

Description

The HIPD25N06S4L30 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.

D S G

TO-252-2L (TO-252-3)

General Features

 $V_{DS} = 60V I_{D} = 30 A$

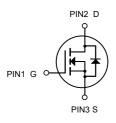
 $R_{DS(ON)}$ < 26m Ω @ V_{GS} =10V

Application

Battery protection

Load switch

Uninterruptible power supply



N-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
HIPD25N06S4L30	TO-252-2L(TO-252-3)	HXY MOSFET	2500

Absolute Maximum Ratings (T_C=25°Cunless otherwise noted)

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	60	V
V _G s	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current, V _{GS} @ 10V ¹	Drain Current, V _{GS} @ 10V ¹ 30	
I _D @T _C =100°C	Continuous Drain Current, V _{GS} @ 10V ¹	15	А
Ірм	Pulsed Drain Current ²	46	А
EAS	Single Pulse Avalanche Energy ³	25.5	mJ
las	Avalanche Current	22.6	А
P _D @T _C =25°C	Total Power Dissipation ⁴	34.7	W
P _D @T _A =25°C	Total Power Dissipation ⁴	2	W
Тѕтс	Storage Temperature Range	-55 to 150	°C
TJ	Operating Junction Temperature Range	-55 to 150	°C
Reja	Thermal Resistance Junction-Ambient ¹	62	°C/W
Rejc	Reuc Thermal Resistance Junction-Case ¹ 3.6		°C/W



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

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
BVDSS	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	60			V
△BVɒss/△Tɹ	BV _{DSS} Temperature Coefficient	Reference to 25°C , I _D =1mA		0.063		V/°C
		V _{GS} =10V , I _D =15A		22	26	
Rds(on)	Static Drain-Source On-Resistance ²	V _{GS} =4.5V , I _D =10A		30	38	mΩ
V _G S(th)	Gate Threshold Voltage	V V 1 050 A	1.2		2.5	V
$\triangle V_{GS(th)}$	V _{GS(th)} Temperature Coefficient	V _{GS} =V _{DS} , I _D =250uA		-5.24		mV/°C
		V _{DS} =48V , V _{GS} =0V , T _J =25°C			1	•
IDSS	Drain-Source Leakage Current	V _{DS} =48V , V _{GS} =0V , T _J =55°C			5	uA
Igss	Gate-Source Leakage Current	V _{GS} =±20V , V _{DS} =0V			±100	nA
gfs	Forward Transconductance	V _{DS} =5V , I _D =15A		17		S
R_g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz		3.2		Ω
Qg	Total Gate Charge (4.5V)			12.6		
Q _{gs}	Gate-Source Charge	V _{DS} =48V , V _{GS} =4.5V , I _D =12A		3.2		nC
Q _{gd}	Gate-Drain Charge			6.3		
T _{d(on)}	Turn-On Delay Time			8		
T _r	Rise Time	V _{DD} =30V , V _{GS} =10V ,		14.2		
Td(off)	Turn-Off Delay Time	—R _G =3.3 , I _D =10A		24.4		ns
T _f	Fall Time			4.6		
C _{iss}	Input Capacitance			1378		
Coss	Output Capacitance	── V _{DS} =15V , V _{GS} =0V , f=1MHz		86		pF
Crss	Reverse Transfer Capacitance	_		64		
Is	Continuous Source Current ^{1,5}				23	Α
Іѕм	Pulsed Source Current ^{2,5}	─V _G =V _D =0V , Force Current			46	Α
VsD	Diode Forward Voltage ²	V _{GS} =0V , I _S =1A , T _J =25°C			1.2	V

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 $\leqq 300 us$, duty cycle $\leqq 2\%$

^{3.} The EAS data shows Max. rating . The test condition is VDD=25V,VGS=10V,L=0.1 mH,IAS=22.6 A 4. The power dissipation is limited by 150 $^{\circ}$ C junction temperature

^{5.}The data is theoretically the same as ID and IDM, in real applications, should be limited by total power dissipation.



Typical Characteristics

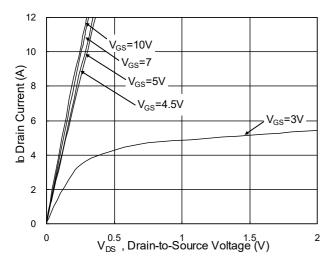


Fig.1 Typical Output Characteristics

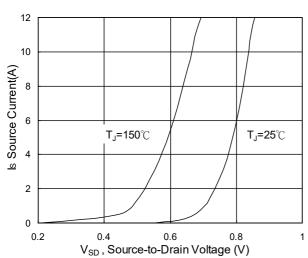


Fig.3 Forward Characteristics of Reverse

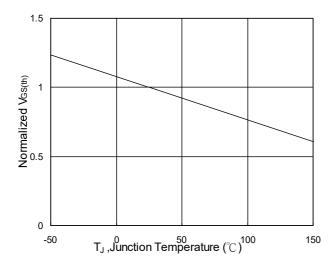


Fig.5 Normalized $V_{\text{GS(th)}}$ v.s T_{J}

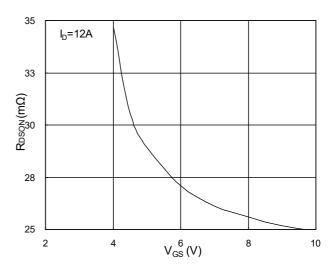


Fig.2 On-Resistance v.s Gate-Source

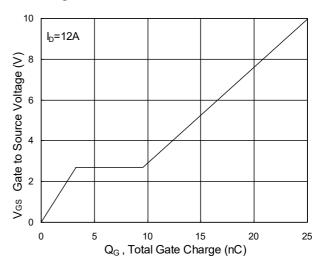


Fig.4 Gate-Charge Characteristics

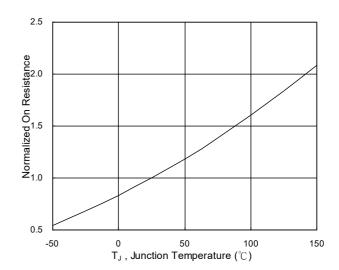
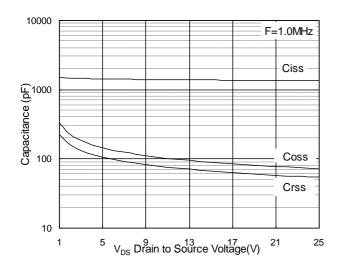


Fig.6 Normalized R_{DSON} v.s T_J



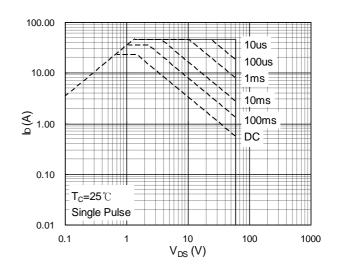


Fig.7 Capacitance

Fig.8 Safe Operating Area

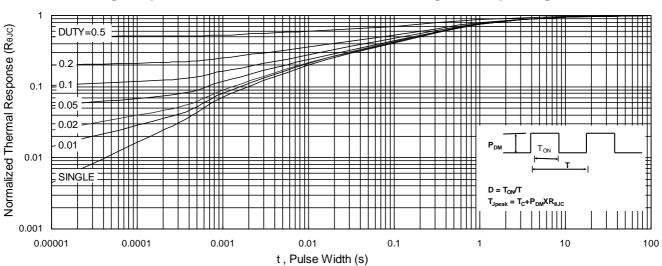


Fig.9 Normalized Maximum Transient Thermal Impedance

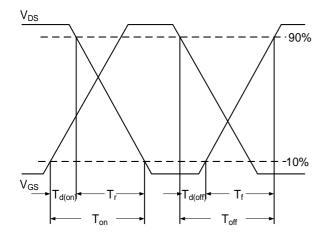


Fig.10 Switching Time Waveform

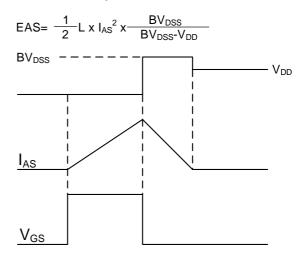
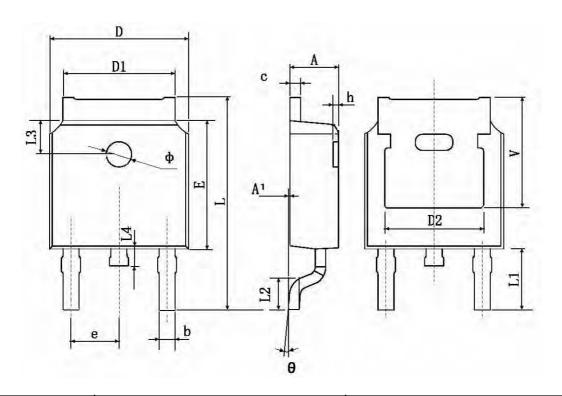


Fig.11 Unclamped Inductive Waveform



TO-252-2L(TO-252-3) Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches			
	Min.	Max.	Min.	Max.		
А	2.200	2.400	0.087	0.094		
A1	0.000	0.127	0.000	0.005		
b	0.660	0.860	0.026	0.034		
С	0.460	0.580	0.018	0.023		
D	6.500	6.700	0.256	0.264		
D1	5.100	5.460	0.201	0.215		
D2	0.483 TYP.		0.190 TYP.			
Е	6.000	6.200	0.236	0.244		
е	2.186	2.386	0.086	0.094		
L	9.800	10.400	0.386	0.409		
L1	2.900	2.900 TYP.		0.114 TYP.		
L2	1.400	1.700	0.055	0.067		
L3	1.600 TYP.		0.063 TYP.			
L4	0.600	1.000	0.024	0.039		
Ф	1.100	1.300	0.043	0.051		
θ	0°	8°	0°	8°		
h	0.000	0.300	0.000	0.012		
V	5.350	TYP.	0.211 TYP.			

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