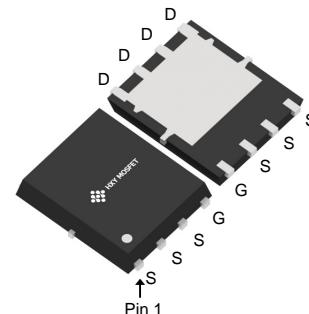




Description

The FDMS8320L 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.



DFN5X6-8L

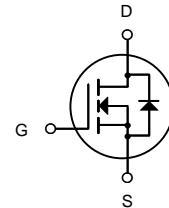
General Features

$V_{DS} = 40V$ $I_D = 219A$

$R_{DS(ON)} < 1.5m\Omega$ $V_{GS}=10V$

Applications

Consumer electronic power supply Motor control
Synchronous-rectification Isolated DC
Synchronous-rectification applications



N-Channel MOSFET

Ordering Information

Product ID	Pack	Brand	Qty(PCS)
FDMS8320L	DFN5X6-8L	HXY MOSFET	5000

Absolute Maximum Ratings ($T_c=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_c=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	219	A
$I_D @ T_c=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	138	A
I_{DM}	Pulsed Drain Current	345	A
EAS	Single Pulse Avalanche Energy	69	mJ
$P_D @ T_c=25^\circ C$	Total Power Dissipation	114	W
T_{STG}	Storage Temperature Range	-50 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-50 to 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	43.2	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	1.1	$^\circ C/W$



Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max	Unit
Static Characteristics						
BV _{DSS}	Drain Source breakdown voltage	V _{GS} =0V, I _D =250uA, T _J =25°C	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V	-	-	1	uA
I _{GSS}	Gate-to-Source Forward Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics						
V _{G(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.4	-	2.3	V
R _{D(on)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =20A	-	1.2	1.5	mΩ
		V _{GS} =5V, I _D =20A	-	1.7	2.2	mΩ
R _G	Gate Resistance	f = 1 MHz	-	1.5	-	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} = 20V f = 150KHz	-	6461	-	pF
C _{oss}	Output Capacitance		-	3257	-	pF
C _{rss}	Reverse Transfer Capacitance		-	196	-	pF
Switching Characteristics						
T _{D(on)}	Turn-on Delay Time	V _{DD} = 20V V _{GS} = 4.5V RG = 3Ω ID = 20A	-	24	-	ns
T _r	Turn-on Rise Time		-	84	-	ns
T _{D(off)}	Turn-off Delay Time		-	62	-	ns
T _f	Turn-off Fall Time		-	20	-	ns
Q _g	Total Gate Charge	V _{DD} = 20V V _{GS} = 4.5V I _D = 20A	-	55	-	nC
Q _{gs}	Gate Source Charge		-	15	-	nC
Q _{gd}	Gate Drain Charge		-	19	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
V _{SD}	Drain-Source Diode Forward Voltage	I _S = 50A, V _{GS} = 0V	-	0.8	1.2	V
T _{rr}	Reverse Recovery Time	I _S = 20A, V _{GS} = 0V di/dt = 100A/μs	-	171	-	ns
Q _{rr}	Reverse Recovery Charge		-	381	-	nC

Notes:

1. Rated according to R_{θJC}
2. Rated according to R_{θJA}
3. Surface mounted on 1 inch² FR4 board, 2 oz Cu
4. Limited by maximum T_J
5. Starting T_J = 25°C, V_{DD} = 30V, V_{GS} = 10V, L = 0.5mH
6. Pulse width limited by maximum T_J



Typical Characteristics

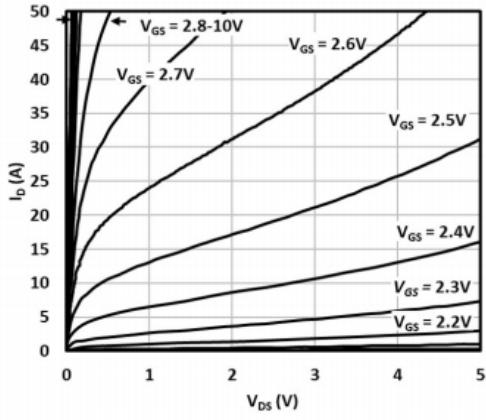


Fig. 1 Output characteristics

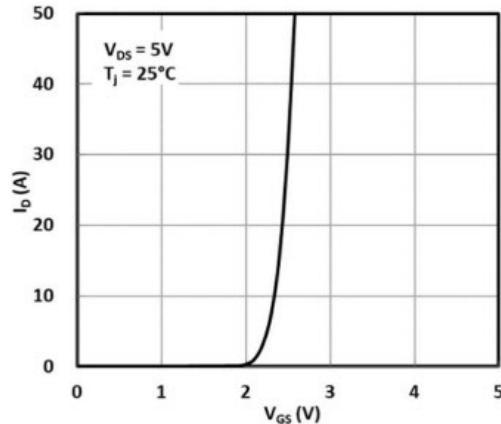


Fig. 2 Transfer characteristics

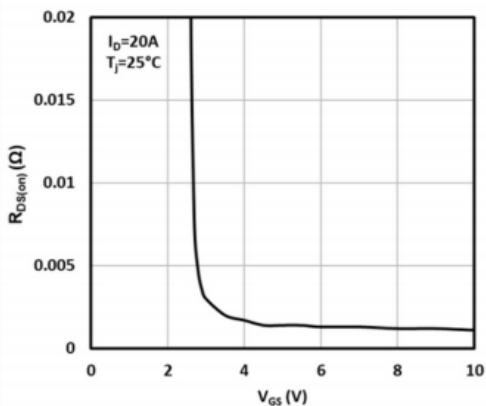


Fig.3 On-resistance vs. gate voltage

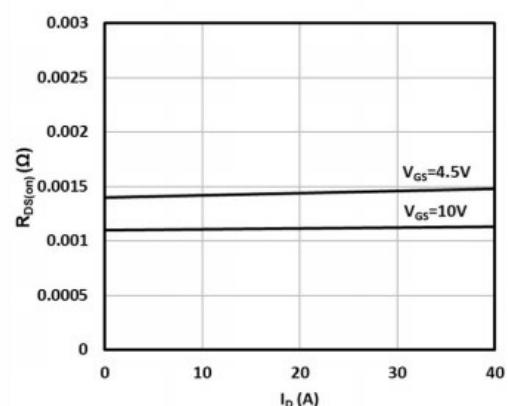


Fig.4 On-resistance vs. drain current

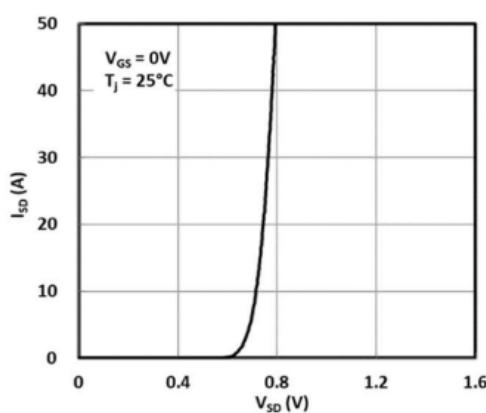


Fig.5 Source-to-drain diode forward characteristics

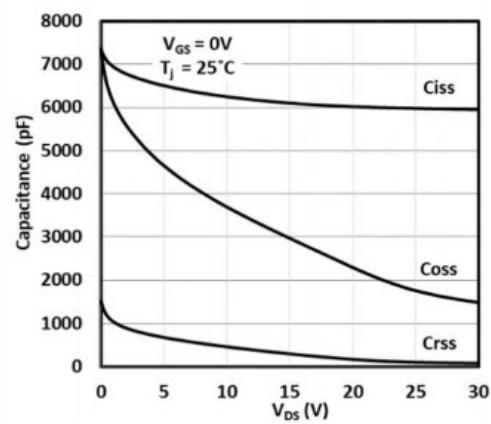


Fig.6 Capacitance vs. drain-to-source voltage

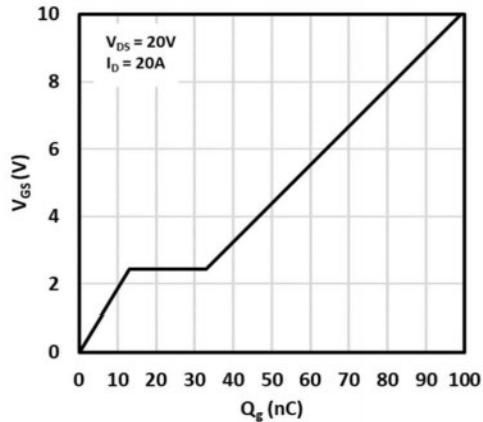


Fig.7 Gate-to-source voltage vs. gate charge

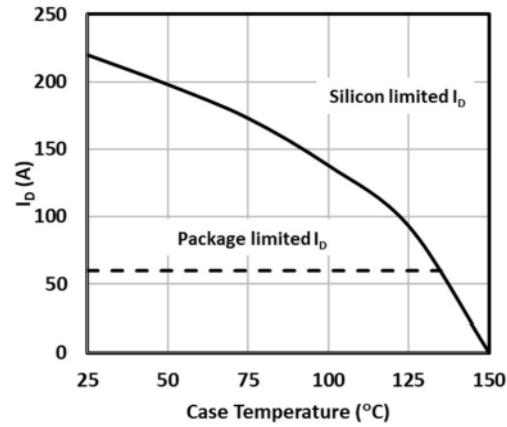


Fig.8 Maximum drain current vs. case temperature

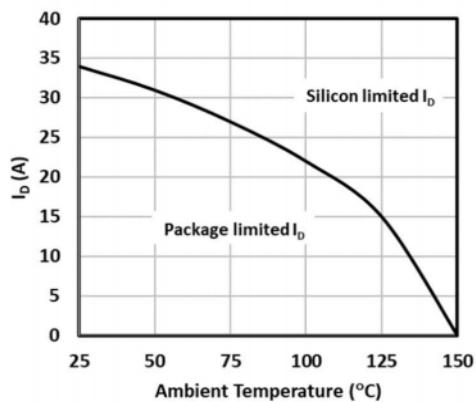
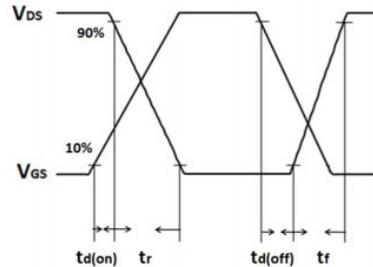
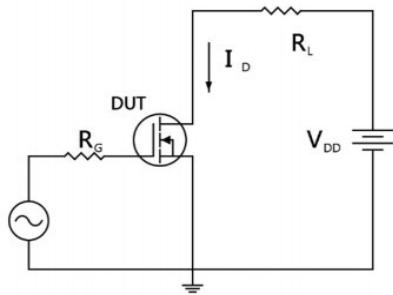


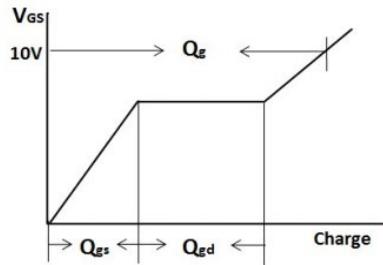
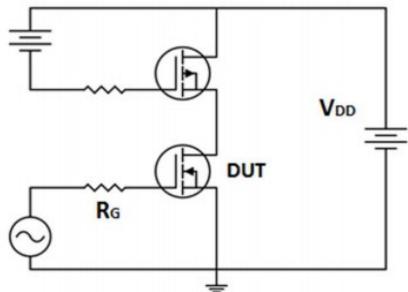
Fig.9 Maximum drain current vs. ambient temperature



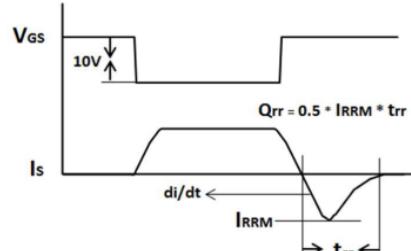
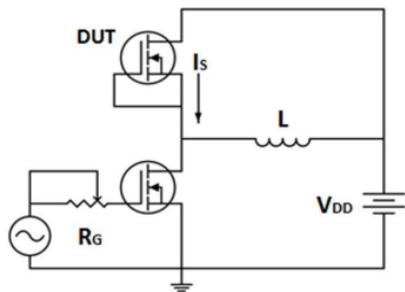
Test Circuits and Waveforms



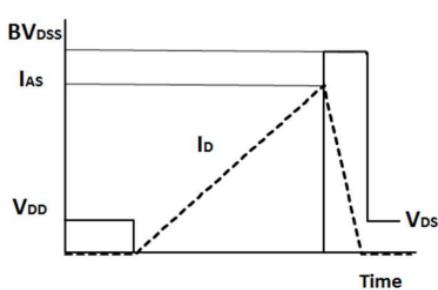
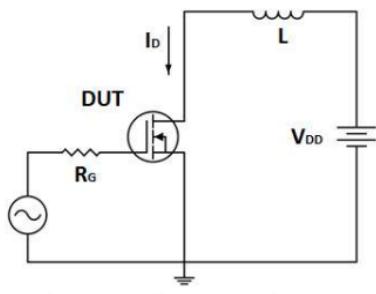
Resistive switching time test circuit & waveforms



Gate charge test circuit & waveform



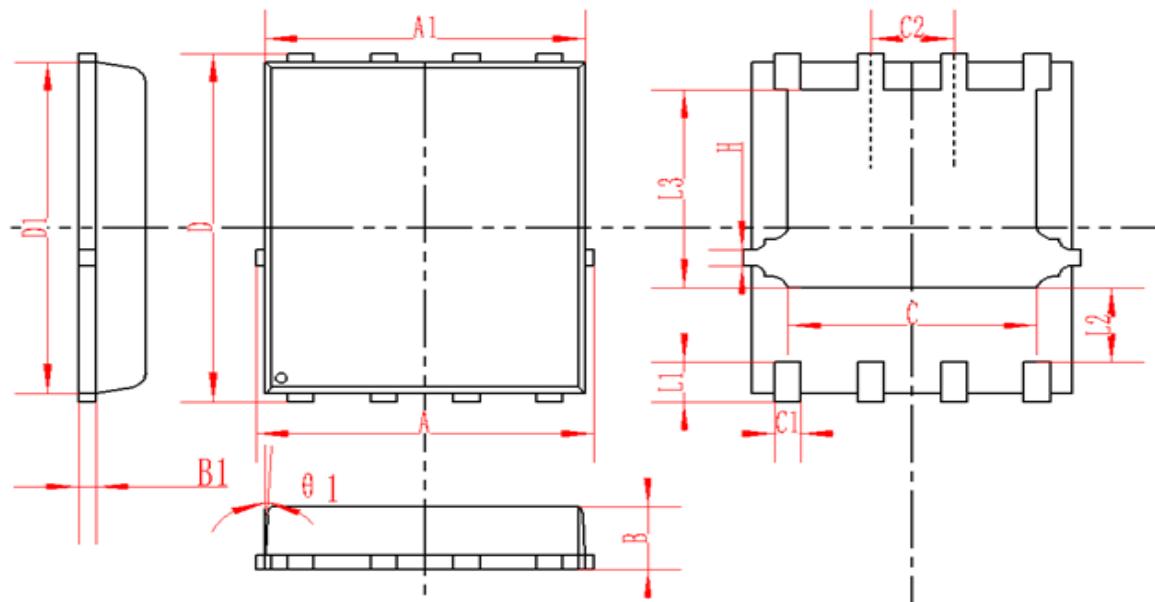
Peak diode recovery dv/dt test circuit & waveforms



Unclamped inductive switching test circuit & waveforms



DFN5X6-8L 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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