



## Description

The FDMS8880 uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

## General Features

$V_{DS} = 30V$   $I_D = 50A$

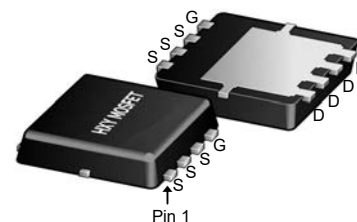
$R_{DS(ON)} < 8.5m\Omega$   $V_{GS}=10V$

## Application

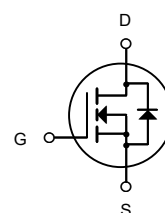
Battery protection

Load switch

Uninterruptible power supply



DFN5X6-8L  
(Power-56-8)



N-Channel MOSFET

## Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
FDMS8880	DFN5X6-8L(Power-56-8)	HXY MOSFET	5000

## Absolute Maximum Ratings ( $T_C=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V^1$	60	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V^1$	38	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	200	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	36	mJ
$I_{AS}$	Avalanche Current	50	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation <sup>4</sup>	31	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^{\circ}C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^{\circ}C$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient <sup>1</sup>	62	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case <sup>1</sup>	27	$^{\circ}C/W$

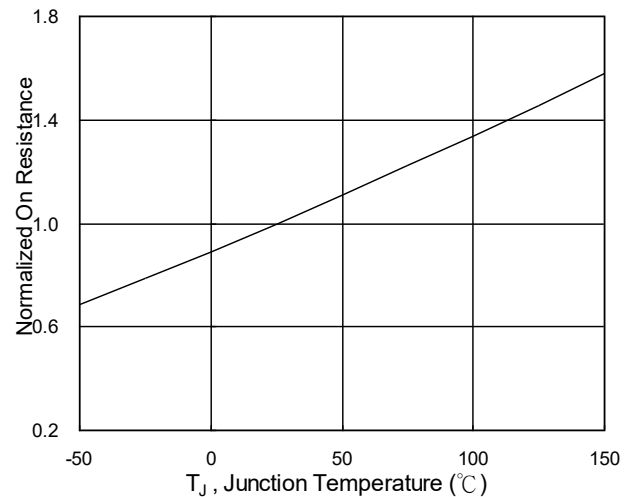
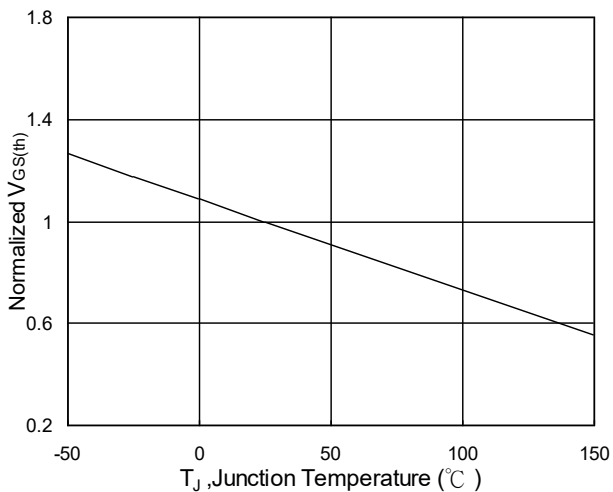
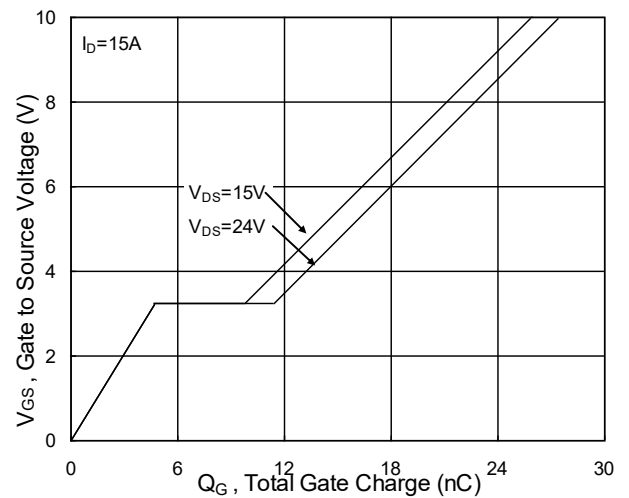
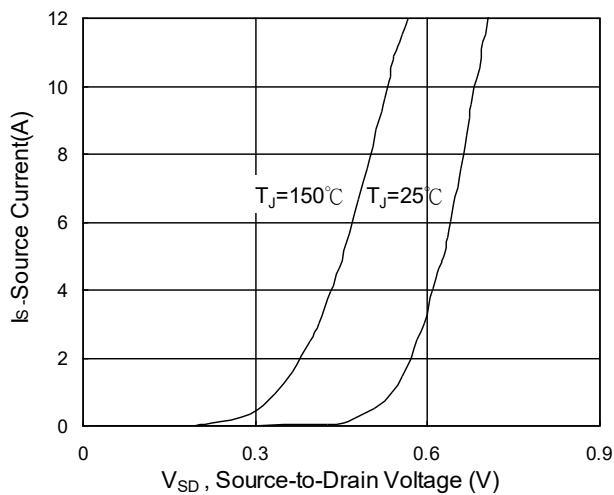
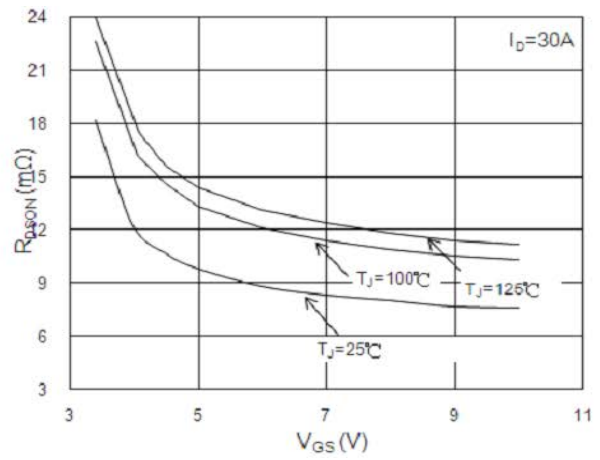
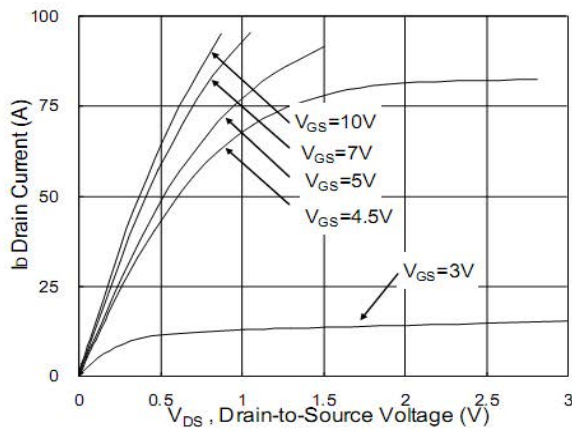


**Electrical Characteristics ( $T_J=25\text{ }^{\circ}\text{C}$ , unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\text{ }\mu\text{A}$	30	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=24V$	---	---	1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 100$	nA
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\text{ }\mu\text{A}$	1.2	1.5	2.5	V
$R_{DS(on)}$	Drain-Source On Resistance <sup>2</sup>	$V_{GS}=10V, I_D=30A$	---	6.5	8.5	m $\Omega$
		$V_{GS}=4.5V, I_D=15A$	---	11	14	
$G_{FS}$	Forward Transconductance	$V_{DS}=5V, I_D=30A$	---	38	---	S
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	1317	1844	pF
$C_{oss}$	Output Capacitance		---	163	228	
$C_{rss}$	Reverse Transfer Capacitance		---	131	183	
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V, I_D=15A, R_L=\Omega$ $V_{GS}=15V, R_G=3.3\Omega$	---	4.6	9.2	ns
$t_r$	Rise Time		---	12.2	22	ns
$t_{d(off)}$	Turn-Off Delay Time		---	26.6	53	ns
$t_f$	Fall Time		---	8	16	ns
$Q_g$	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=15V,$ $I_D=15A$	---	21	17.6	nC
$Q_{gs}$	Gate-Source Charge		---	2.35	5.9	nC
$Q_{gd}$	Gate-Drain "Miller" Charge		---	5.9	7.1	nC
$V_{SD}$	Source-Drain Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=1A$	---	---	1	V
$I_S$	Continuous Source Current <sup>1,5</sup>	$V_G=V_D=0V$ , Force Current	---	---	58	A
$I_{SM}$	Pulsed Source Current <sup>2, 5</sup>		---	---	115	A
$t_{rr}$	Reverse Recovery Time	$I_F=30A,$ $dI/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	9.2	---	
$Q_{rr}$	Reverse Recovery Charge		---	2	---	



## Typical Characteristics



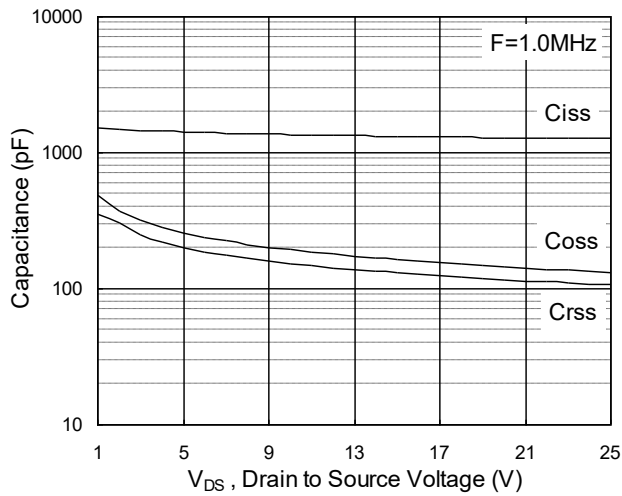


Fig.7 Capacitance

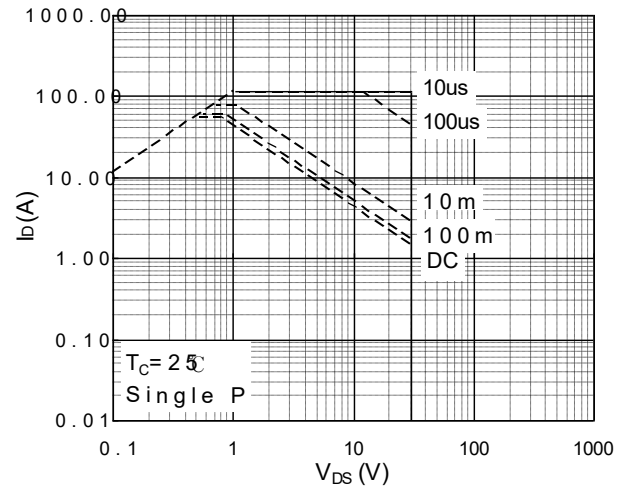


Fig.8 Safe Operating Area

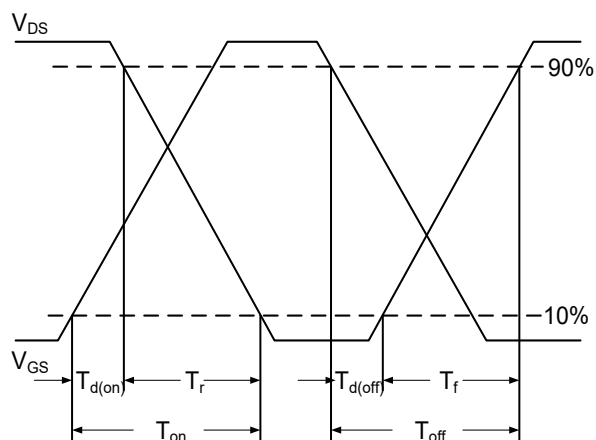
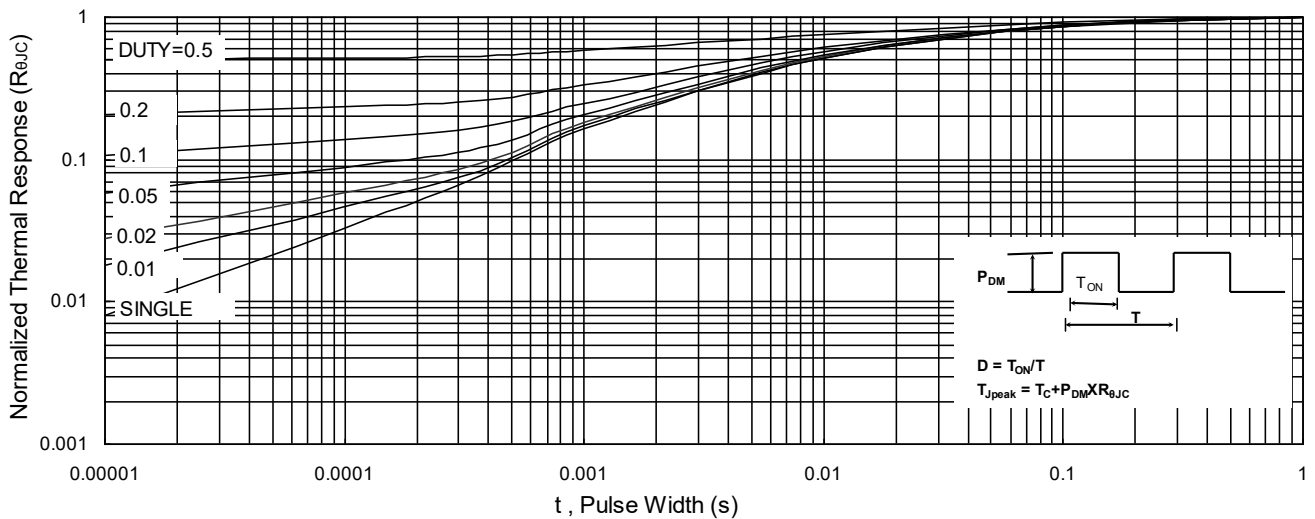
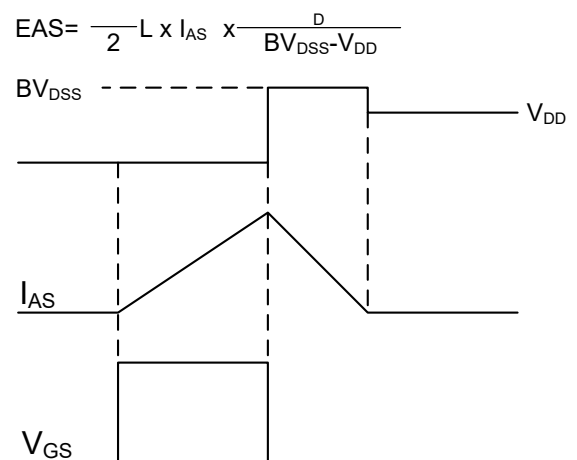
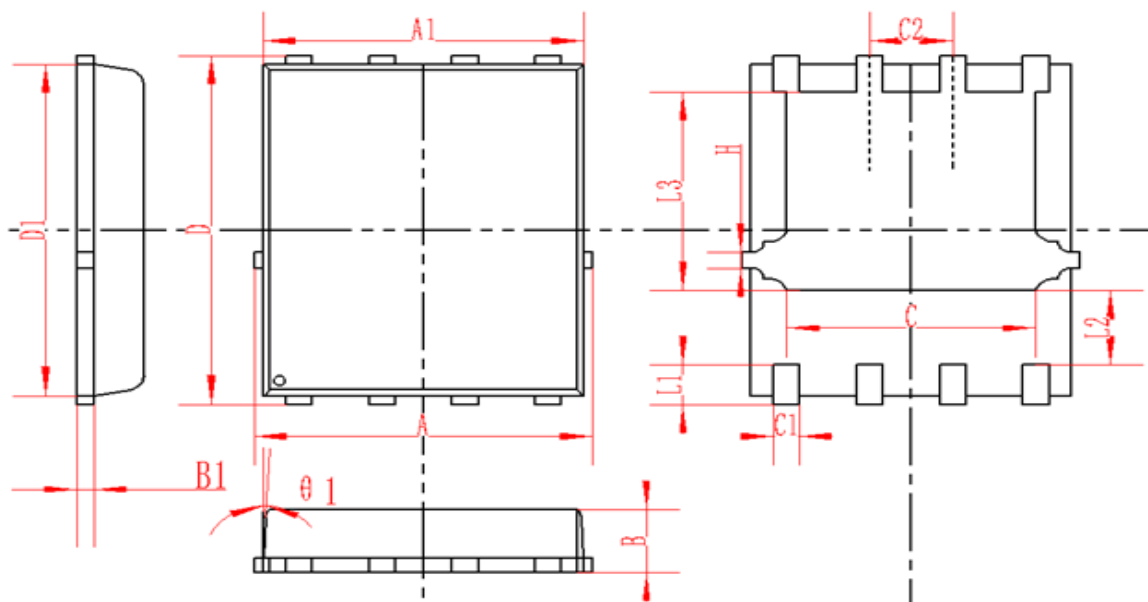


Fig.10 Switching Time Waveform





## DFN5X6-8L(Power-56-8)Package Information



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	5.3	5.5	5.7	0.208	0.216	0.224
A1	5.1	5.2	5.3	0.2	0.204	0.209
D	5.98	6	6.02	0.235	0.236	0.237
D1	5.85	6.05	6.25	0.23	0.238	0.246
B	0.85	0.95	1.05	0.033	0.037	0.041
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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