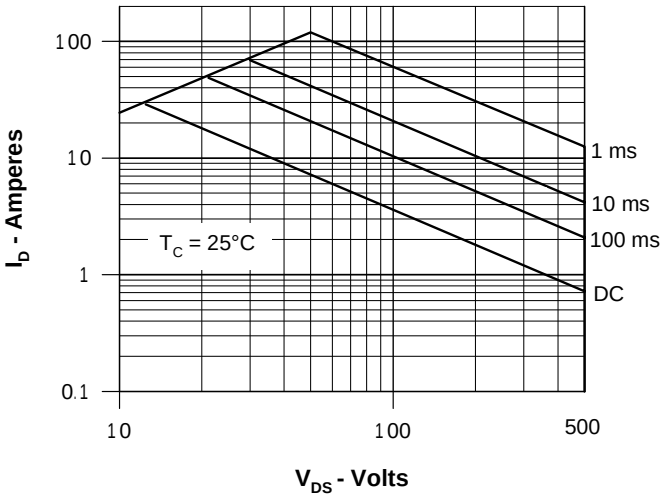


Figure 10. Forward Biased SOA

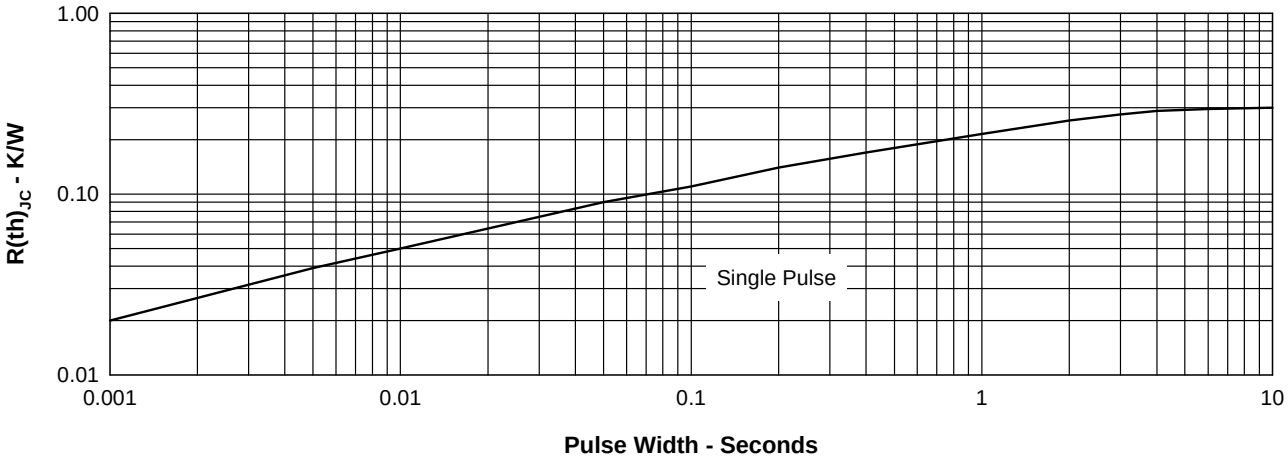


Figure 11. Transient Thermal Resistance