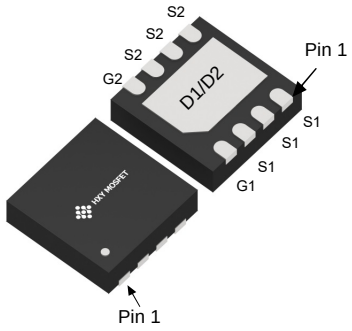
HXY50HD02DF

Dual N-Channel Enhancement Mode MOSFET

Description

The HXY50HD02DF 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.



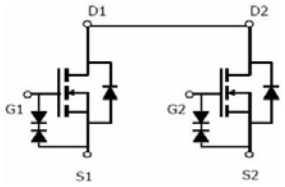
DFN3X3C-8L

General Features

V_{DS} = 20V I_D =50A

$R_{DS(ON)}$ < 3.7 mΩ @ V_{GS}=10V

ESD Rating：2000V HBM



Dual N-Channel MOSFET

Application

Battery protection

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
HXY50HD02DF	DFN3X3C-8L	HXY MOSFET	5000

Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	20	V
VGS	Gate-Source Voltage	±12	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ 10V[1]	50	A
IDM	Pulsed Drain Current[2]	100	A
TSTG	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C
$R_{\theta}JA$	Thermal Resistance Junction-Ambient [1]	38	°C/W
$R_{\theta}JC$	Thermal Resistance Junction-Ambient [1]	4.6	°C/W

MOSFET Electrical Characterictics

Ta =25 ° C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characterictiscs						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =19V,V_{GS} = 0V			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V			±7	uA
Gate threshold voltage (note 3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.5	0.6	1.0	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	V_{GS} =4.5V, I_D =8.0A		3.2	3.7	mΩ
		V_{GS} =2.5V, I_D =6.0A		4.2	4.8	mΩ
Forward tranconductance (note 3)	g_{FS}	V_{DS} =5V, I_D =4A		10		S
Diode forward voltage (note 3)	V_{SD}	I_S=1.50A, V_{GS} = 0V			1.0	V
Dynamic Characterictiscs (note4)						
Input Capacitance	C_{iss}	V_{DS} =10V,V_{GS} =0V,f =1MHz		2610		pF
Output Capacitance	C_{oss}			345		pF
Reverse Transfer Capacitance	C_{rss}			322		pF
Switching Characterictiscs (note 4)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=4.5V, V_{DS} =10V, I_D=6A R_{GEN}=3Ω		8.2		ns
Turn-on rise time	t_r			35		ns
Turn-off delay time	$t_{d(off)}$			372		ns
Turn-off fall time	t_f			213		ns
Total Gate Charge	Q_g	V_{DS} =10V,V_{GS} =4.5V,I_D=6A		36		nC
Gate-Source Charge	Q_{gs}			3.2		nC
Gate-Drain Charge	Q_{gd}			13.0		nC

Notes :

1.Repetitive rating：Pluse width limited by maximum junction temperature

2.Surface Mounted on FR4 board，t≤10 sec.

3. Pulse test : Pulse width≤300μs, duty cycle≤2%.

4. Guaranteed by design, not subject to production.

Typical Electrical and Thermal Characteristics

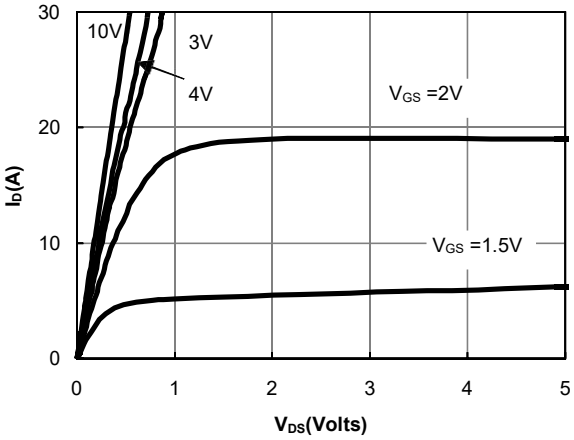


Figure 1: On-Regions Characteristi CS

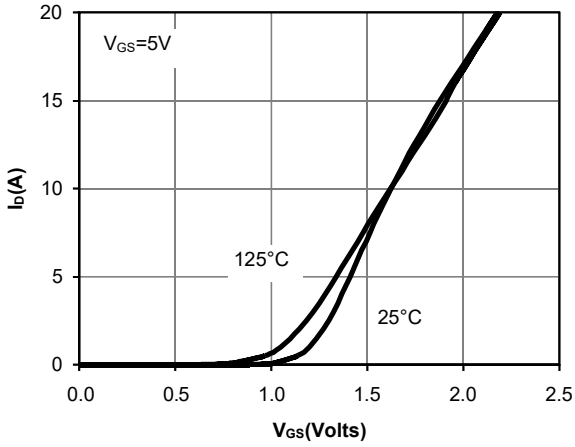


Figure 2: Transfer Characteristics

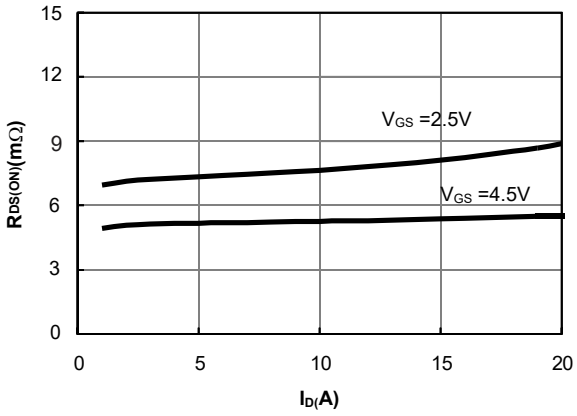


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

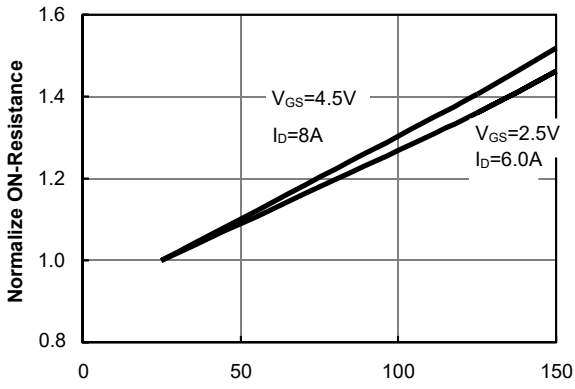


Figure 4: On-Resistance vs. Junction Temperature

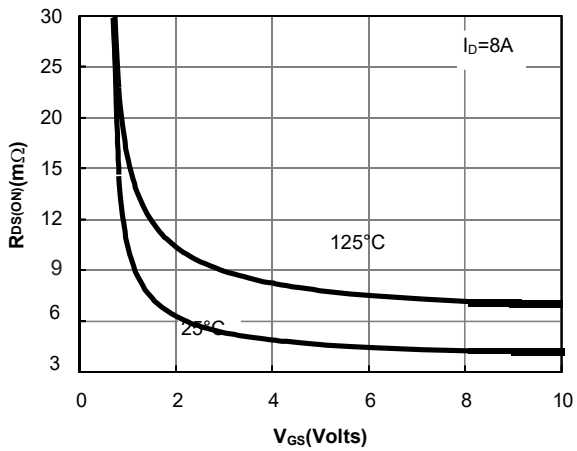


Figure 5: On-Resistance vs. Gate-Source Voltage

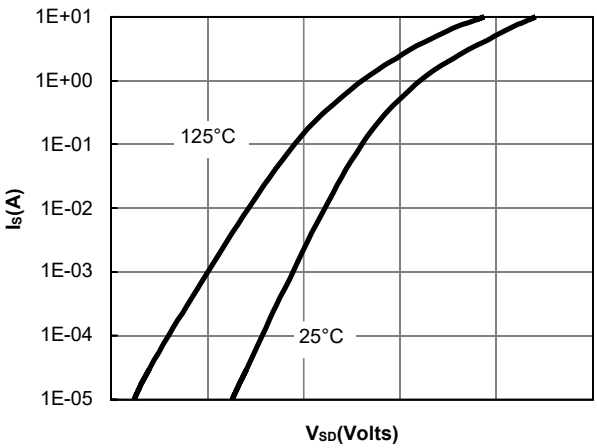


Figure 6: Body-Diode Characteristics

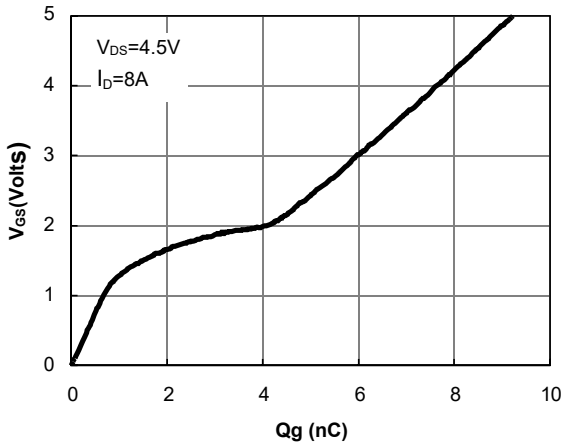


Figure 7: Gate-Charge Characteristics

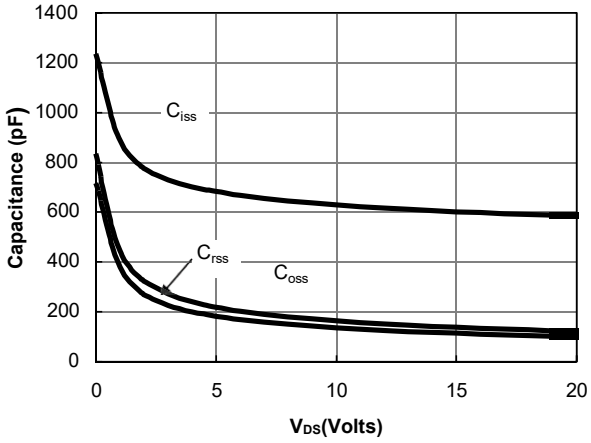


Figure 8: Capacitance Characteristics

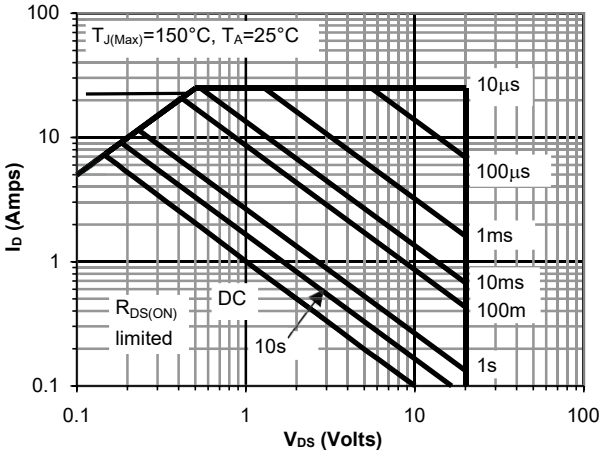


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

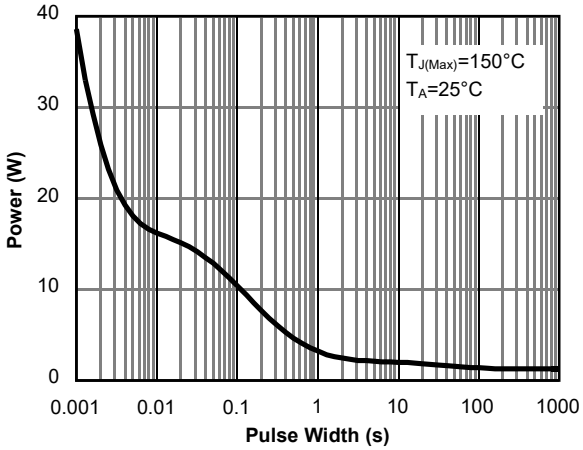


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

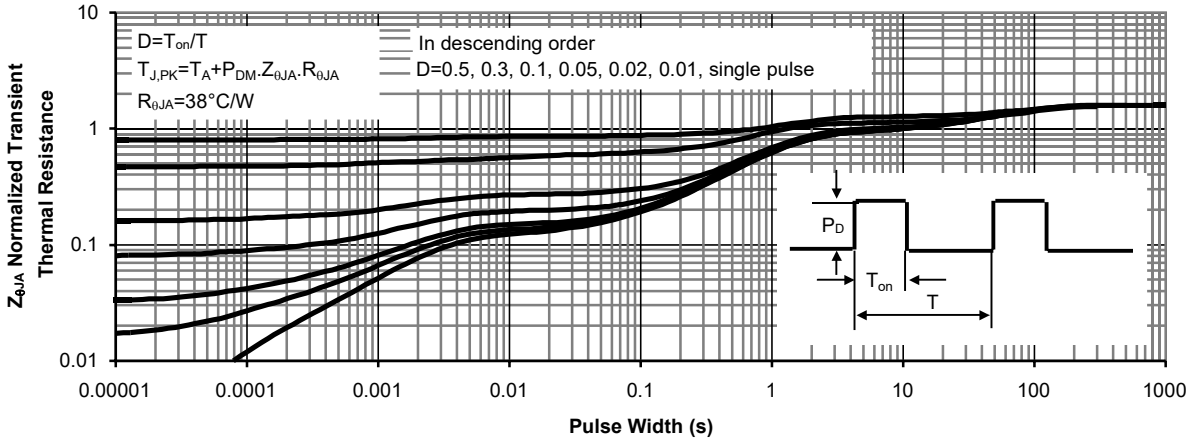
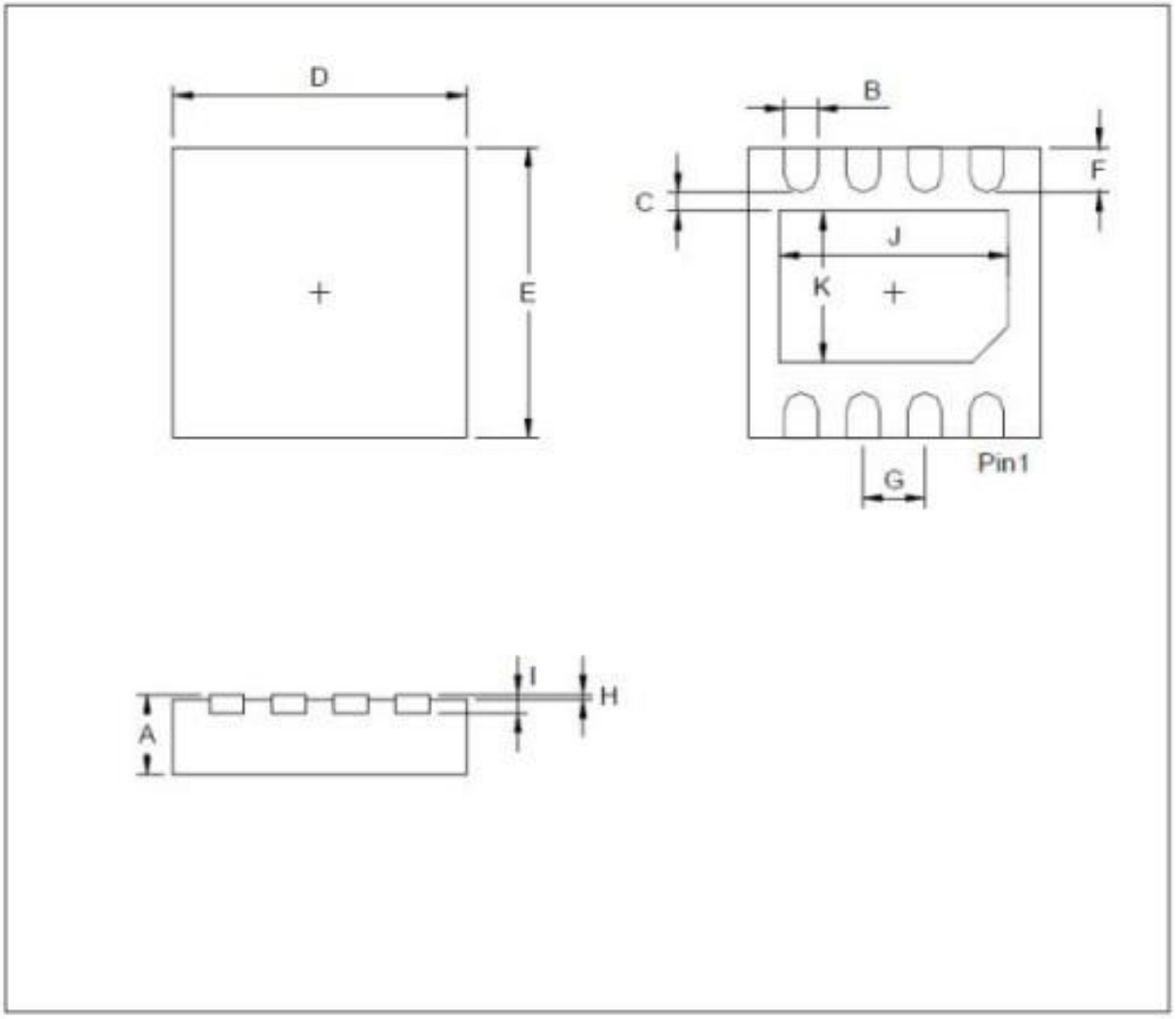


Figure 11: Normalized Maximum Transient Thermal Impedance

DFN3X3C-8L Package Information



Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.7		0.8	I		0.203	
B	0.25		0.35	J	2.2		2.4
C	0.2			K	1.4		1.6
D	2.924		3.076				
E	2.924		3.076				
F	0.324		0.476				
G		0.65					
H	0		0.05				

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