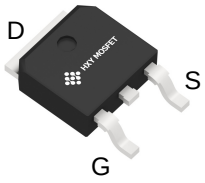
FDD6530A

N-Channel Enhancement Mode MOSFET

Description

The FDD6530A uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge . The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications



TO-252-2L
(TO-252-2(DPAK)

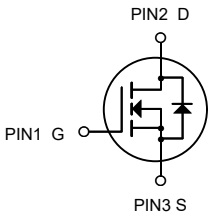
General Features

V_{DS} = 20V,I_D =20A
$R_{DS(ON)}$ < 25mΩ@ V_{GS}=4.5V

High power and current handing capability

Lead free product is acquired

Surface mount package



N-Channel MOSFET

Application

- Power switching application
- Hard Switched and High Frequency Circuits
- Uninterruptible Power Supply

Ordering Information

Product ID	Pack	Brand	Qty(PCS)
FDD6530A	TO-252-2L(TO-252-2(DPAK)	HXY MOSFET	2500

Absolute Maximum Ratings@T_j=25ºC(unless otherwise specified)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	20	V
VGS	Gate-Source Voltage	±12	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 4.5V	20	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 4.5V	12	A
IDM	Pulsed Drain Current[1]	40	A
P_D@T_C=25℃	Total Power Dissipation	5	W
E_{AS}	Single Pulse Avalanche Energy[4]	150	mJ
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
Rthj-c	Maximum Thermal Resistance, Junction-case	5	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient[3]	62	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	20	---	---	V
△BV_{DSS}/△	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.023	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V , I_D=8.0A	---	16	25	mΩ
		V_{GS}=2.5V , I_D=5.0A	---	22	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.4	0.8	1.2	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-5.2	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=24V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=15A	---	21.6	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2.5	5	Ω
Q_g	Total Gate Charge (4.5V)	V_{DS}=15V , V_{GS}=4.5V , I_D=15A	---	6.2	8.7	nC
Q_{gs}	Gate-Source Charge		---	2.4	3.4	
Q_{gd}	Gate-Drain Charge		---	2.5	3.5	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V , R_G=3.3Ω, I_D=15A	---	4	6.0	ns
T_r	Rise Time		---	7.6	14	
$T_{d(off)}$	Turn-Off Delay Time		---	21	42	
T_f	Fall Time		---	4	8	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	472	801	pF
C_{oss}	Output Capacitance		---	71	113	
C_{rss}	Reverse Transfer Capacitance		---	55	91	
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	20	A
I_{SM}	Pulsed Source Current[2,5]		---	---	40	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I_F=15A , dI/dt=100A/μs , T_J=25℃	---	17	---	nS
Q_{rr}	Reverse Recovery Charge		---	3	---	nC

Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=21A
4.The power dissipation is limited by 150℃ junction temperature
5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

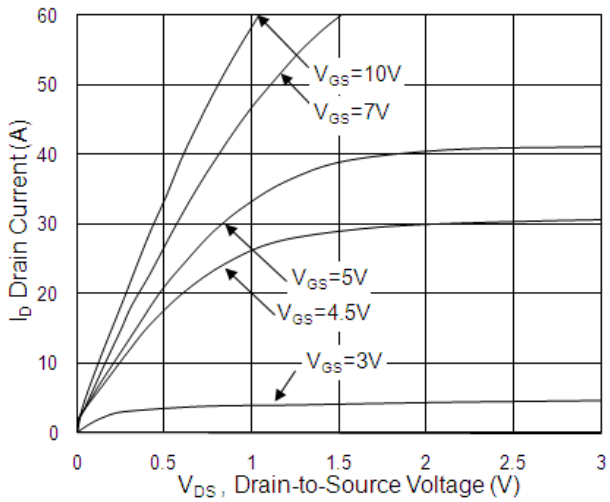


Fig.1 Typical Output Characteristics

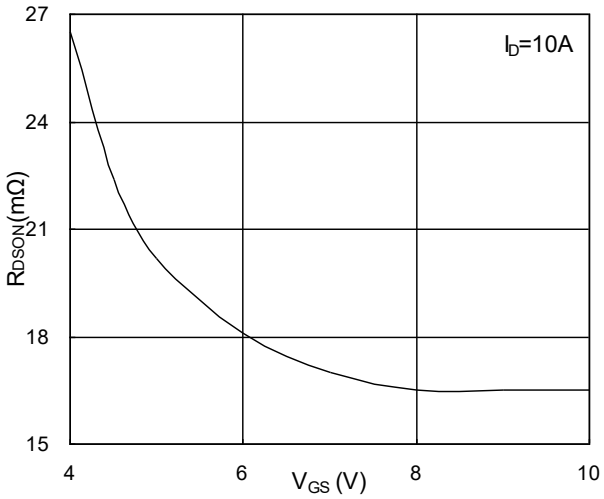


Fig.2 On-Resistance v.s Gate-Source

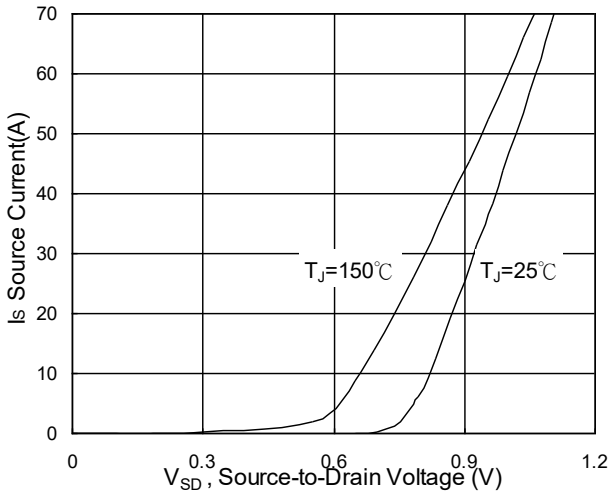


Fig.3 Forward Characteristics Of Reverse

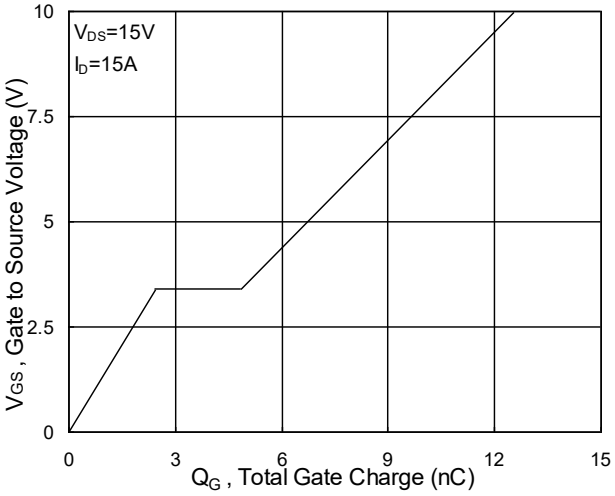


Fig.4 Gate-Charge Characteristics

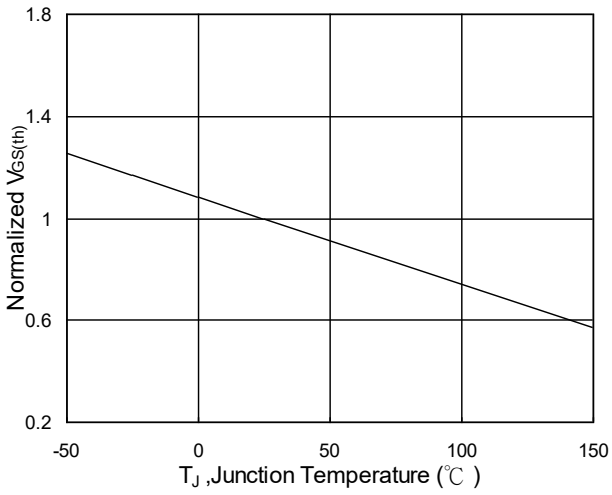


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

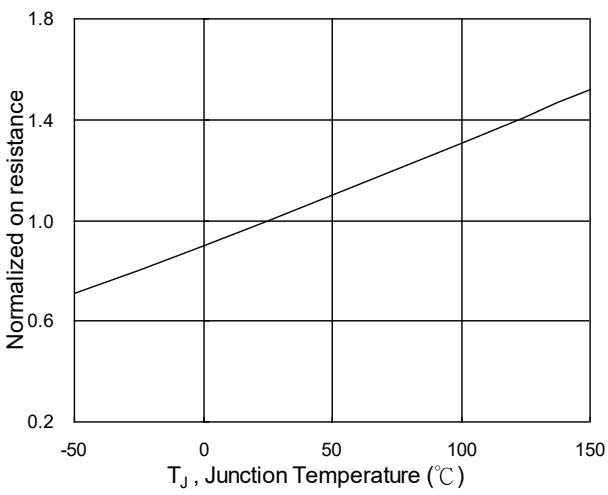


Fig.6 Normalized R_{DSON} v.s T_J

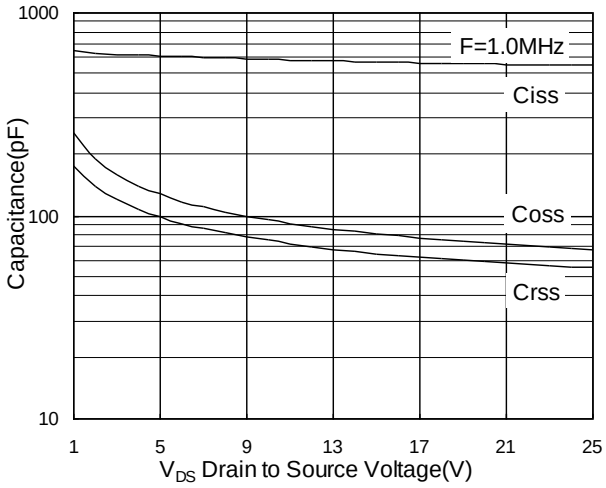


Fig.7 Capacitance

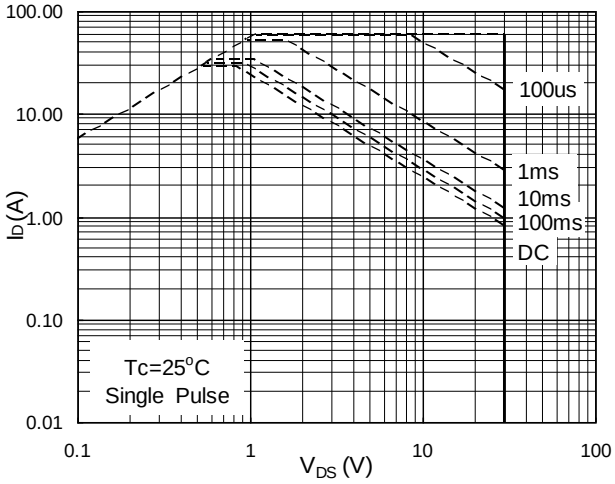


Fig.8 Safe Operating Area

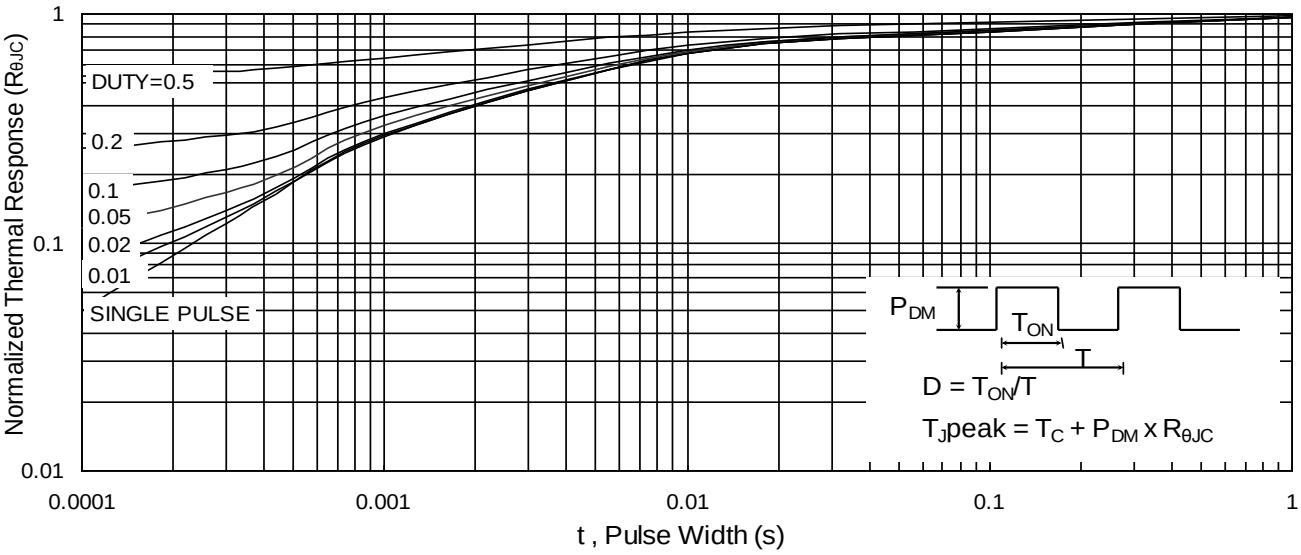


Fig.9 Normalized Maximum Transient Thermal Impedance

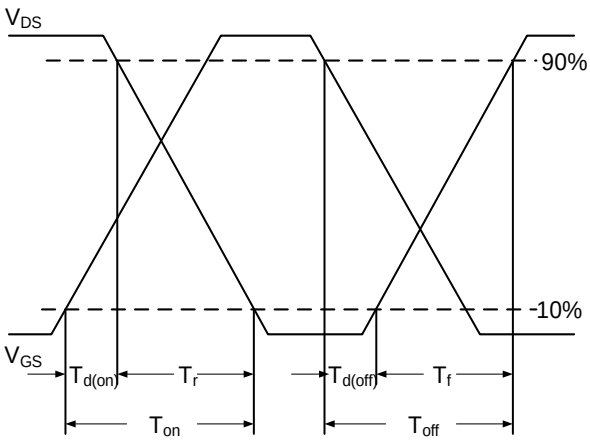


Fig.10 Switching Time Waveform

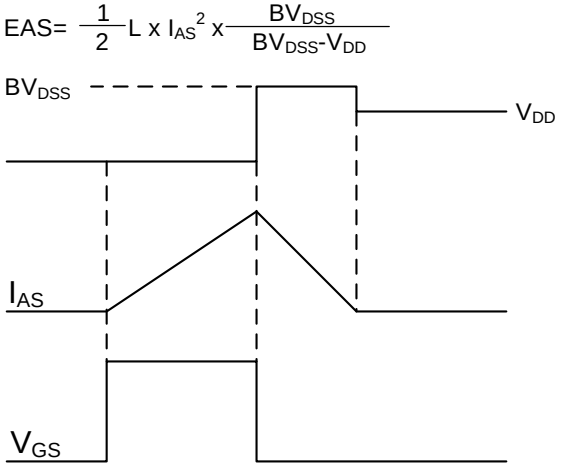
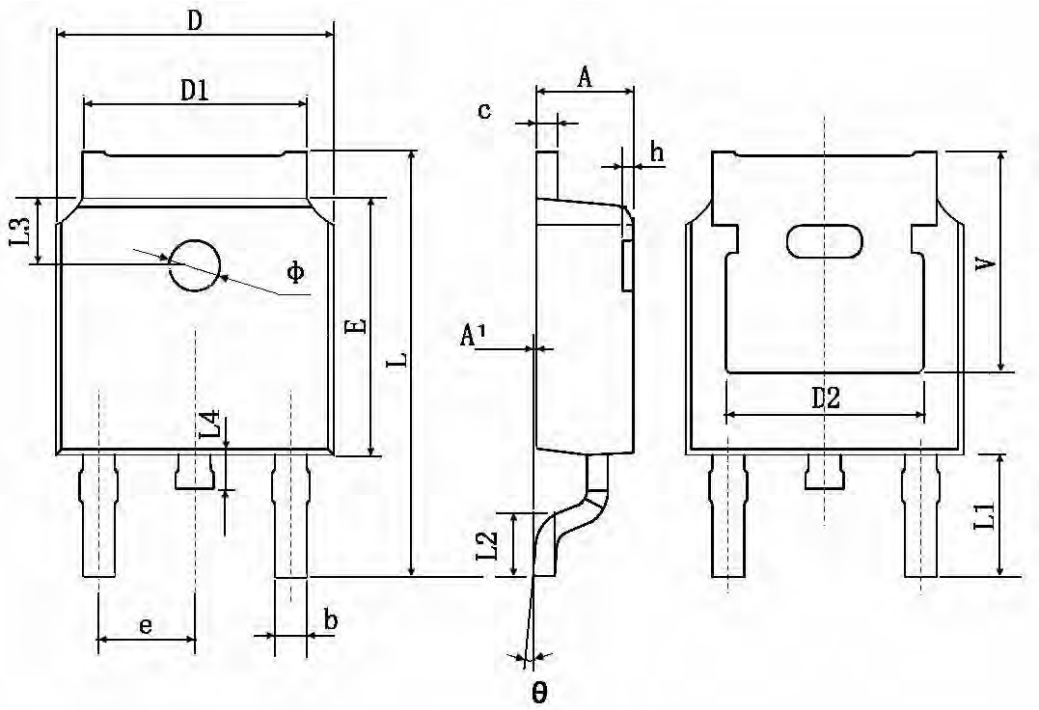


Fig.11 Unclamped Inductive Switching Waveform

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



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	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
c	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.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	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
Φ	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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