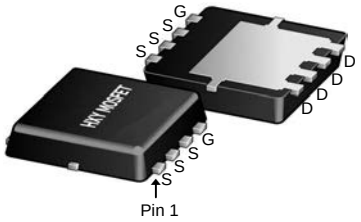
General Description

The FDMS86101 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 and suitable to use in

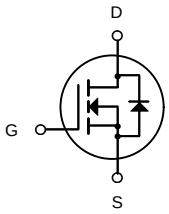


DFN5X6-8L
(Power(5x6))

General Features

V_{DS} =100V I_D =75A

$R_{DS(ON)}$ < 7.5mΩ@ V_{GS}=10V



N-Channel MOSFET

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)
FDMS86101	DFN5X6-8L(Power(5x6))	HXY MOSFET	5000

Absolute Maximum Ratings at T_j=25℃ 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)]	P_D	97	W
Single pulsed avalanche energy[5)]	EAS	90	mJ
Operation and storage temperature	Tstg，Tj	-55 to 150	℃
Thermal resistance, junction-case	RθJC	1.3	°C/W

Electrical Characteristics (T_J=25℃ 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 note3	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℃, 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℃, 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

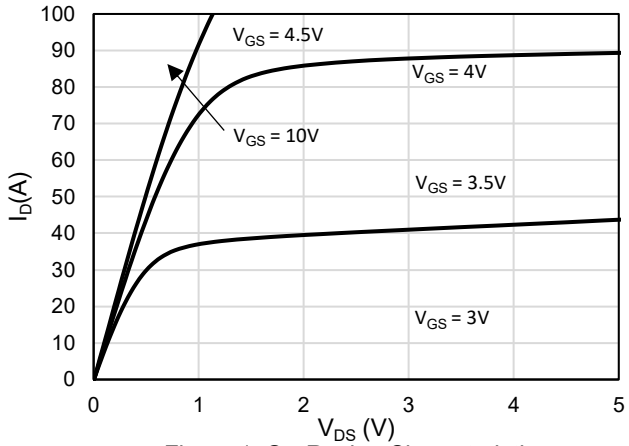


Figure 1: On Region Characteristics

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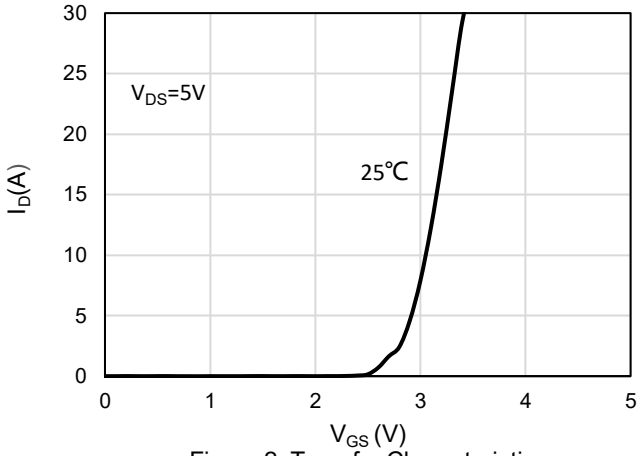


Figure 2: Transfer Characteristics

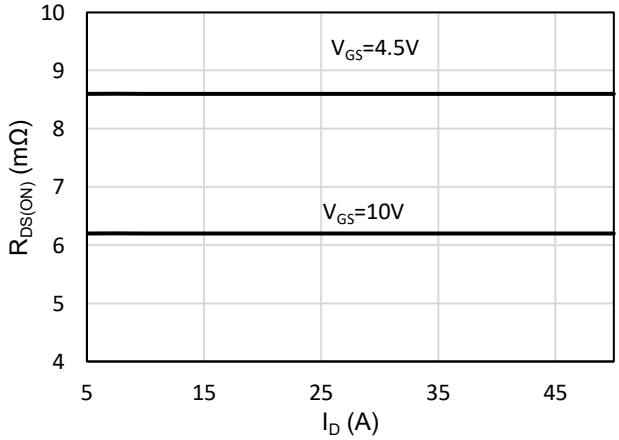


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

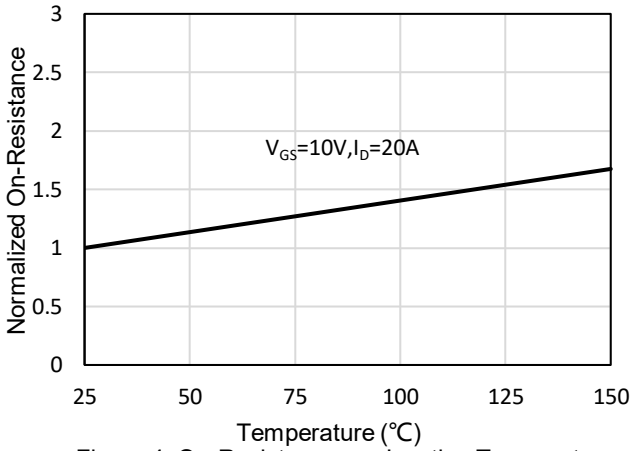


Figure 4: On-Resistance vs. Junction Temperature

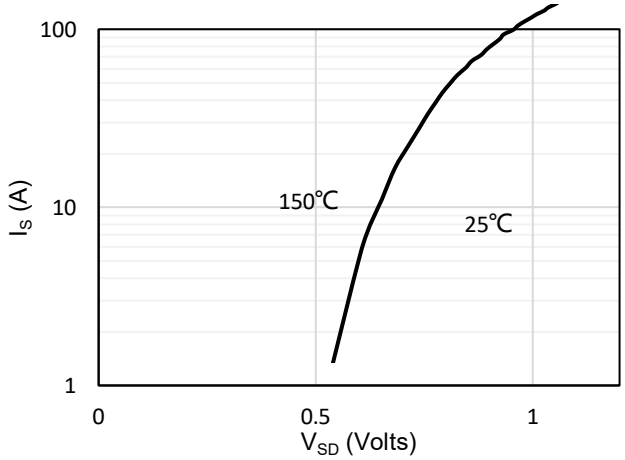


Figure 5: Body-Diode Characteristics

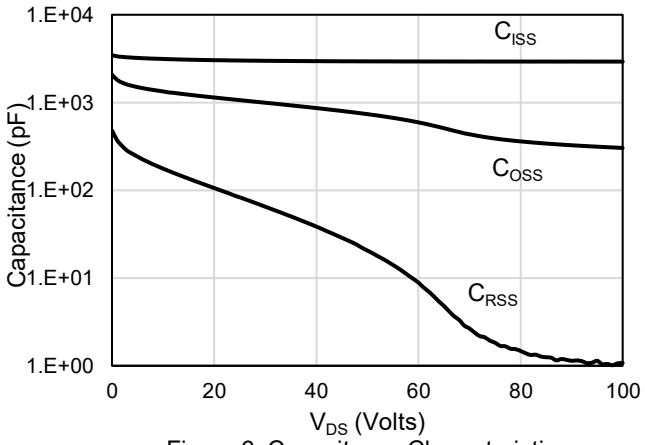


Figure 6: Capacitance Characteristics

Typical Performance Characteristics

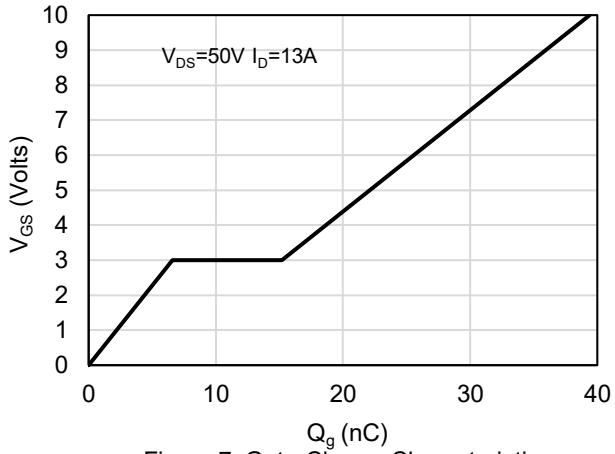


Figure 7: Gate-Charge Characteristics

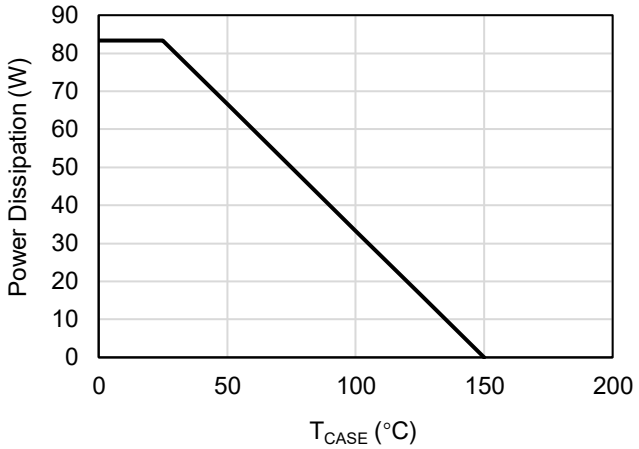


Figure 8: Power De-rating

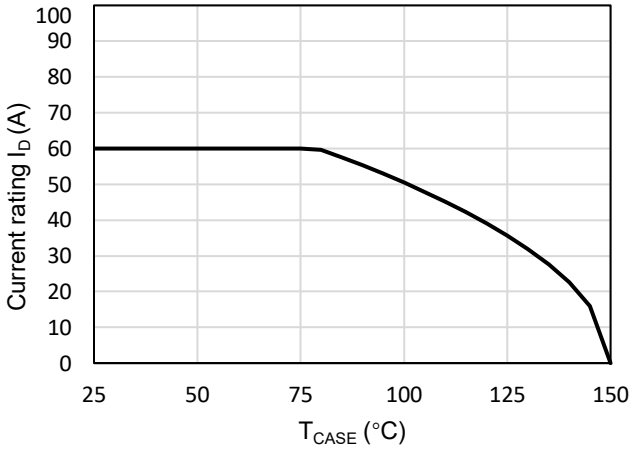


Figure 9: Current De-rating

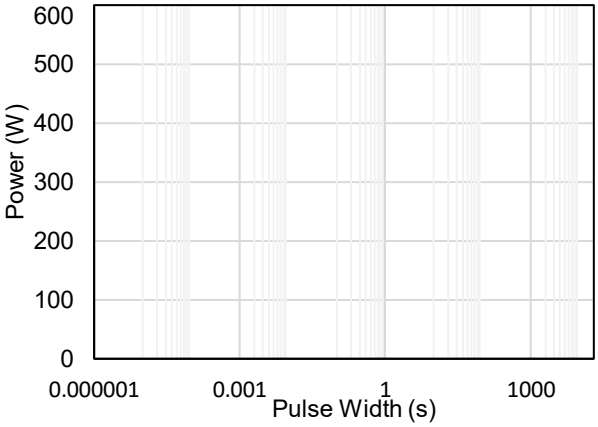


Figure 10: Single Pulse Power Rating Junction-to-Case

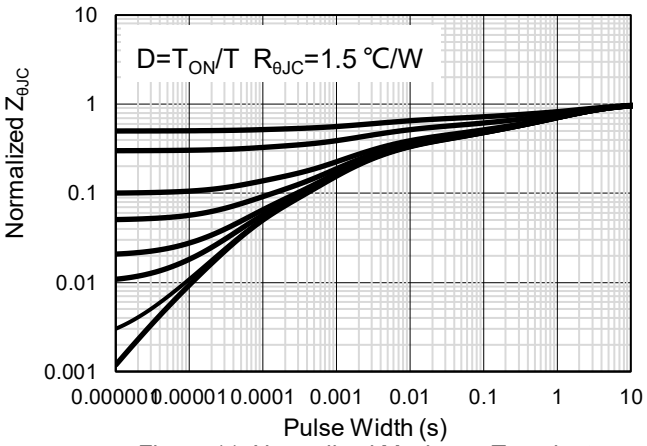


Figure 11: Normalized Maximum Transient Thermal Impedance

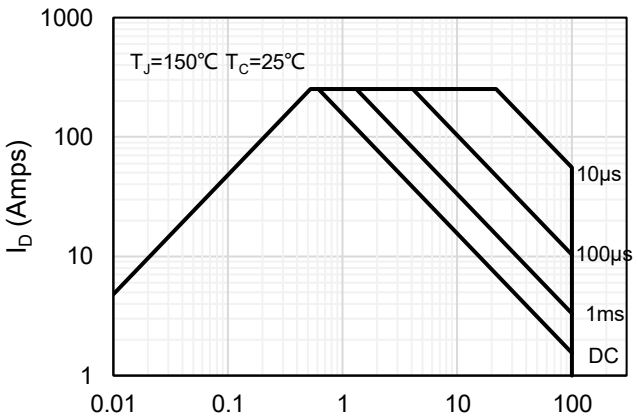
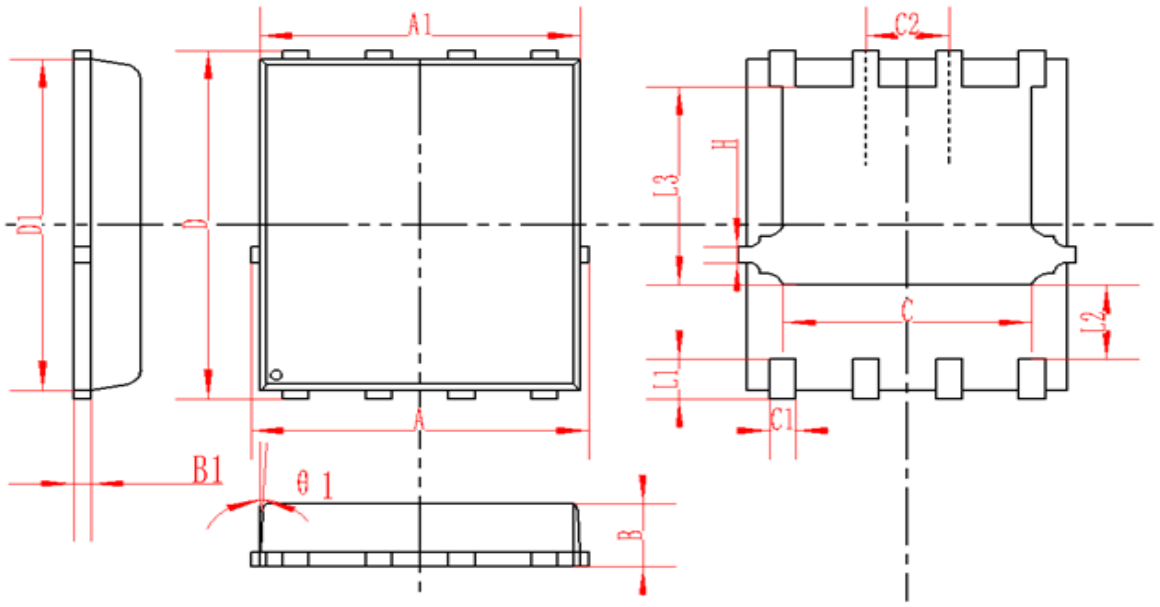


Figure 12: Maximum Forward Biased Safe Operating Area

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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