

Power MOSFET

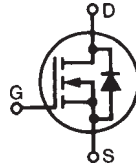
Low $R_{DS(on)}$, High Voltage,
Superjunction MOSFET

IXKK 94N60C3

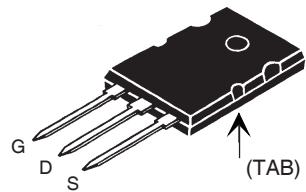
$$V_{DSS} = 600 \text{ V}$$

$$I_{D25} = 94 \text{ A}$$

$$R_{DS(on)} = 35 \text{ m}\Omega$$



Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	600	V
V_{GS}	Continuous	± 20	V
I_{D25}	$T_C = 25^\circ\text{C}$; Note 1	94	A
I_{D100}	$T_C = 100^\circ\text{C}$; Note 1	60	A
$I_{D(RMS)}$	Package lead current limit	45	A
E_{AS}	$I_o = 10\text{A}$, $T_C = 25^\circ\text{C}$	1800	mJ
P_D	$T_C = 25^\circ\text{C}$	780	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +125	$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s	300	$^\circ\text{C}$
F_C	Mounting force	11 ... 65 / 2.4 ... 11	N/lb
Weight		3	g

TO-264


G = Gate D = Drain
S = Source

Features

- 3RD generation Superjunction 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

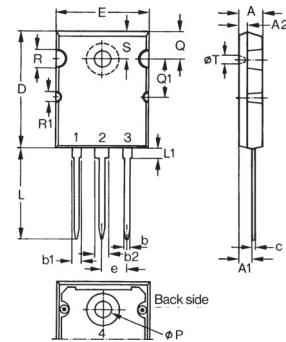
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = I_{D100}$, Note $V_{GS} = 10 \text{ V}$, $I_D = I_{D100}$, Note $T_J = 125^\circ\text{C}$		30 75	35 m Ω m Ω
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4 \text{ mA}$	2	3	4 V
I_{DSS}	$V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V}$			$T_J = 25^\circ\text{C}$ 50 μA $T_J = 150^\circ\text{C}$ 400 μA
I_{GSS}	$V_{GS} = \pm 20 V_{DC}$, $V_{DS} = 0$			$\pm 200 \text{ nA}$

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
g_{FS}	$V_{DS} = 10\text{ V}, I_D = I_{D100}$		75	S
$Q_{g(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 350\text{ V}, I_D = 40\text{ A}$		500	625 nC
Q_{gs}			48	nC
Q_{gd}			240	nC
$t_{d(on)}$	$V_{GS} = 10\text{ V}, V_{DS} = 380\text{ V}$		20	ns
t_r			27	ns
$t_{d(off)}$	$I_D = 60\text{ A}, R_G = 2.2\ \Omega$		14	ns
t_f			10	ns
R_{thJC}			0.16	K/W
R_{thCH}			0.15	K/W

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

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

TO-264 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

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	4,881,106	5,017,508	5,049,961	5,187,117	5,486,715	6,306,728B1	6,259,123B1	6,306,728B1
4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025	6,404,065B1	6,162,665	6,534,343

Fig. 1. Output Characteristics @ 25 Deg. C

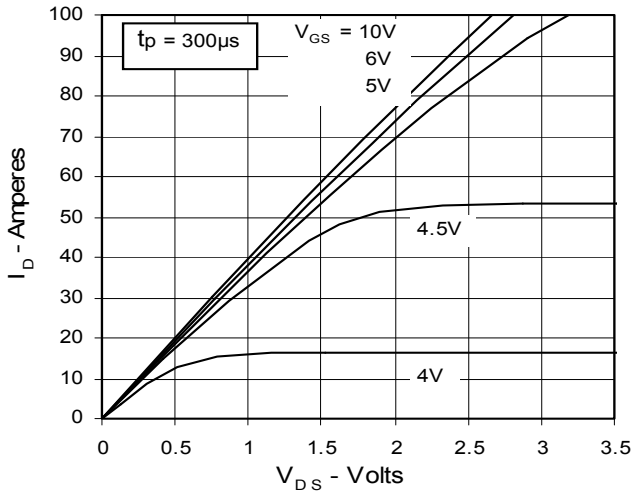


Fig. 2. Extended Output Characteristics @ 25 deg. C

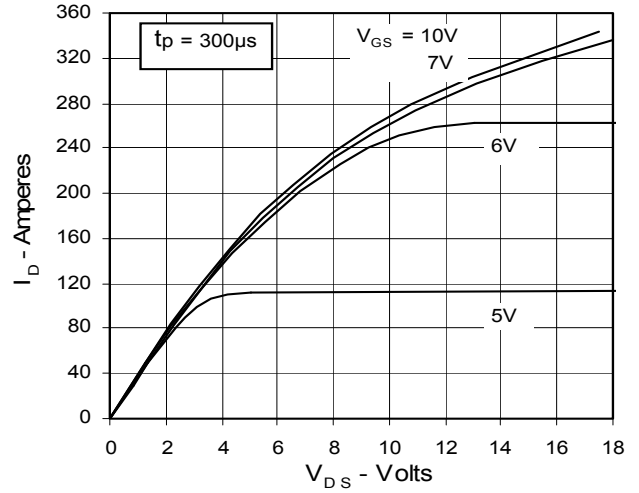


Fig. 3. Output Characteristics @ 125 Deg. C

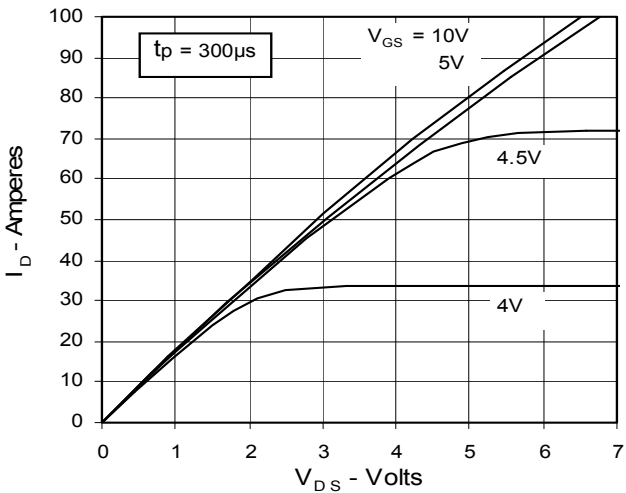


Fig. 4. $R_{DS(on)}$ Normalized to I_{D100} Value vs. Junction Temperature

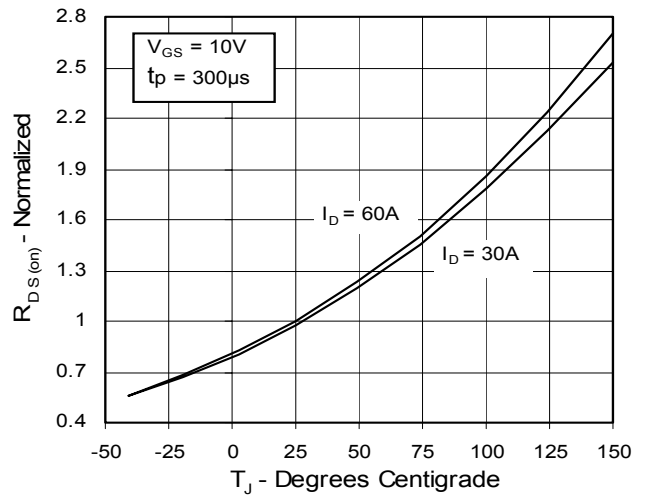


Fig. 5. $R_{DS(on)}$ Normalized to I_{D100} Value vs. I_D

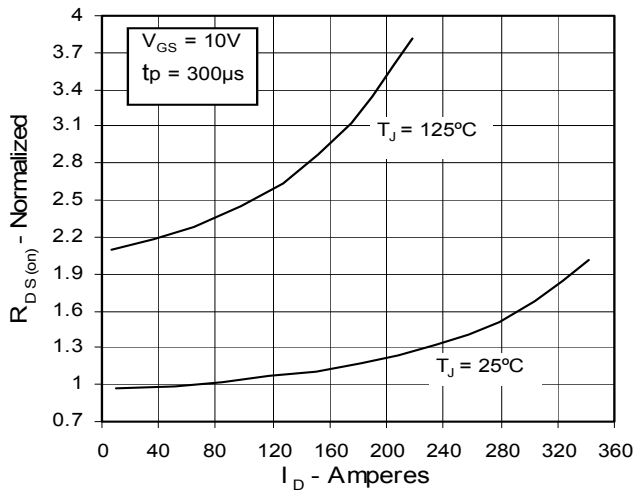


Fig. 6. Drain Current vs. Case Temperature

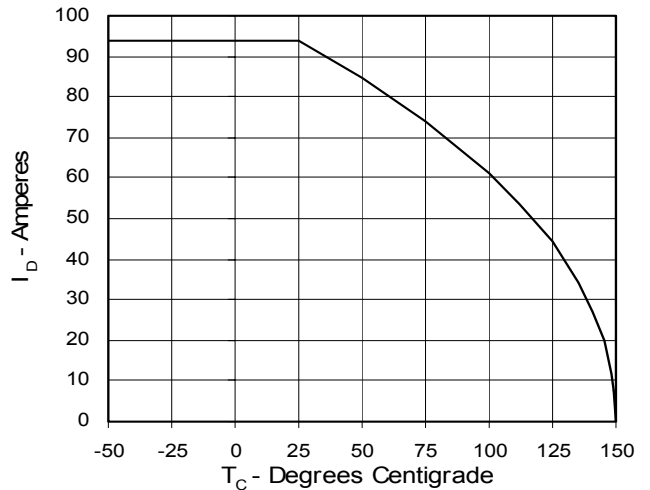


Fig. 7. Input Admittance

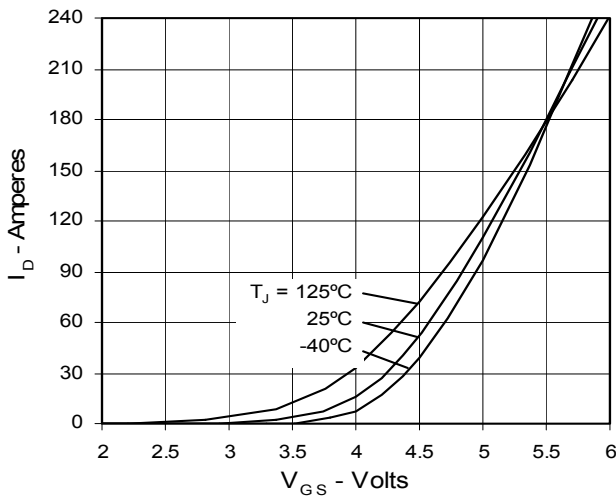


Fig. 8. Transconductance

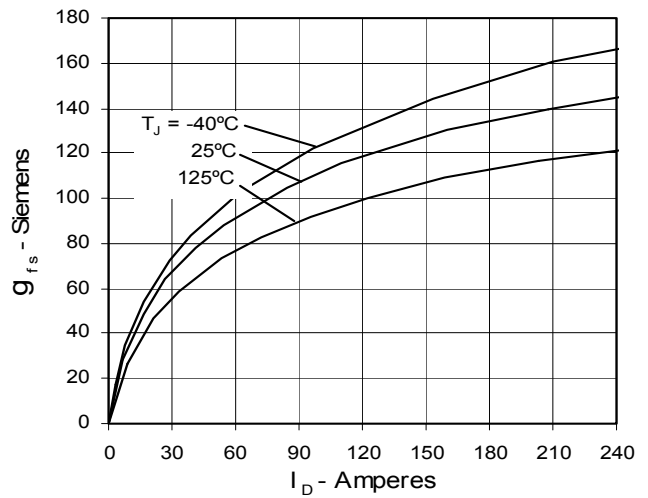


Fig. 9. Source Current vs. Source-To-Drain Voltage

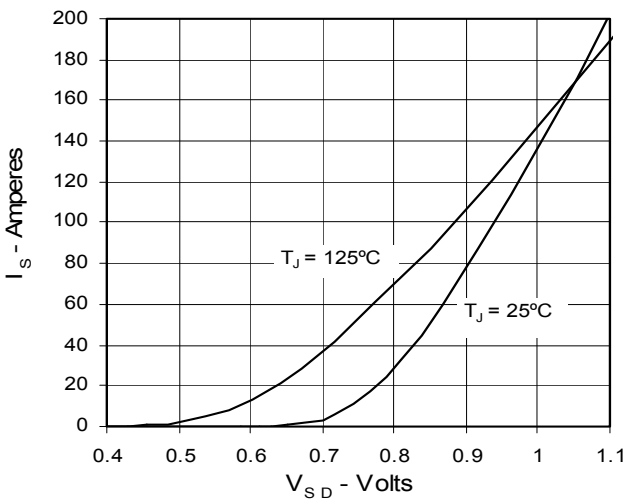


Fig. 10. Gate Charge

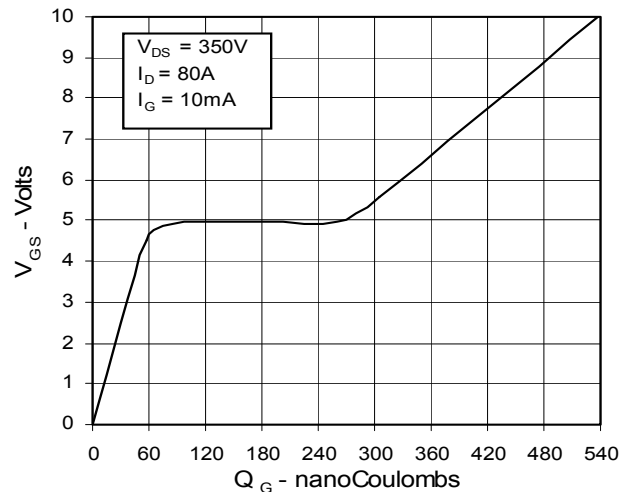


Fig. 11. Capacitance

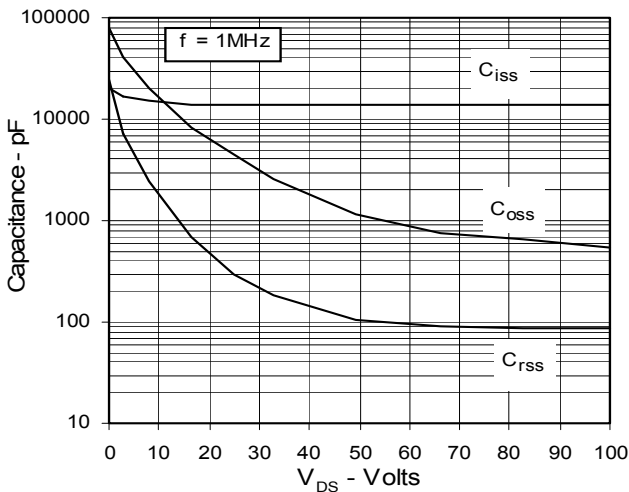
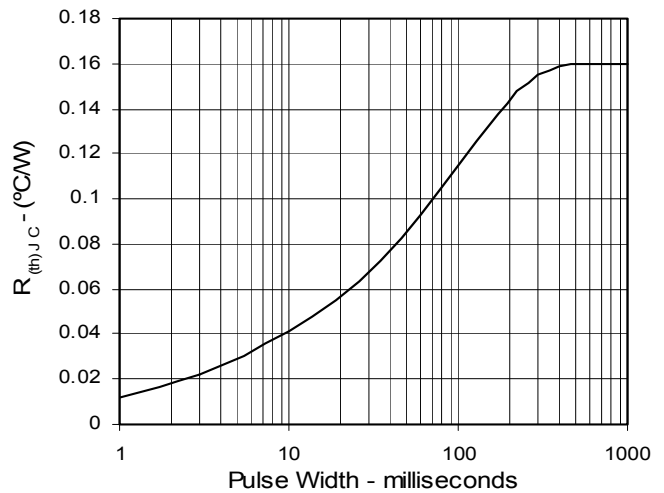


Fig. 12. Maximum Transient Thermal Resistance



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	4,850,072	4,931,844	5,034,796	5,063,307	5,237,481	5,381,025	6,404,065B1	6,162,665	6,534,343