

Description

The DMP2010UFV-13 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

 $V_{DS} = -20V I_{D} = -60A$

 $R_{DS(ON)}$ < 10 m Ω @ V_{GS} =-4.5V

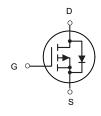
Application

Battery protection

Load switch

Uninterruptible power supply

DFN3X3-8L



P-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
DMP2010UFV-13	DFN3X3-8L	HXY MOSFET	5000

Absolute Maximum Ratings (T_c=25 ℃ 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	-60	А
I _D @T _C =100°C	Continuous Drain Current, V _{GS} @ 10V ¹	-30	А
IDM	Pulsed Drain Current ²	-78	А
P _D @T _C =25°C	Total Power Dissipation ⁴	22	W
TSTG	Storage Temperature Range	-55 to 150	°C
TJ	Operating Junction Temperature Range	-55 to 150	°C
ReJA	Thermal Resistance Junction-ambient ¹	75	°C/W
R₀JC	Thermal Resistance Junction-Case ¹	4.2	°C/W



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

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =-250uA	-20			V
$\triangle BV_{\text{DSS}}/\triangle T_J$	BV _{DSS} Temperature Coefficient	Reference to 25°C , I _D =-1mA		-0.012		V/°C
		V _{GS} =-4.5V , I _D =-10A		7	10	
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-2.5V , I _D =-8A		9	12	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-0.4	-0.7	-1.0	V
$\triangle V_{GS(th)}$	V _{GS(th)} Temperature Coefficient	VGS-VDS , ID230UA		2.94		mV/°C
IDSS	Drain-Source Leakage Current	V _{DS} =-15V , V _{GS} =0V , T _J =25°C			1	uA
I _{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 12 V$, $V_{DS}=0V$			±100	nA
gfs	Forward Transconductance	V _{DS} =-5V , I _D =-10A		43		S
Q_g	Total Gate Charge (-4.5V)			35		
Qgs	Gate-Source Charge	V _{DS} =-10V , V _{GS} =-4.5V , I _D =-10A		5.0		nC
Q _{gd}	Gate-Drain Charge			10		
T _{d(on)}	Turn-On Delay Time			12.0		
Tr	Rise Time	V _{DD} =-10V , V _{GS} =-4.5V ,		40.0		no
T _{d(off)}	Turn-Off Delay Time	R _G =3.3Ω, I _D =-10A		30		ns
T _f	Fall Time			10		
Ciss	Input Capacitance			2800		
Coss	Output Capacitance	V _{DS} =-15V , V _{GS} =0V , f=1MHz		690		pF
Crss	Reverse Transfer Capacitance			590		
Is	Continuous Source Current ^{1,4}	Vo=Vo=0V Force Current			-60.0	Α
lsм	Pulsed Source Current ^{2,4}	──V _G =V _D =0V , Force Current				Α
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _S =-1A , T _J =25°C			-1.2	V
t _{rr}	Reverse Recovery Time	IF=-10A , dI/dt=100A/μs ,		27	-	nS
Qrr	Reverse Recovery Charge	T _J =25°C		17.8		nC

Note:

^{1.}The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

^{2.}The data tested by pulsed , pulse width \leq 300us , duty cycle \leq 2%

^{3.}The power dissipation is limited by 150°C junction temperature

 $^{4.} The \ data \ is \ theoretically \ the \ same \ as \ I_D \ and \ I_{DM} \ , \ in \ real \ applications \ , \ should \ be \ limited \ by \ total \ power \ dissipation.$



Typical Characteristics

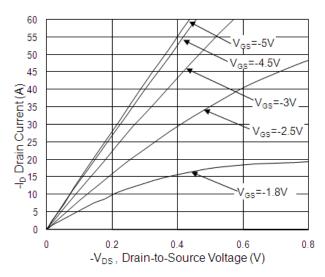


Fig.1 Typical Output Characteristics

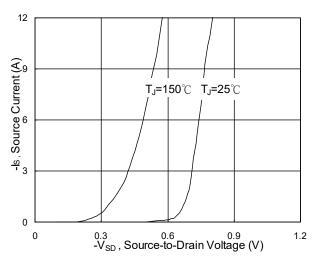


Fig.3 Forward Characteristics of Reverse

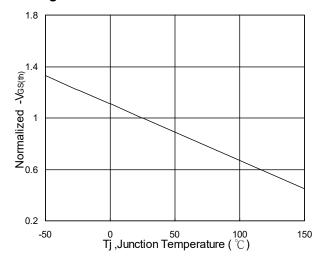


Fig.5 Normalized V_{GS(th)} vs. T_J

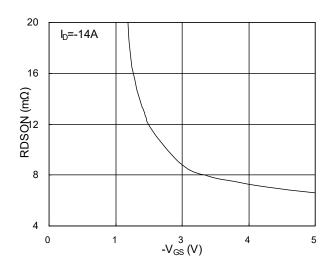


Fig.2 On-Resistance vs. G-S Voltage

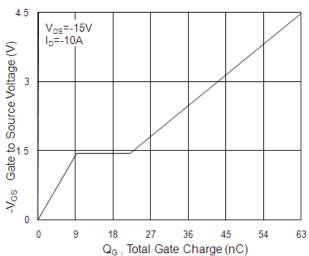


Fig.4 Gate-charge Characteristics

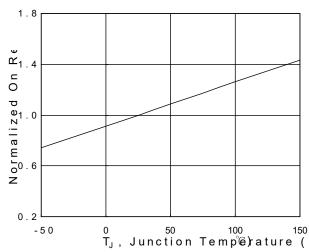
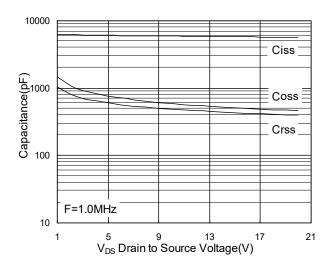


Fig.6 Normalized R_{DSON} vs. T_J



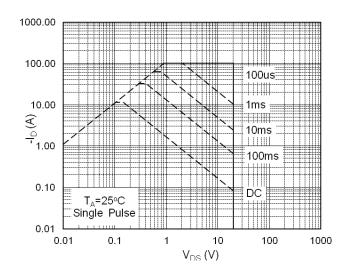


Fig.7 Capacitance

Fig.8 Safe Operating Area

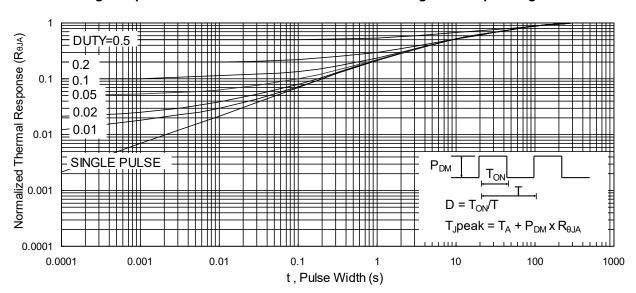
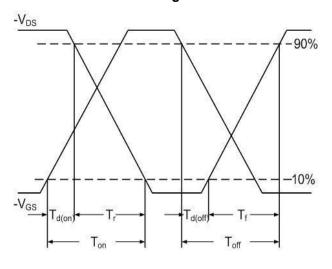


Fig.9 Normalized Maximum Transient Thermal Impedance



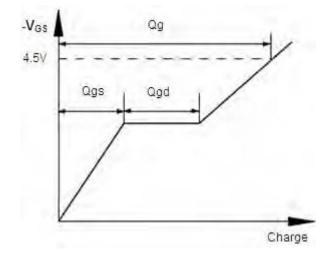
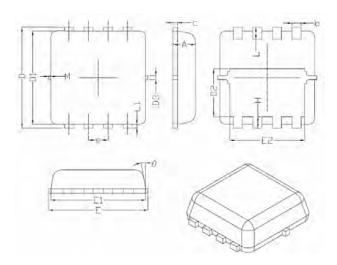


Fig.10 Switching Time Waveform

Fig.11 Gate Charge Waveform



DFN3X3-8L Package Information



Cumbal	Dimensions In Millimeters			
Symbol	Min.	Nom.	Max.	
A	0.70	0.75	0.80	
b	0.25	0.30	0.35	
С	0.10	0.15	0.25	
D	3.25	3.35	3.45	
D1	3.00	3.10	3.20	
D2	1.48	1.58	1.68	
D3	-	0.13	-	
E	3.20	3.30	3.40	
E1	3.00	3.15	3.20	
E2	2.39	2.49	2.59	
е	0.65BSC			
Н	0.30	0.39	0.50	
L	0.30	0.40	0.50	
L1	-	0.13	-	
M	*	*	0.15	
θ		10°	12 [°]	



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