IXYS

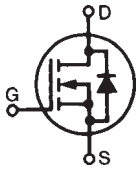
ADVANCE TECHNICAL INFORMATION

Power MOSFET

Low $R_{DS(on)}$, High Voltage,
CoolMOS™ Superjunction MOSFET

IXKK 85N60C

V_{DSS} = 600 V
I_{D25} = 85 A
$R_{DS(on)}$ = 36 mΩ



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_J = 25°C to 150°C	600	V
V_{GS}	Continuous	±20	V
I_{D25}	T_C = 25°C; Note 1	85	A
I_{D100}	T_C = 100°C, Note 1	55	A
$I_{D(RMS)}$	Package lead current limit	75	A
E_{AS}	I_o = 10A, T_C = 25°C	1.8	J
P_D	T_C = 25°C	700	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +125	°C
T_L	1.6 mm (0.062 in.) from case for 10 s	300	°C
M_d	Mounting torque	1.2 / 10	Nm/lb-in
Weight		10	g

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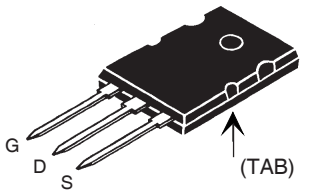

G = Gate D = Drain
S = Source

Features

- 3RD generation CoolMOS power MOSFET
  - High blocking capability
  - Low on resistance
  - Avalanche rated for unclamped inductive switching (UIS)
- Low thermal resistance due to reduced chip thickness

Applications

- Switched Mode Power Supplies (SMPS)
- Uninterruptible Power Supplies (UPS)
- Power Factor Correction (PFC)
- Welding
- Inductive Heating

Symbol	Test Conditions		Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
$R_{DS(on)}$	V_{GS} = 10 V, I_D = I_{D100}, Note V_{GS} = 10 V, I_D = I_{D100}, Note	 T_J = 125°C		30 75	36	mΩ mΩ
$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 4 mA		2		4	V
I_{DSS}	V_{DS} = V_{DSS} V_{GS} = 0 V	T_J = 25°C T_J = 150°C			50 400	μA μA
I_{GSS}	V_{GS} = ±20 V_{DC}, V_{DS} = 0				±200	nA

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

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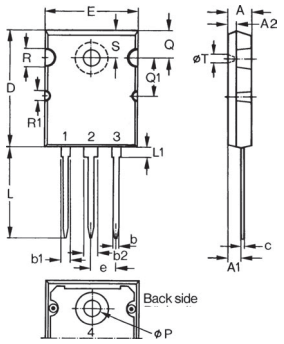
Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
g_{FS}	V_{DS} = 10 V, I_D = I_{D100}		90		S
$Q_{g(on)}$			540	650	nC
Q_{gs}	V_{GS} = 10 V, V_{DS} = 350 V, I_D = 40 A		60		nC
Q_{gd}			220		nC
$t_{d(on)}$			20		ns
t_r	V_{GS} = 10 V, V_{DS} = 380V		27		ns
$t_{d(off)}$	I_D = 60 A, R_G = 2.2 Ω		14		ns
t_f			10		ns
R_{thJC}				0.18	K/W
R_{thCH}			0.15		K/W

Reverse Correction

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
V_{SD}	I_F = I_{D100}, V_{GS} = 0 V Note 1		1.0	1.2	V

Note: 1. Pulse test, $t_{100} \leq 300$ µs, duty cycle d ≤ 2 %

TO-264 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

Fig. 1. Output Characteristics @ 25 Deg. C

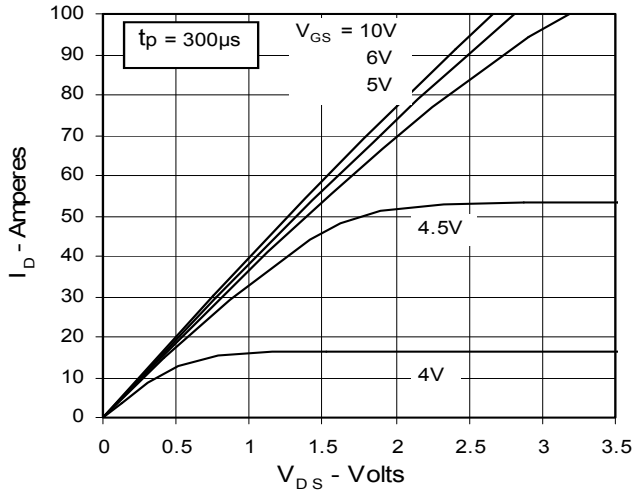


Fig. 2. Extended Output Characteristics @ 25 deg. C

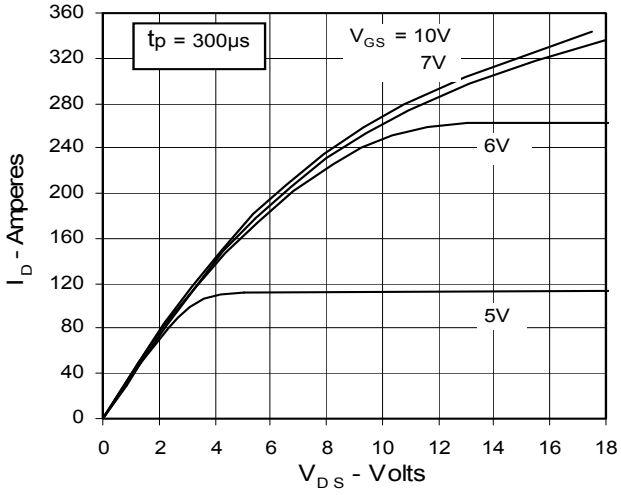


Fig. 3. Output Characteristics @ 125 Deg. C

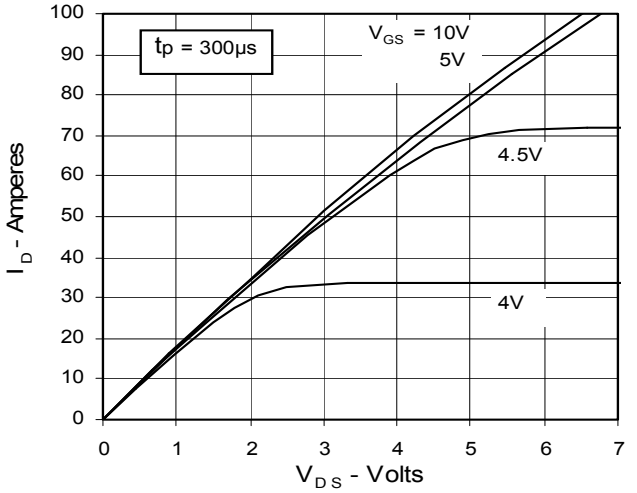


Fig. 4. $R_{DS(on)}$ Normalized to I_{D100} Value vs. Junction Temperature

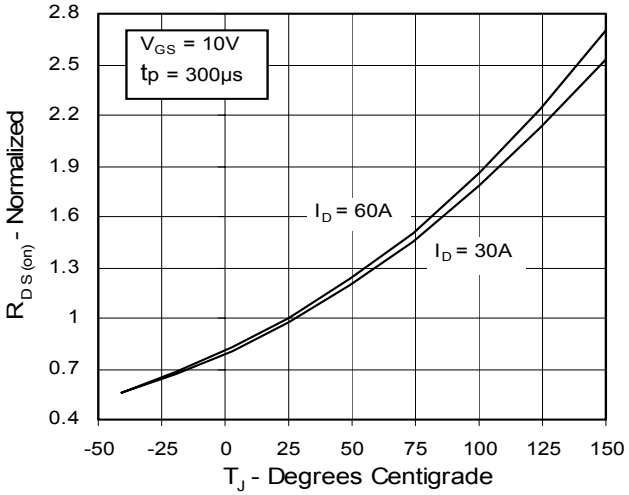


Fig. 5. $R_{DS(on)}$ Normalized to I_{D100} Value vs. I_D

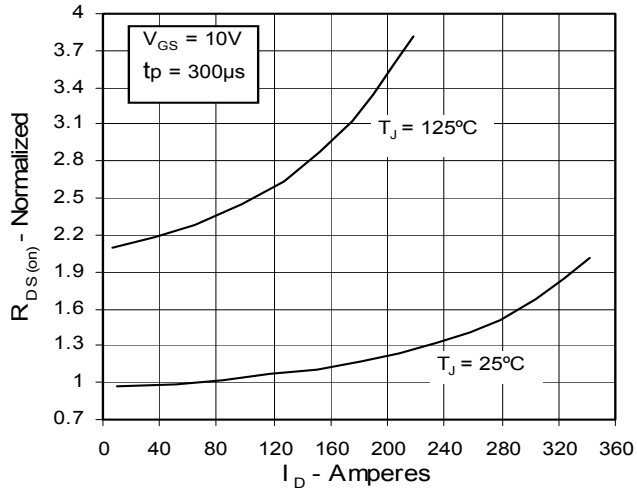


Fig. 6. Drain Current vs. Case Temperature

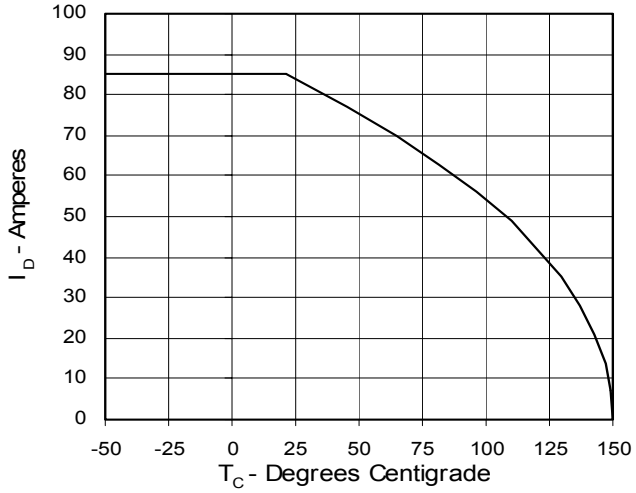


Fig. 7. Input Admittance

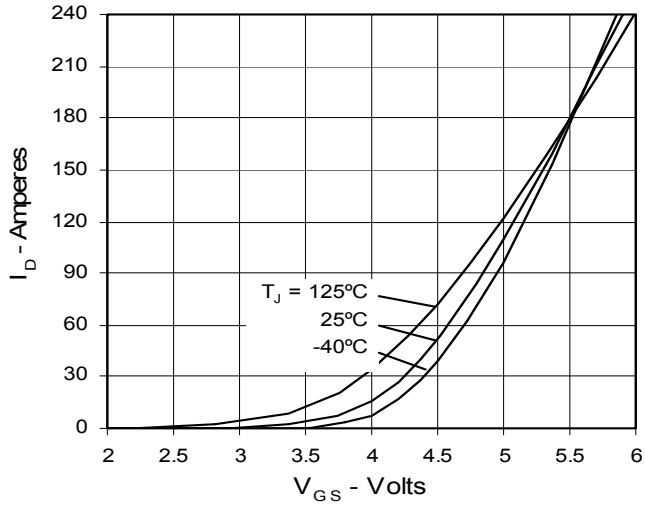


Fig. 8. Transconductance

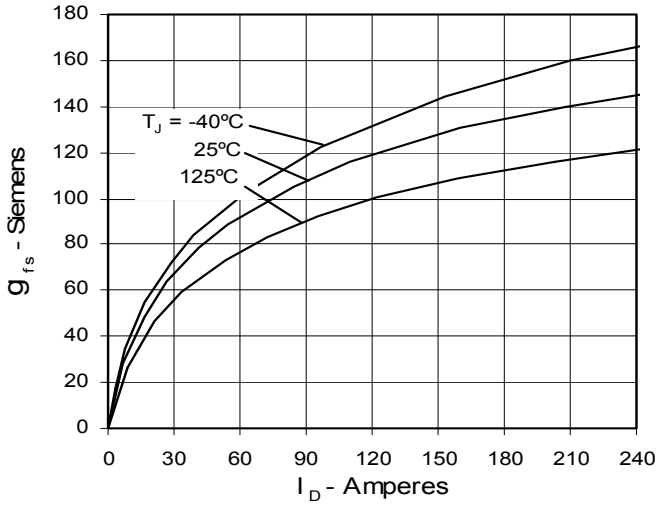


Fig. 9. Source Current vs. Source-To-Drain Voltage

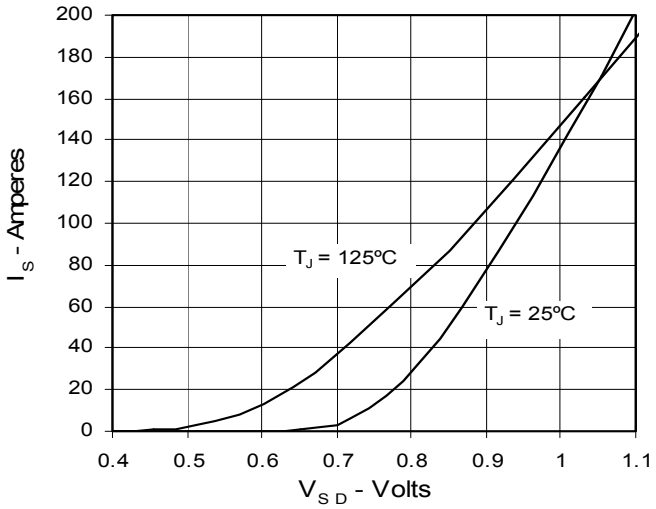


Fig. 10. Gate Charge

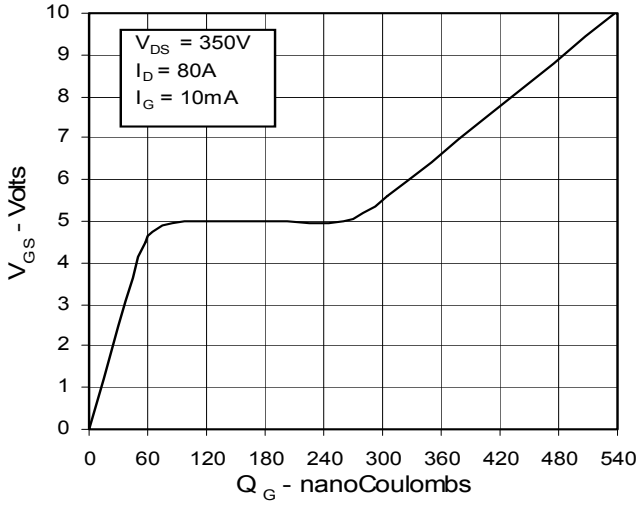


Fig. 11. Capacitance

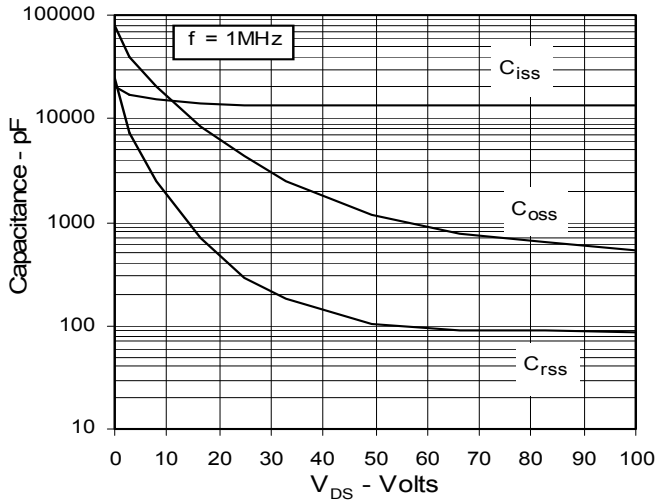


Fig. 12. Maximum Transient Thermal Resistance