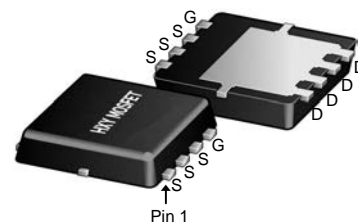


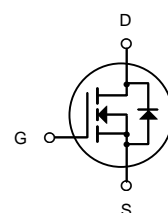


General Description

The IAUC90N10S5N062ATMA1 use advanced SGT MOSFET technology to provide low RDS(ON), low gate charge, fast switching and excellent avalanche characteristics. This device is specially designed to get better ruggedness.



DFN5X6-8L
(Power(5x6))



N-Channel MOSFET

General Features

$V_{DS} = 100V$ $I_D = 75A$

$R_{DS(ON)} < 7.5m\Omega @ V_{GS} = 10V$

Applications

Consumer electronic power supply Motor control

Synchronous-rectification Isolated DC

Synchronous-rectification applications

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
IAUC90N10S5N062ATMA1	DFN5X6-8L(Power(5x6))	HXY MOSFET	5000

Absolute Maximum Ratings at $T_j = 25^\circ C$ unless otherwise noted

Parameter	Symbol	Value	Unit
Drain source voltage	VDS	100	V
Gate source voltage	VGS	± 20	V
Continuous drain current ¹⁾	ID	75	A
Pulsed drain current ²⁾	ID, pulse	300	A
Power dissipation ³⁾	PD	97	W
Single pulsed avalanche energy ⁵⁾	EAS	90	mJ
Operation and storage temperature	Tstg, Tj	-55 to 150	$^\circ C$
Thermal resistance, junction-case	R θ JC	1.3	$^\circ C/W$



Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.6	2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note3</small>	V _{GS} =10V, I _D =20A	-	6.4	7.5	mΩ
		V _{GS} =4.5V, I _D =8A	-	9.2	11.4	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1.0MHz	-	2944	-	pF
C _{Oss}	Output Capacitance		-	736	-	pF
C _{rss}	Reverse Transfer Capacitance		-	2.04	-	pF
Q _g	Total Gate Charge	V _{DS} =50V, I _D =30A, V _{GS} =10V	-	39.4	-	nc
Q _{gs}	Gate-Source Charge		-	5.6	-	nc
Q _{gd}	Gate-Drain(“Miller”) Charge		-	7.6	-	nc
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =50V, I _D =25A, R _G =6Ω, V _{GS} =10V	-	13	-	nc
t _r	Turn-on Rise Time		-	27.5	-	nc
t _{d(off)}	Turn-off Delay Time		-	45.5	-	nc
t _f	Turn-off Fall Time		-	41.5	-	nc
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	75	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	300	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =30A	-	-	1	V
t _{rr}	Body Diode Reverse Recovery Time	T _J =25°C, I _F =12A,dI/dt=100A/μs	-	177	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	1291	-	nc

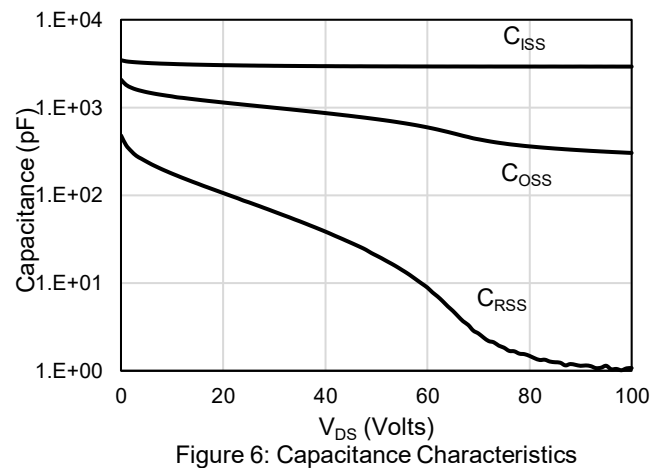
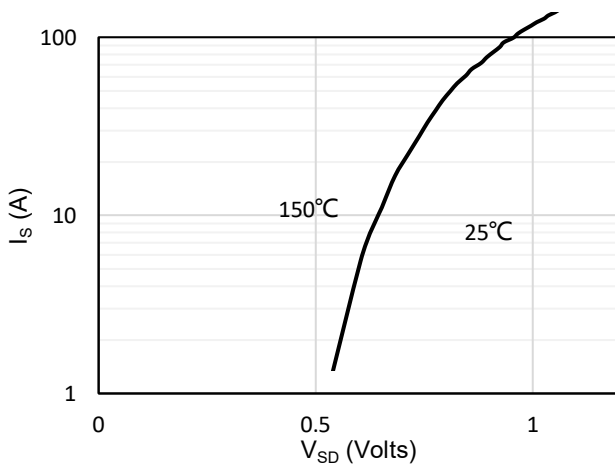
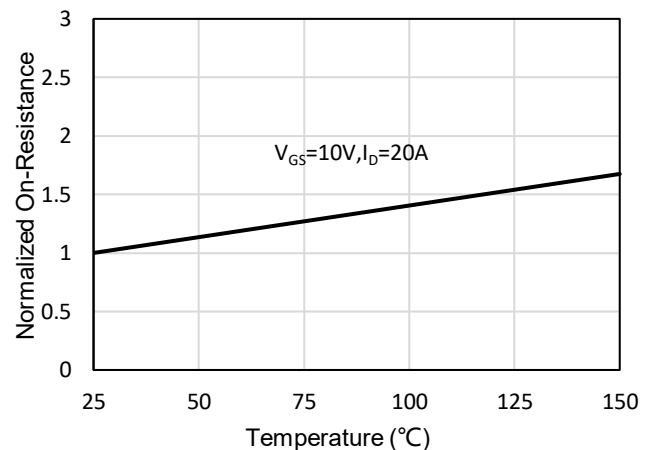
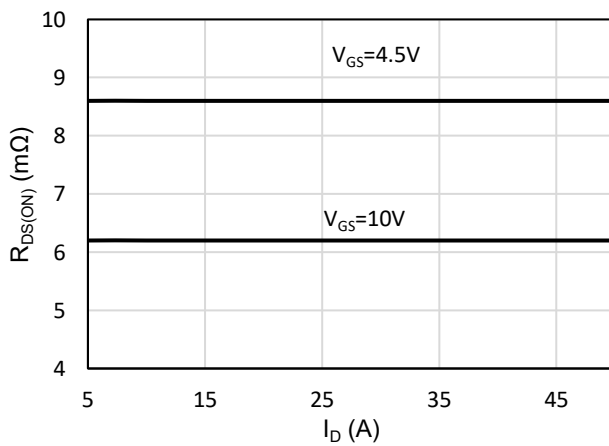
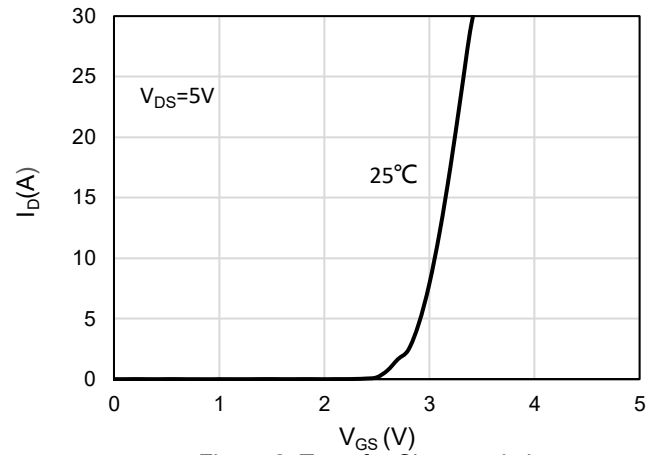
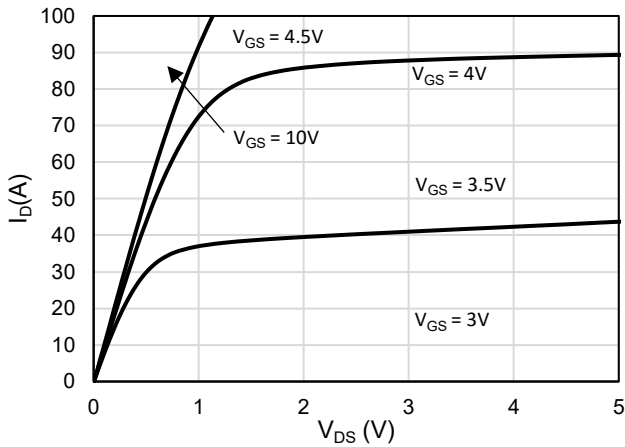
Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25°C, V_{DD}=50V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=19A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



Typical Performance Characteristics



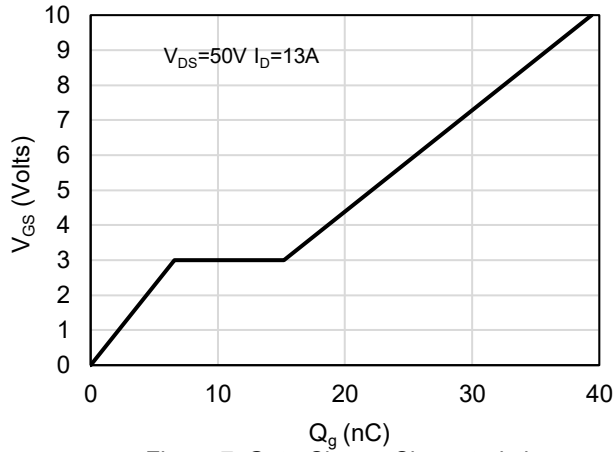


Figure 7: Gate-Charge Characteristics

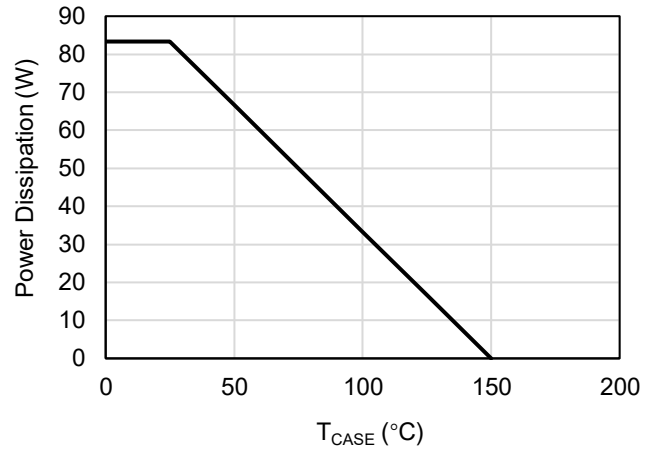


Figure 8: Power De-rating

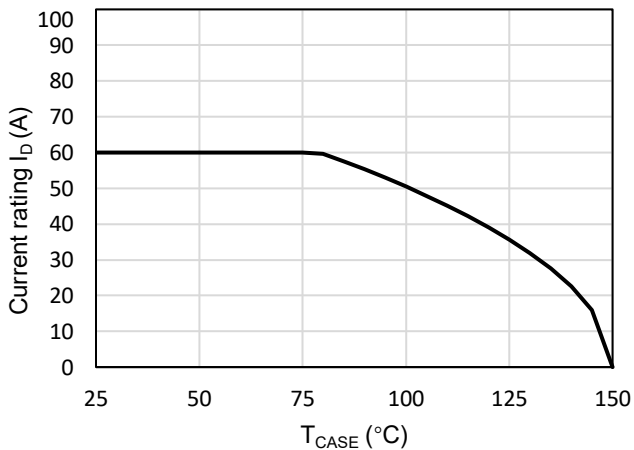


Figure 9: Current De-rating

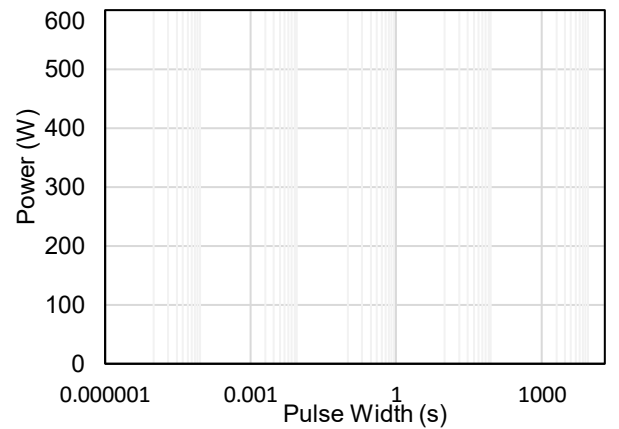


Figure 10: Single Pulse Power Rating Junction-to-Case

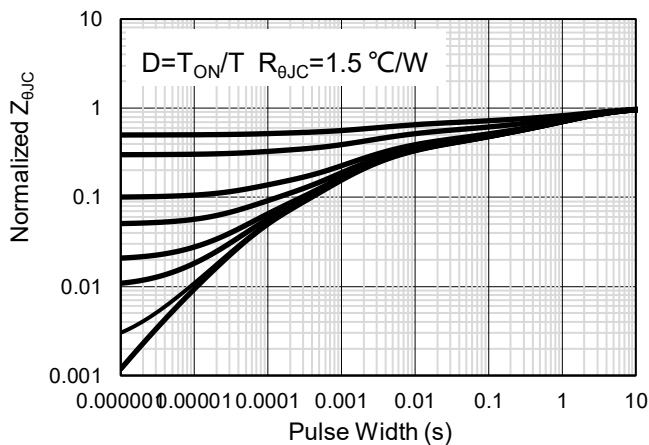


Figure 11: Normalized Maximum Transient Thermal Impedance

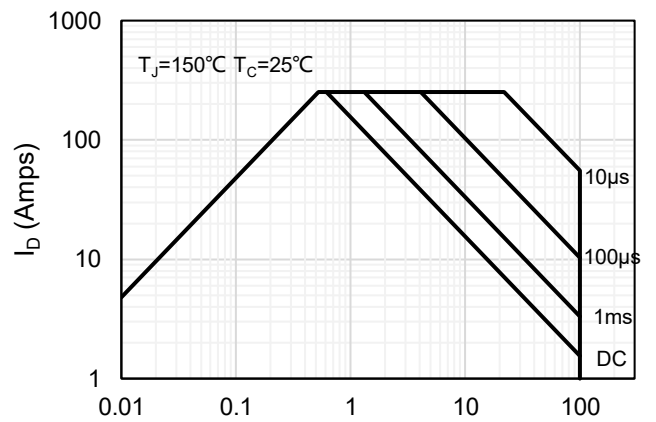
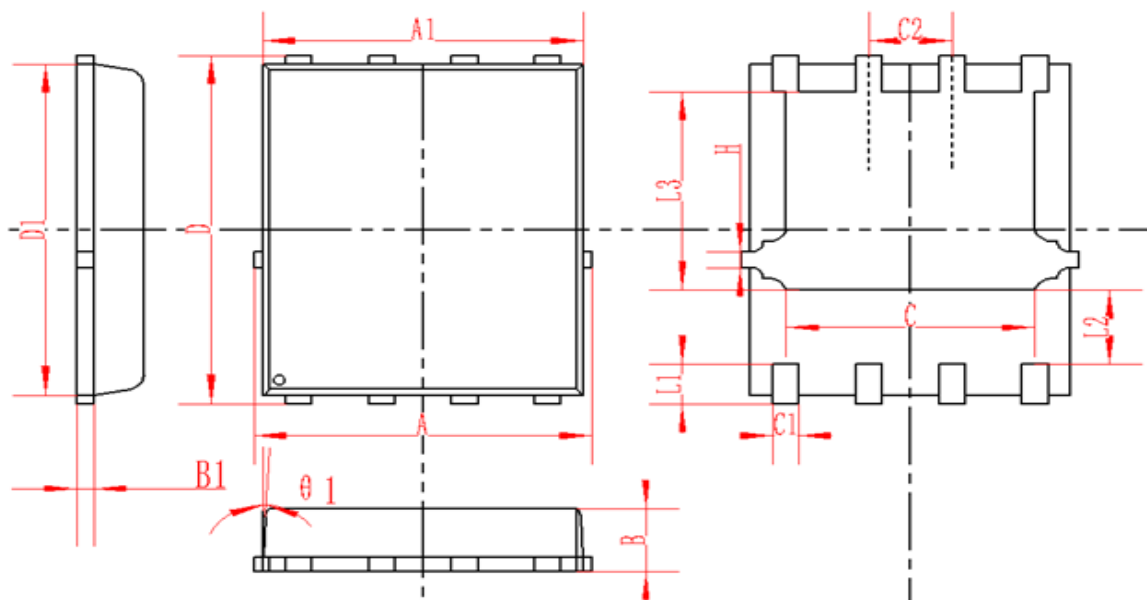


Figure 12: Maximum Forward Biased Safe Operating Area



DFN5X6-8L(Power(5x6)) Package Information



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.95	5	5.05	0.195	0.197	0.199
A1	4.82	4.9	4.98	0.190	0.193	0.196
D	5.98	6	6.02	0.235	0.236	0.237
D1	5.67	5.75	5.83	0.223	0.226	0.230
B	0.9	0.95	1	0.035	0.037	0.039
B1	0.254REF			0.010REF		
C	3.95	4	4.05	0.156	0.157	0.159
C1	0.35	0.4	0.45	0.014	0.016	0.018
C2	1.27TYP			0.5TYP		
θ1	8°	10°	12°	8°	10°	12°
L1	0.63	0.64	0.65	0.025	0.025	0.026
L2	1.2	1.3	1.4	0.047	0.051	0.055
L3	3.415	3.42	3.425	0.134	0.135	0.135
H	0.24	0.25	0.26	0.009	0.010	0.010



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