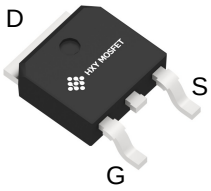
Description

The STD2LN60K3 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. This device is suitable for use as a Battery protection or in other Switching application.

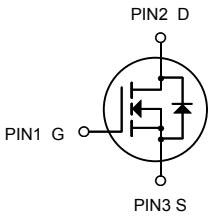


TO-252-2L
(TO-252(DPAK))

General Features

V_{DS} = 600V I_D = 2A

$R_{DS(ON)}$ < 4.5Ω @ V_{GS}=10V



N-Channel MOSFET

Application

Battery protection

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
STD2LN60K3	TO-252-2L(TO-252(DPAK))	HXY MOSFET	2500

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage	±30	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	2	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V[1]	1.2	A
I_{DM}	Pulsed Drain Current[2]	8	A
P_D@T_C=25℃	Total Power Dissipation[1]	31	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction-ambient[6]	100	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	4.0	℃/W

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	600			V
Zero gate voltage drain current	I_{DSS}	V_{DS}=600V, V_{GS} =0V			1.0	μA
Gate-body leakage current	I_{GSS}	V_{DS}=0V, V_{GS} =±30V			±100	nA
On characteristics [4]						
Gate-threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D =250μA	2.0	3.4	4.0	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS}=10V, I_D =1A		3.7	4.5	Ω
Dynamic characteristics[5]						
Input capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V, f =1MHz		322		pF
Output capacitance	C_{oss}			38		
Reverse transfer capacitance	C_{rss}			7		
Gate resistance	R_g	f =1MHz		5.7		Ω
Switching characteristics [5]						
Total gate charge	Q_g	V_{GS}=10V, V_{DS}=25V, I_D=2A		1.6		nC
Gate-source charge	Q_{gs}			2.1		
Gate-drain charge	Q_{gd}			6.2		
Turn-on delay time	$t_{d(on)}$	V_{DD}=25V, V_{GS}=10V, R_G=18Ω, I_D =2A		1.8		nS
Turn-on rise time	t_r			3.2		
Turn-off delay time	$t_{d(off)}$			7.4		
Turn-off fall time	t_f			7.6		
Drain-Source Diode Characteristics						
Drain-source diode forward voltage[4]	V_{SD}	V_{GS} =0V, I_S=2A			1.4	V
Continuous drain-source diode forward current [1]	I_S				2.0	A
Pulsed drain-source diode forward current [2]	I_{SM}				8.0	A
Reverse recovery time	trr	dIF/dt = 100A/μs, I_S = 2A, V_{DD} = 400V		192		ns
Reverse recovery charge	Qrr			1027		nC

Notes:

1.T_C=25℃ Limited only by maximum temperature allowed.

2.P_W≤10μs, Duty cycle≤1%.

3.EAS condition: V_{DD}=150V,V_{GS}=10V, L=10mH, Rg=25Ω Starting T_J= 25℃.

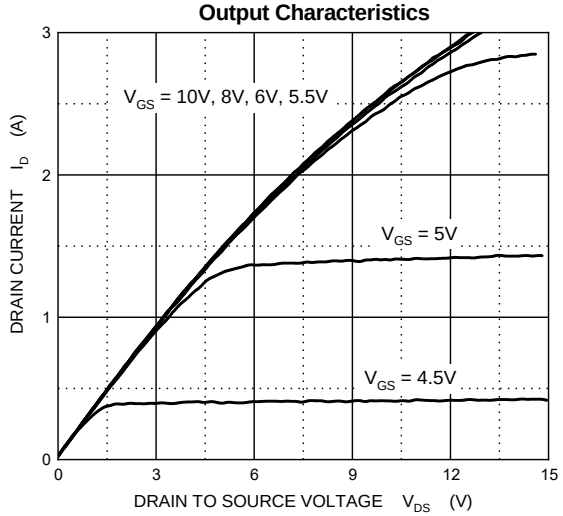
4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

5.Guaranteed by design, not subject to production.

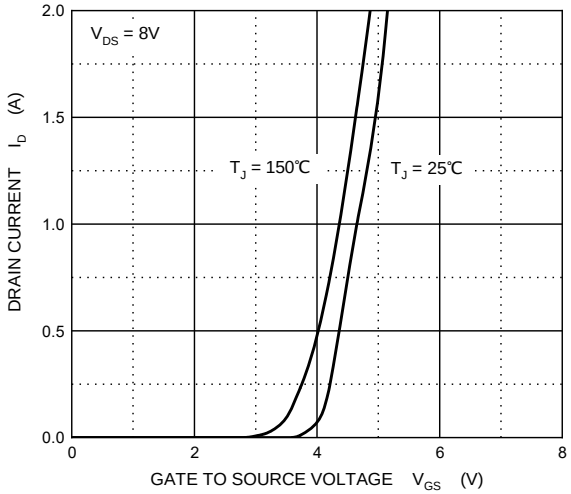
6.The value of RθJA is measured with the device in a still air environment with T_A=25℃.

Typical Characteristics

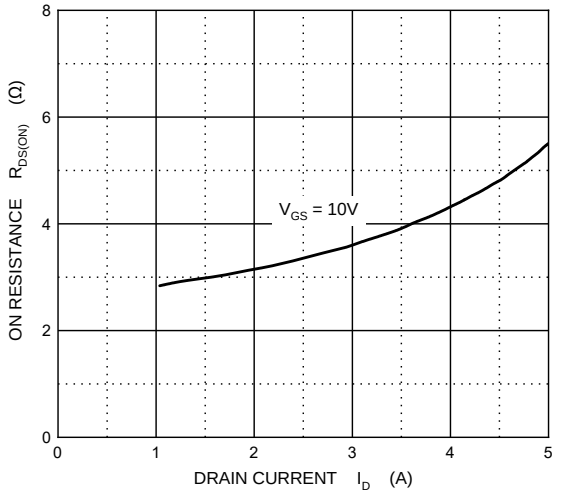
Output Characteristics



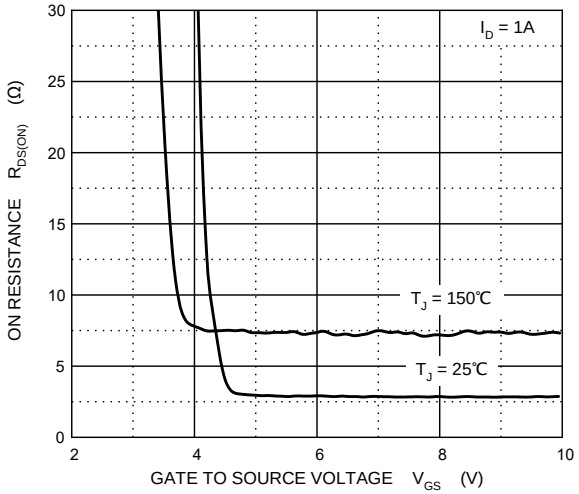
Transfer Characteristics



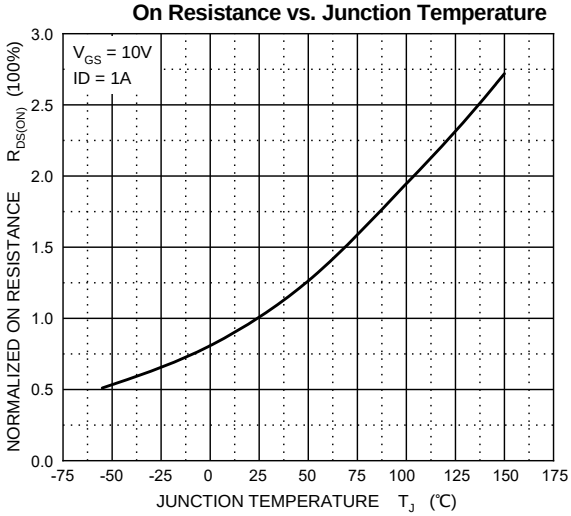
On Resistance vs. Drain Current



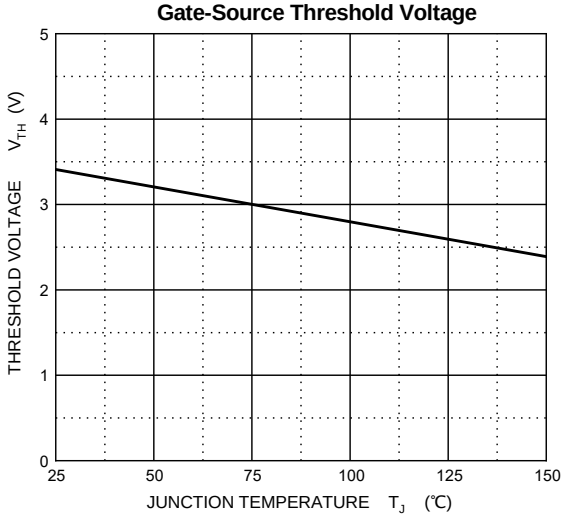
On Resistance vs. Gate-Source Bias



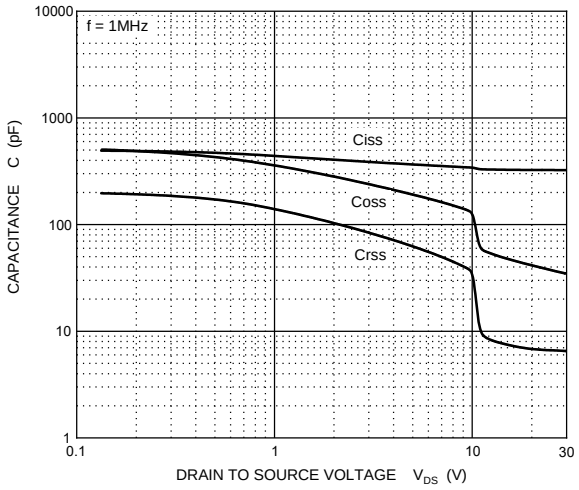
On Resistance vs. Junction Temperature



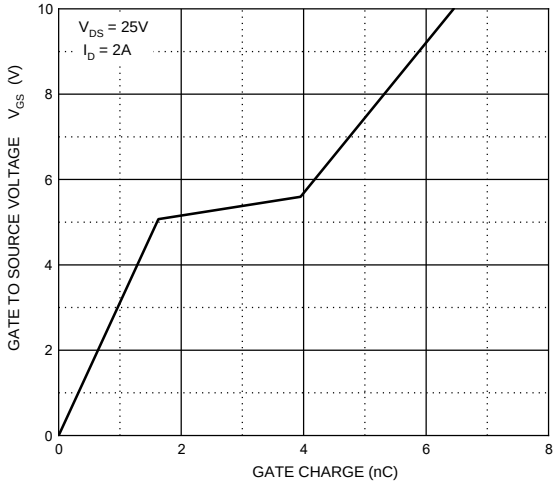
Gate-Source Threshold Voltage



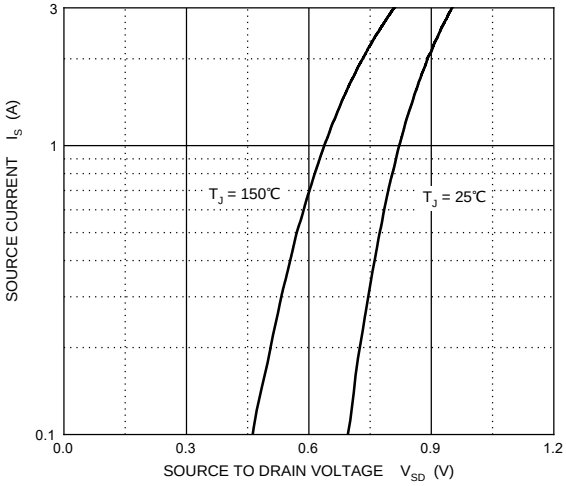
Typical Capacitances



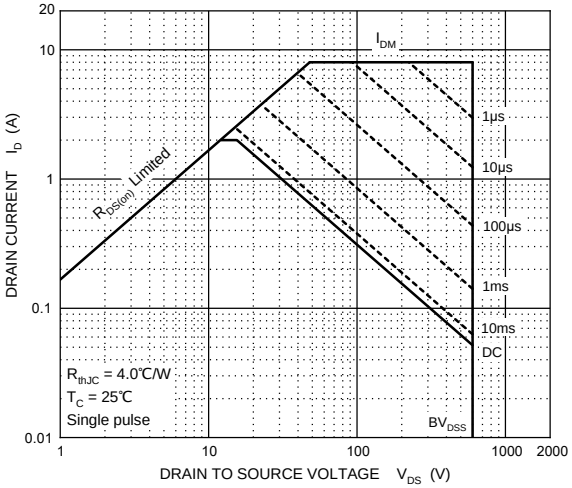
Gate Charge



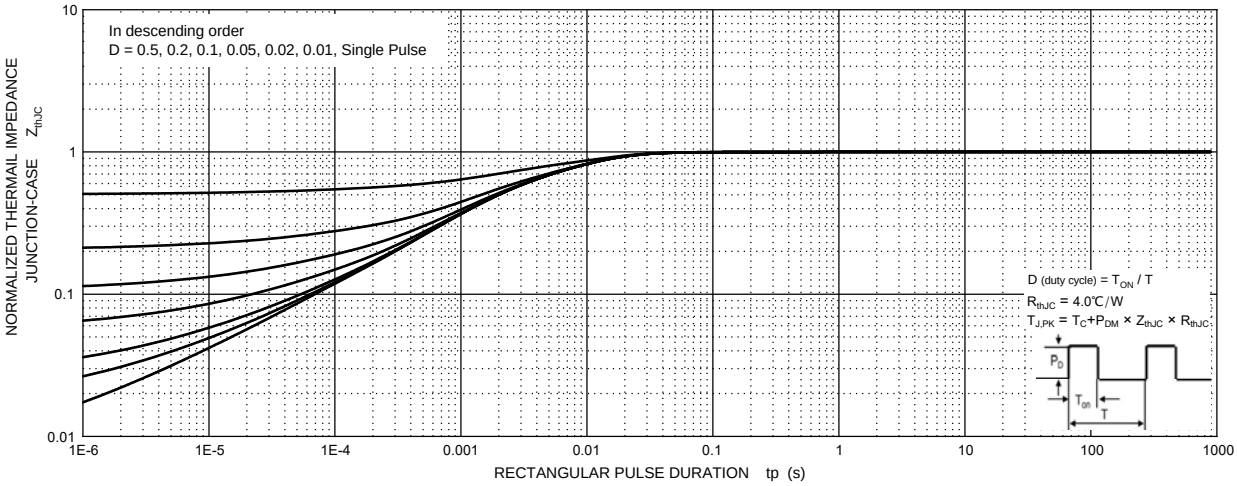
Source-Drain Diode Forward Characteristics



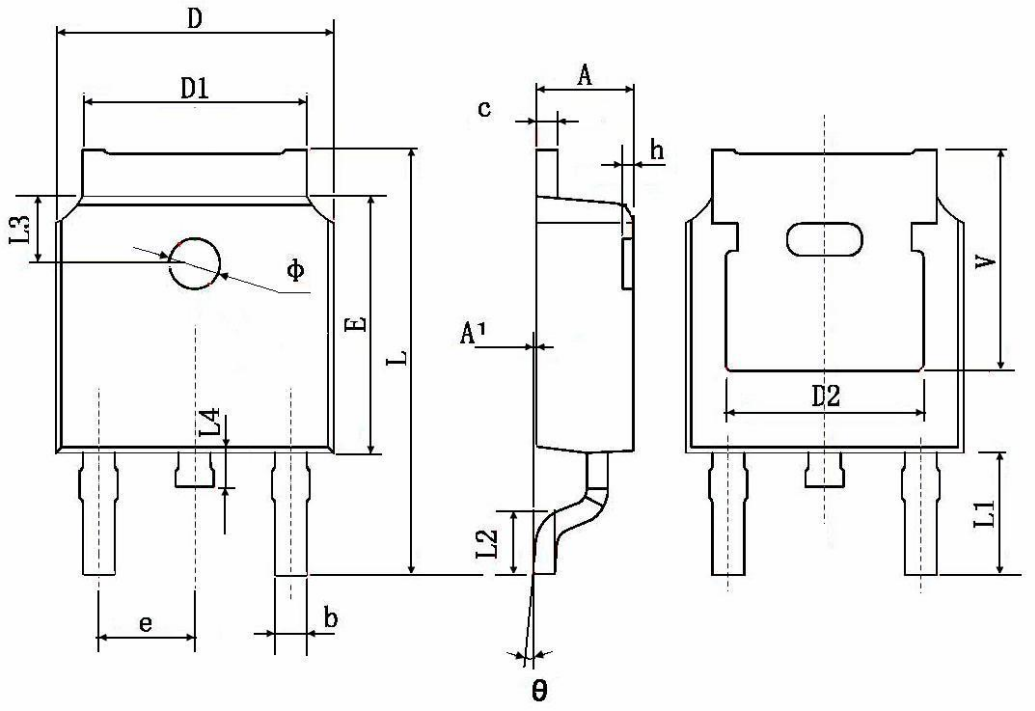
Maximum Safe Operating Area



Transient Thermal Impedance, Junction-Case



TO-252-2L(TO-252(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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