



## Description

The HXY60N03NF 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

$V_{DS} = 30V$   $I_D = 60A$

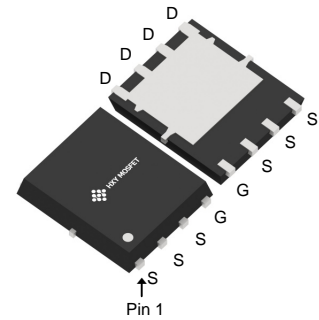
$R_{DS(ON)} < 8.5m\Omega$   $V_{GS}=10V$

## Application

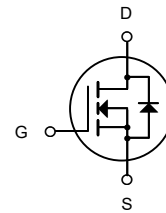
Battery protection

Load switch

Uninterruptible power supply



DFN5X6-8L



N-Channel MOSFET

## Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
HXY60N03NF	DFN5X6-8L	60N03 XXX YYYY	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, $V_{GS} @ 10V$	60	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	38	A
$I_{DM}$	Pulsed Drain Current	200	A
EAS	Single Pulse Avalanche Energy	36	mJ
$I_{AS}$	Avalanche Current	50	A
$P_D@T_C=25^\circ C$	Total Power Dissipation	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	62	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	27	$^\circ C/W$

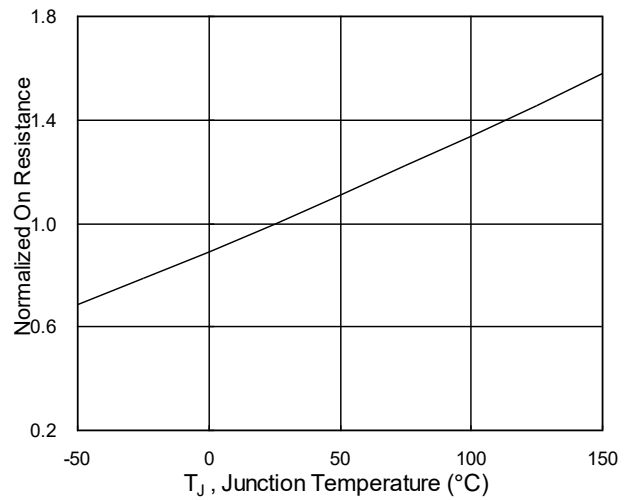
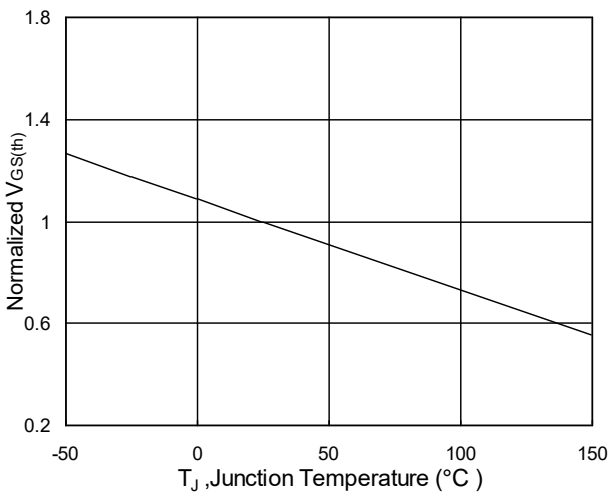
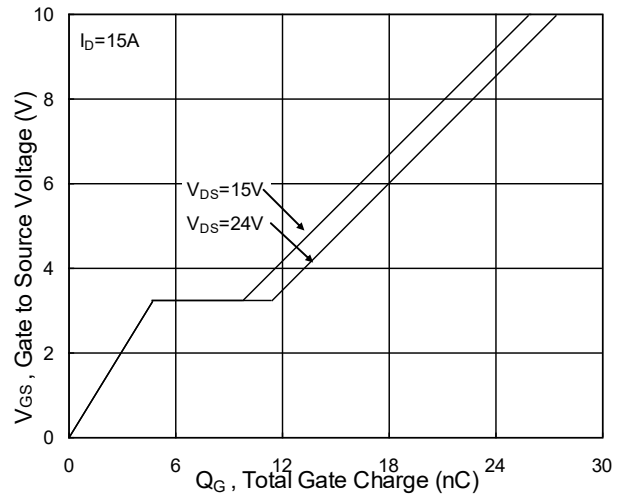
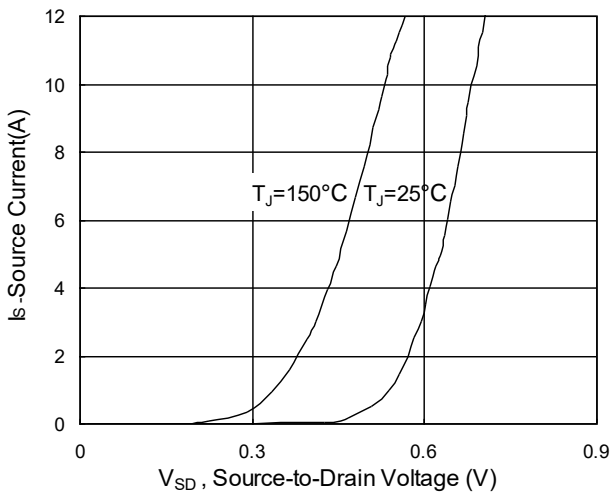
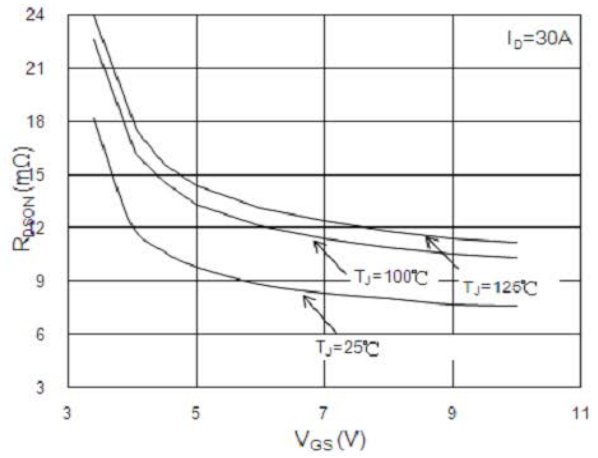
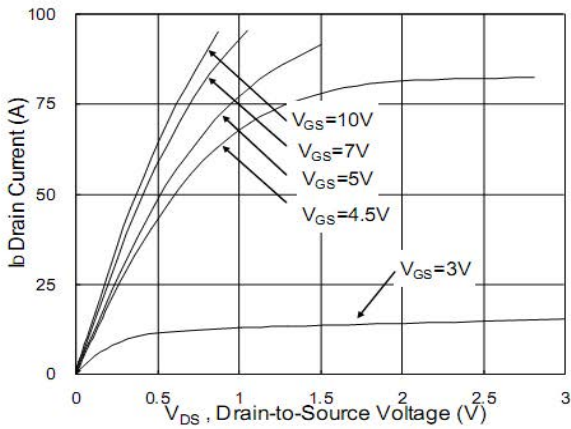


**Electrical Characteristics ( $T_J=25^\circ\text{C}$ , unless otherwise noted)**

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



### Typical Characteristics



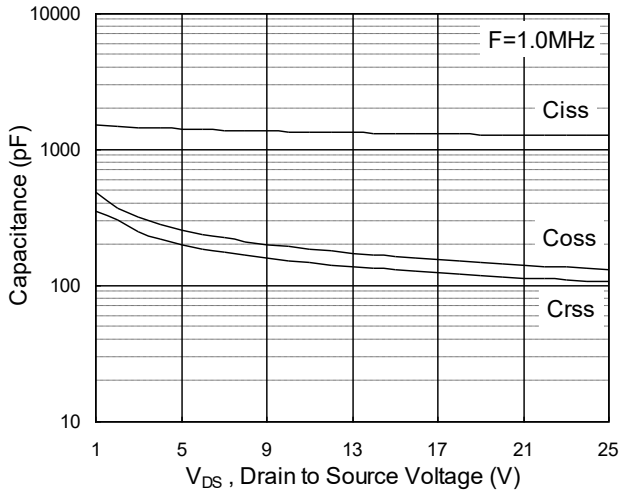


Fig.7 Capacitance

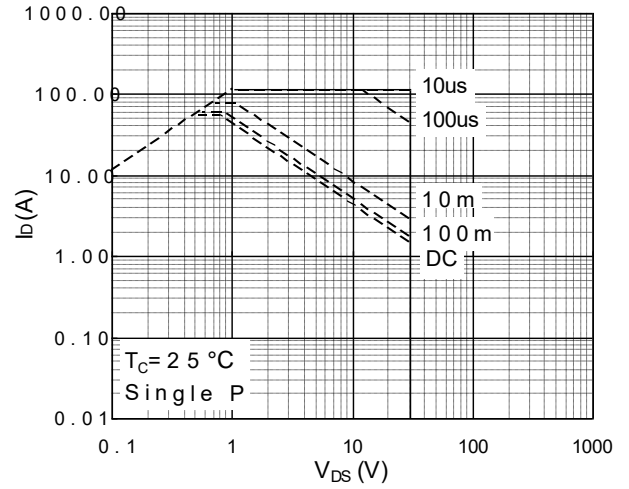


Fig.8 Safe Operating Area

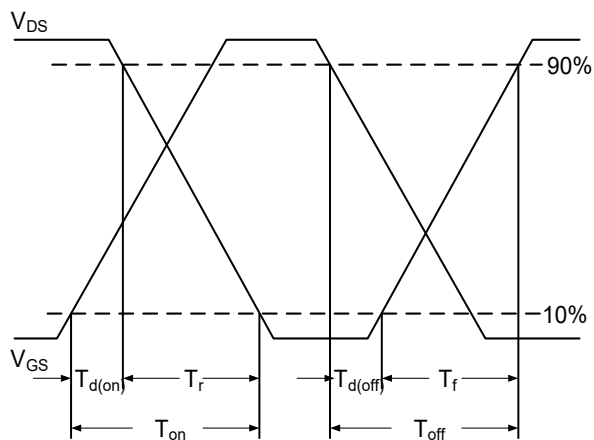
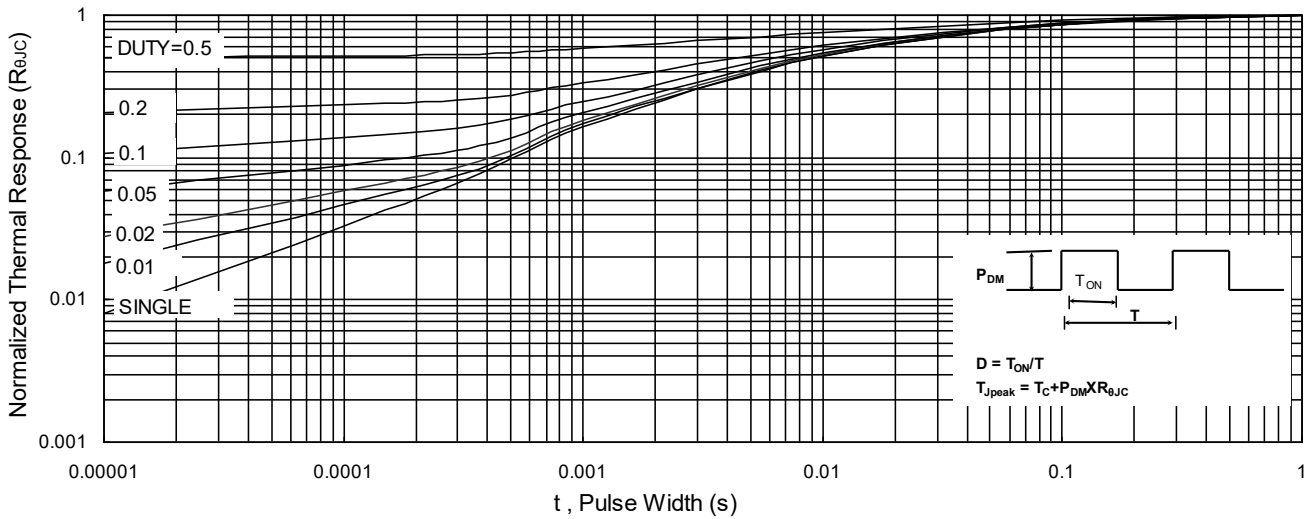
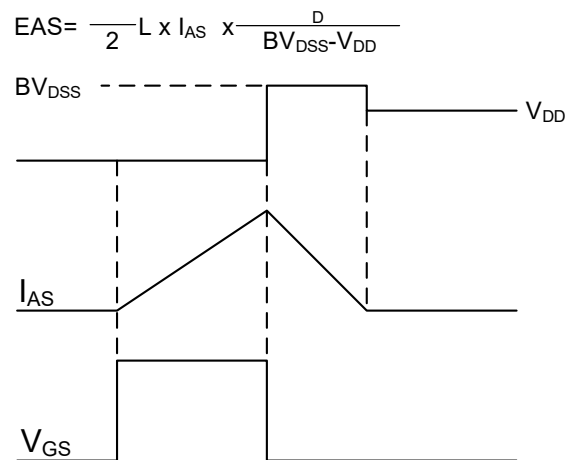
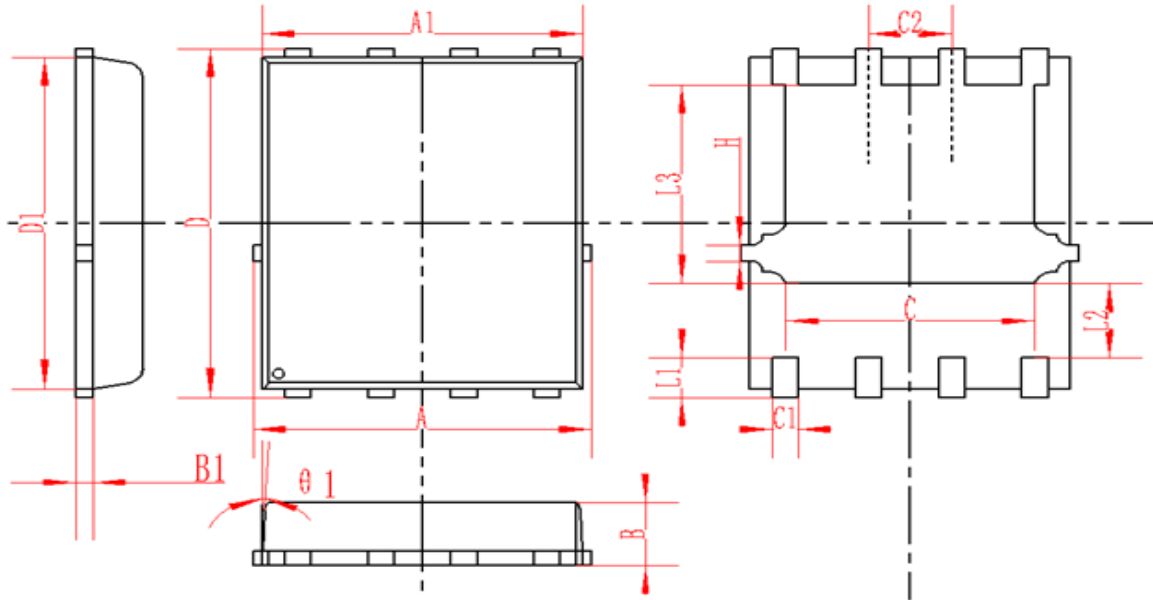


Fig.10 Switching Time Waveform





### 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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