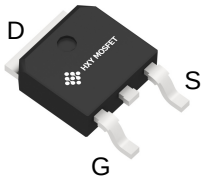
Description

The 10N65 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.

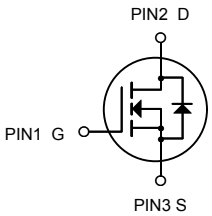


TO-252-2L

General Features

V_{DS} = 650V I_D = 10A

$R_{DS(ON)}$ < 1.0 Ω @ 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)
10N65	TO-252-2L	HXY MOSFET	2500

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage	±30	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ 10V[1]	10	A
I_D@T_C=100°C	Continuous Drain Current, V_{GS} @ 10V[1]	5.8	A
I_{DM}	Pulsed Drain Current[2]	40	A
P_D@T_C=25°C	Total Power Dissipation[4]	39	W
T_{STG}	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]	43.3	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	3.8	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	650	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=650V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V, V_{DS}=0A	---	---	±100	nA
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	2	---	4	V
$R_{DS(ON)}$	Drain-Source On Resistance	V_{GS}=10V,I_D=3.5A	---	0.85	1.0	Ω
g_{FS}	Forward Transconductance	V_{GS}=40V,I_D=3.5A[4]	2.5	---	---	S
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	1570	---	pF
C_{oss}	Output Capacitance		---	166	---	
C_{rss}	Reverse Transfer Capacitance		---	18	---	
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=325V, I_D=7A, R_{GEN}=2.5Ω[4,5]	---	23	---	ns
t_r	Rise Time		---	69	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	144	---	ns
t_f	Fall Time		---	77	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=520V, I_D=7A[4,5]	---	44	---	nC
Q_{gs}	Gate-Source Charge		---	6.7	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	18.5	---	nC
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=10A	---	---	1.4	V
Is	Continuous Source Current	---	---	---	7	A
Ism	Pulsed Source Current		---	--	28	Ns
trr	Reverse Recovery Time	V_{GS} = 0 V, I_S = 7 A, [4] dI_F / dt = 100 A/μs	---	389	---	ns
Qrr	Reverse Recovery Charge		---	2.04	---	μ C

Typical Characteristics

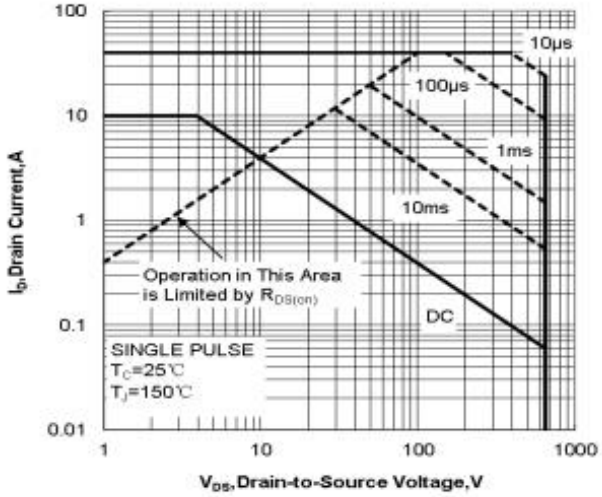


Figure.1 Maximum Forward Bias Safe Operating Area

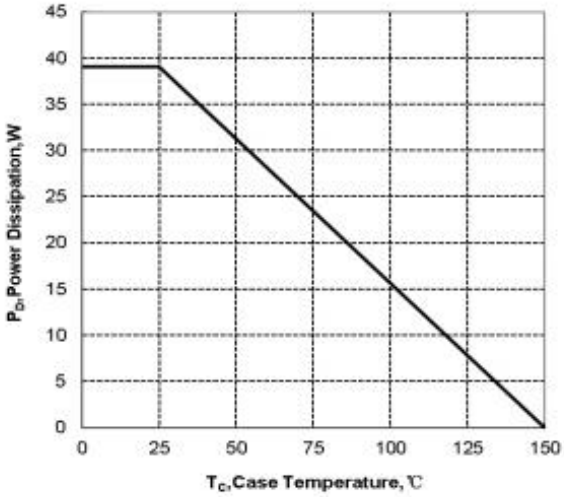


Figure.2 Maximum Power Dissipation vs Case Temperature

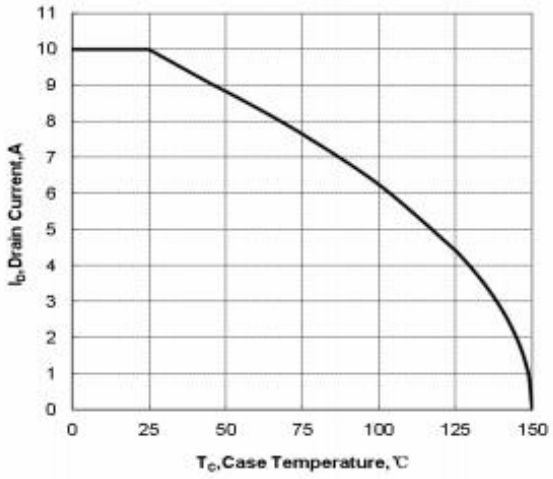


Figure.3 Maximum Continuous Drain Current vs Case Temperature

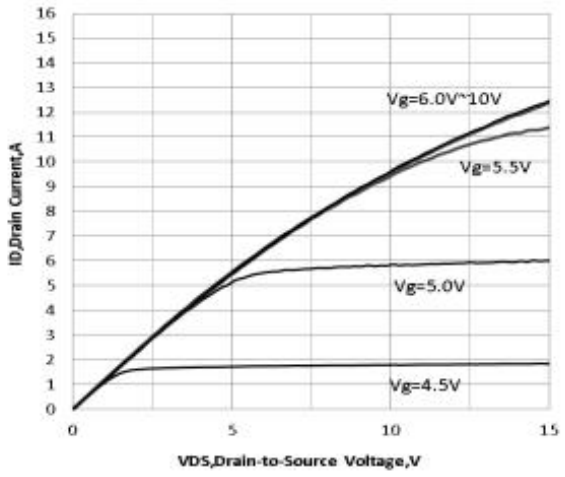
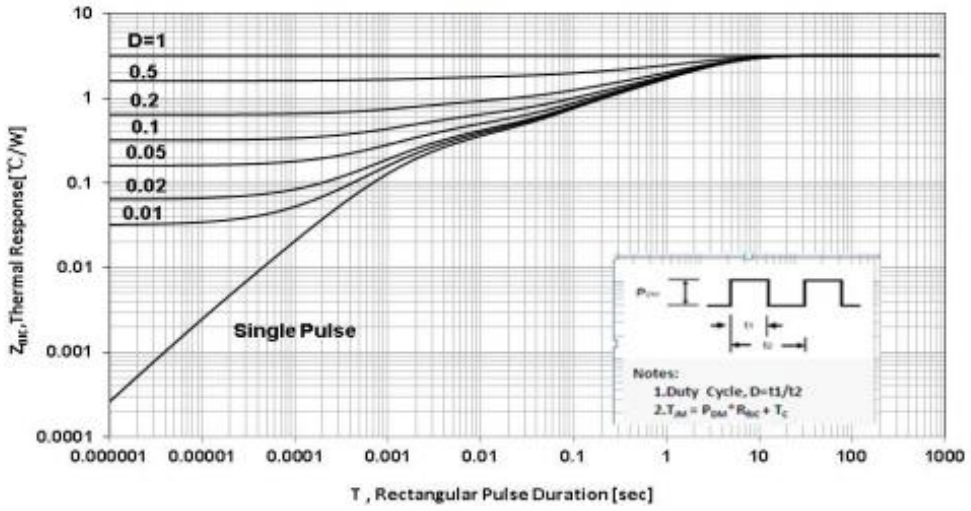


Figure.4 Typical Output Characteristics



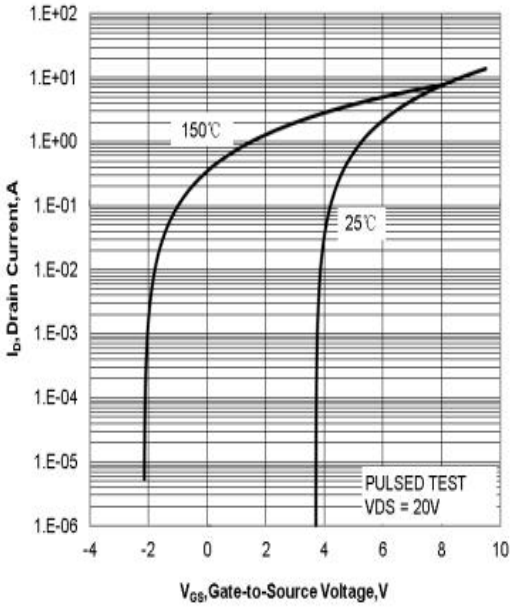


Figure.6 Typical Transfer Characteristics

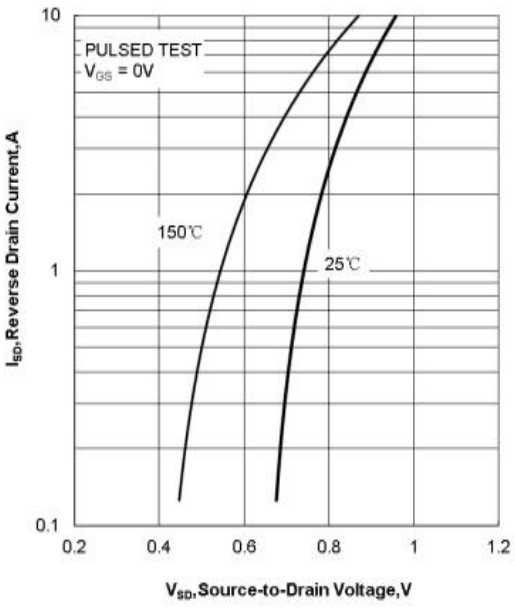


Figure.7 Typical Body Diode Transfer Characteristics

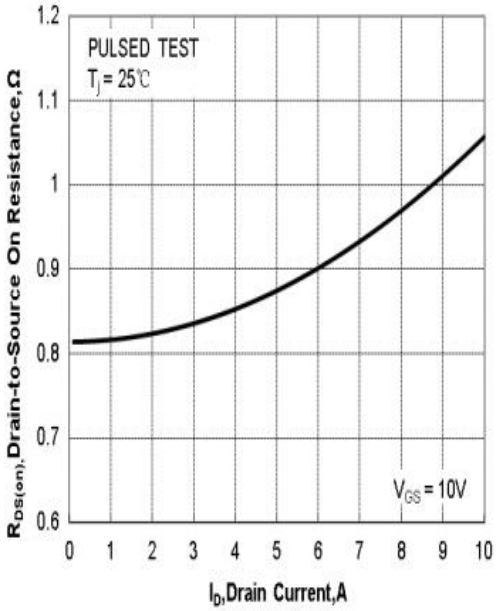


Figure.8 Typical Drain to Source ON Resistance vs Drain Current

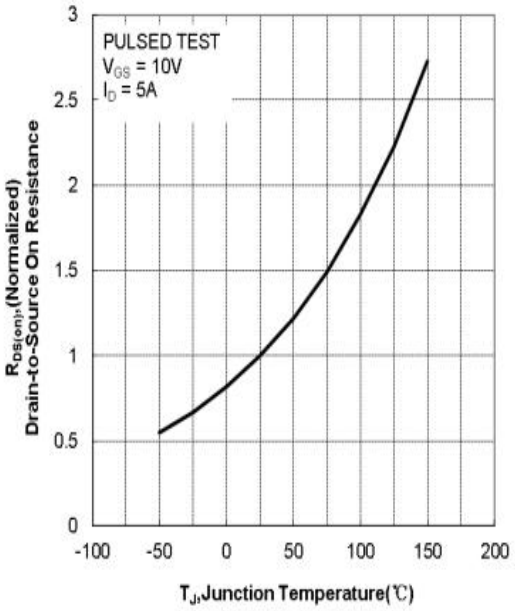


Figure.9 Typical Drian to Source on Resistance vs Junction Temperature

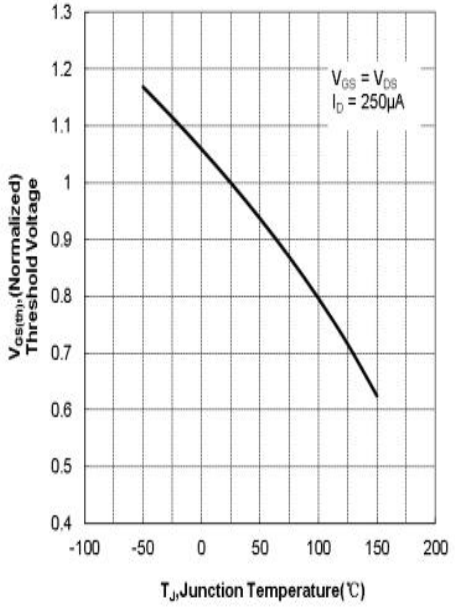


Figure.10 Typical Theshold Voltage vs Junction Temperatu

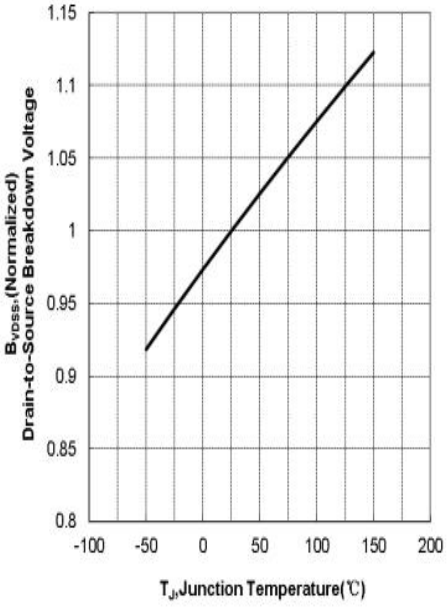


Figure 11 Typical Breakdown Voltage vs Junction Temperature

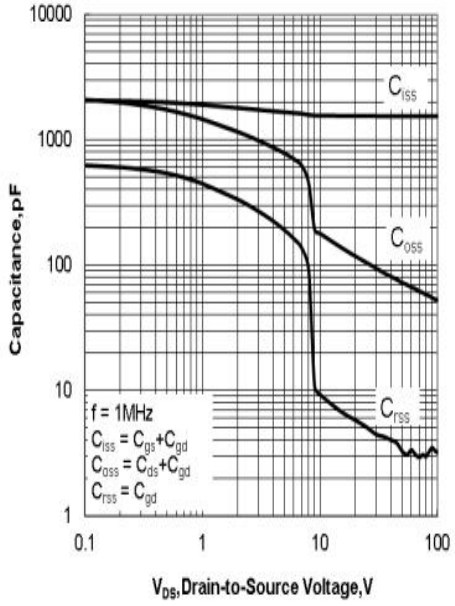


Figure.12 Typical Capacitance vs Drain to Source Voltage

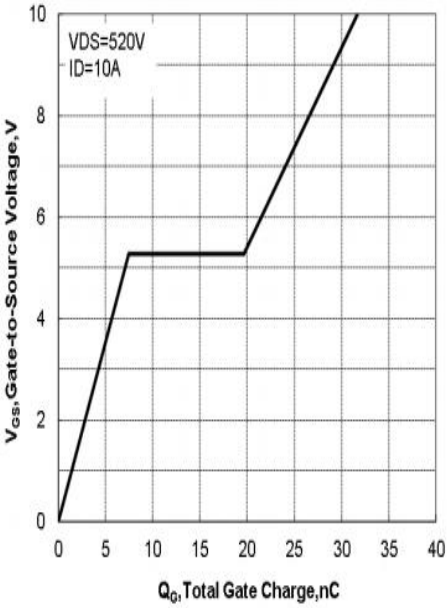
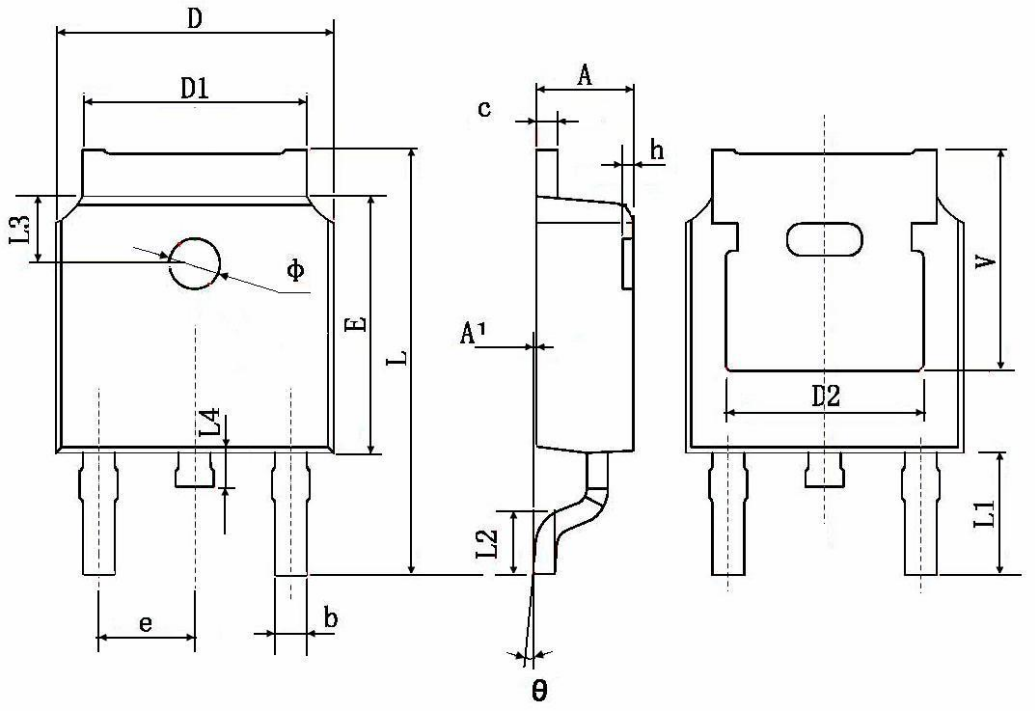


Figure.13 Typical Gate Charge vs Gate to Source Voltage

TO-252-2L 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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