



Description

The HXYG350N10L use advanced SGT MOSFET technology to provide low $R_{DS(ON)}$, low gate charge, fast switching and excellent avalanche characteristics.

This device is specially designed to get better ruggedness.

General Features

$V_{DS} = 80V$ $I_D = 320A$

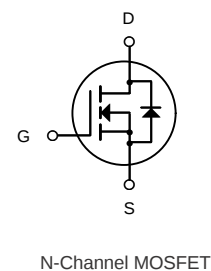
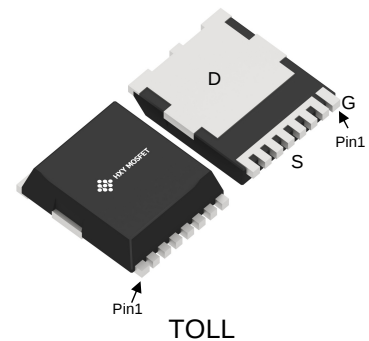
$R_{DS(ON)} < 2m\Omega$ @ $V_{GS}=10V$

Application

Battery protection

Load switch

Uninterruptible power supply



N-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
HXYG320N08L	TOLL	HXY MOSFET	2000

Absolute Maximum Ratings ($T_C=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	80	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current, V_{GS} @ 10V ¹	320	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current, V_{GS} @ 10V ¹	196	A
I_{DM}	DrainCurrent(Pulsed)	1240	A
ESA	Single Pulse Avalanche Energy ²	625	MJ
P_D	Total Power Dissipation	347.2	W
TSTG TJ	Storage Temperature Range	-55 to 150	$^{\circ}C$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	0.36	$^{\circ}C/W$
$R_{\theta JA}$	ThermalResistanceJunctiontoAmbient	40	$^{\circ}C/W$



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

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	80	-	-	V
Gate-body Leakage current		I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T _J =25°C	I _{DSS}	V _{DS} = 80V, V _{GS} = 0V	-	-	1	μA
	T _J =100°C			-	-	100	
Gate-Threshold Voltage		V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2	3	4	V
Drain-Source on-Resistance ⁴		R _{DS(on)}	V _{GS} = 10V, I _D = 20A	-	1.6	2	mΩ
Forward Transconductance ⁴		g _{fs}	V _{DS} = 10V, I _D =20A	-	70	-	S
Dynamic Characteristics ⁵							
Input Capacitance		C _{iss}	V _{DS} = 40V, V _{GS} =0V, f =1MHz	-	8980	-	pF
Output Capacitance		C _{oss}		-	1560	-	
Reverse Transfer Capacitance		C _{rss}		-	90	-	
Gate Resistance		R _g	f=1MHz	-	2.4	-	Ω
Switching Characteristics ⁵							
Total Gate Charge		Q _g	V _{GS} = 10V, V _{DS} = 40V, I _D = 20A	-	140	-	nC
Gate-Source Charge		Q _{gs}		-	37.5	-	
Gate-Drain Charge		Q _{gd}		-	37.5	-	
Turn-on Delay Time		t _{d(on)}	V _{GS} =10V, V _{DD} = 40V, R _G = 3Ω, I _D = 20A	-	27.5	-	ns
Rise Time		t _r		-	82	-	
Turn-off Delay Time		t _{d(off)}		-	85	-	
Fall Time		t _f		-	52	-	
Body Diode Reverse Recovery Time		t _{rr}	I _F =20A, di/dt = 100A/μs	-	98	-	ns
Body Diode Reverse Recovery Charge		Q _{rr}		-	166	-	nC
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ⁴		V _{SD}	I _S = 20A, V _{GS} = 0V	-	-	1.2	V
Continuous Source Current	T _C =25°C	I _S	-	-	-	320	A

Note:

- The maximum current rating is package limited.
- Repetitive rating; pulse width limited by max. junction temperature.
- V_{DD}=32V, R_G=25Ω, L=0.5mH, starting T_J=25°C.
- P_D is based on max. junction temperature, using junction-case thermal resistance.
- The value of R_{θJA} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with Ta=25°C.



Typical Characteristics

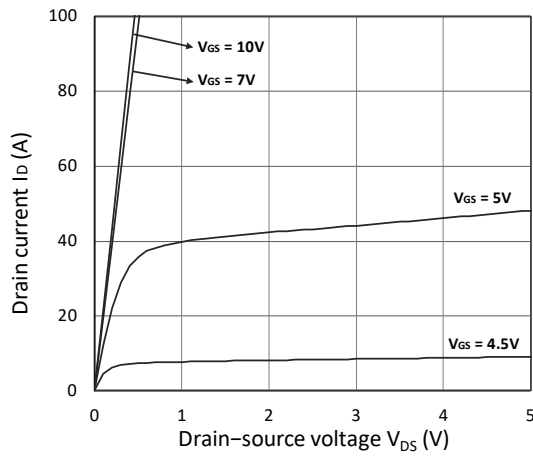


Figure 1. Output Characteristics

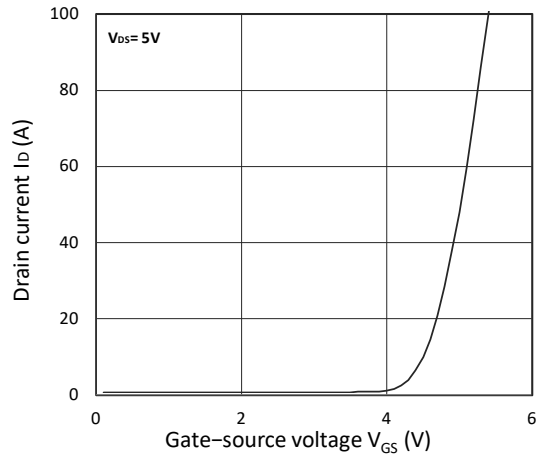


Figure 2. Transfer Characteristics

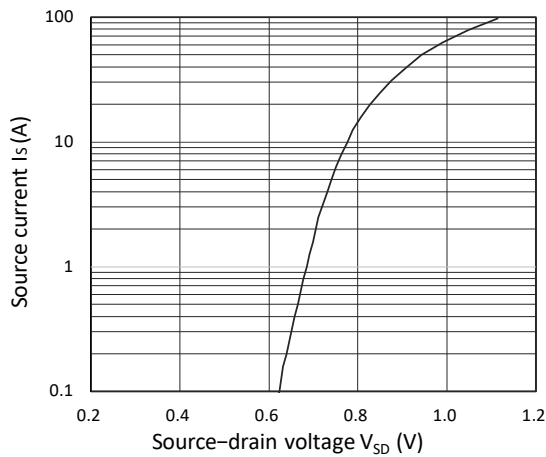


Figure 3. Forward Characteristics of Reverse

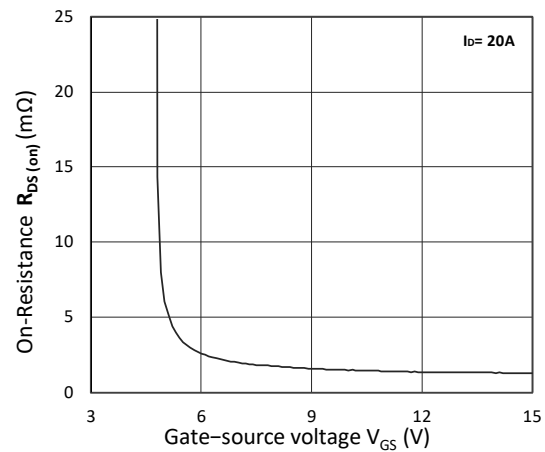


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

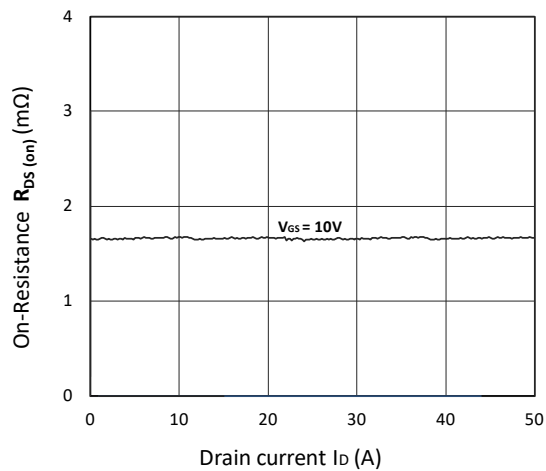


Figure 5. $R_{DS(ON)}$ vs. I_D

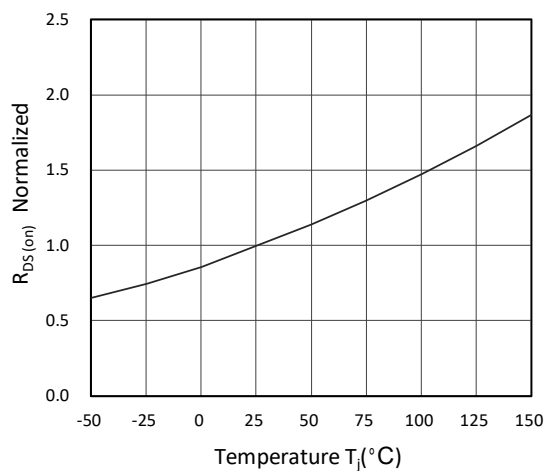


Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature

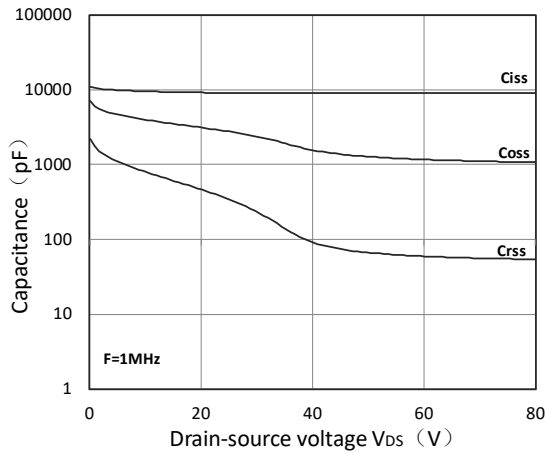


Figure 7. Capacitance Characteristics

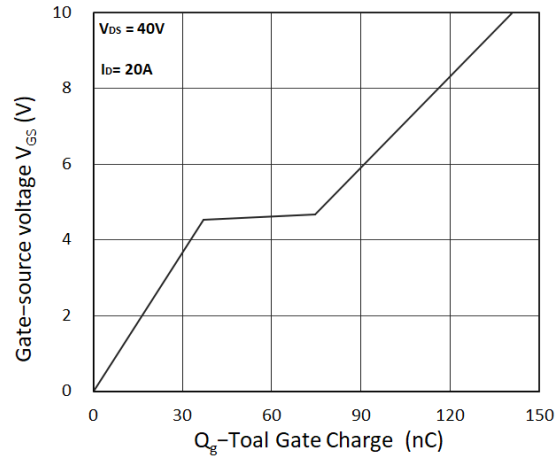


Figure 8. Gate Charge Characteristics

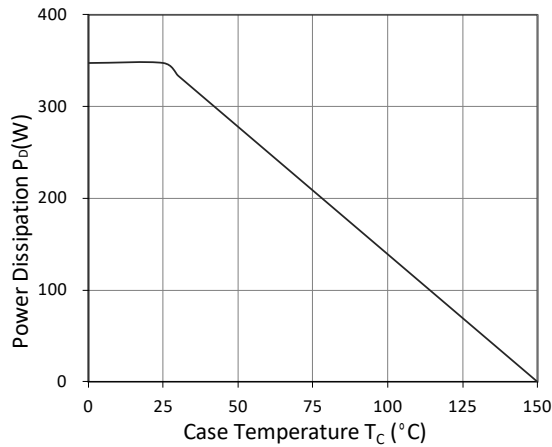


Figure 9. Power Dissipation

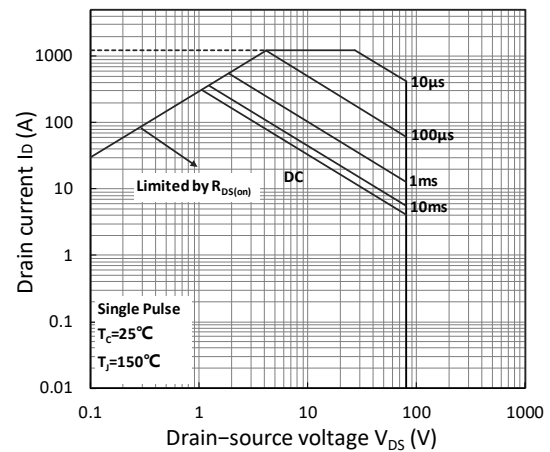


Figure10. Safe Operating Area

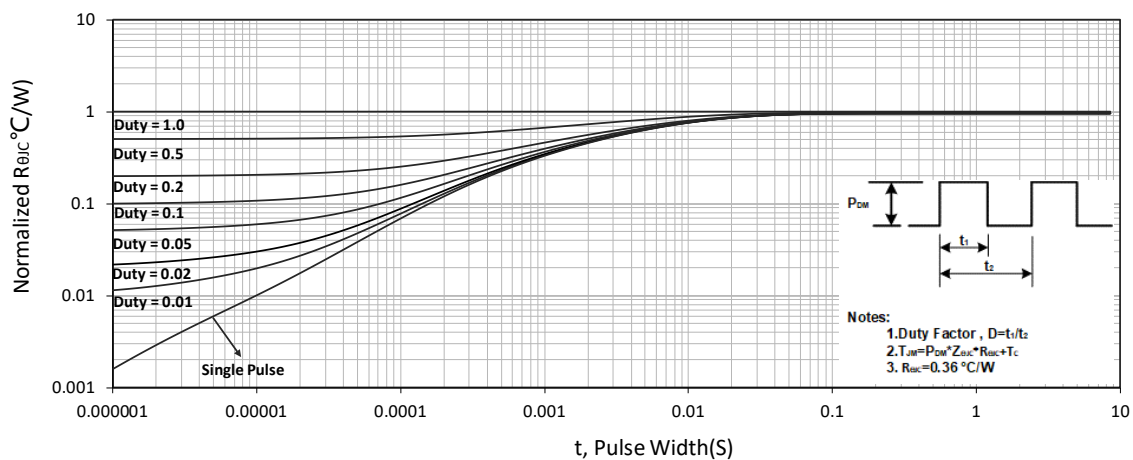


Figure 11. Normalized Maximum Transient Thermal Impedance



Test Circuit

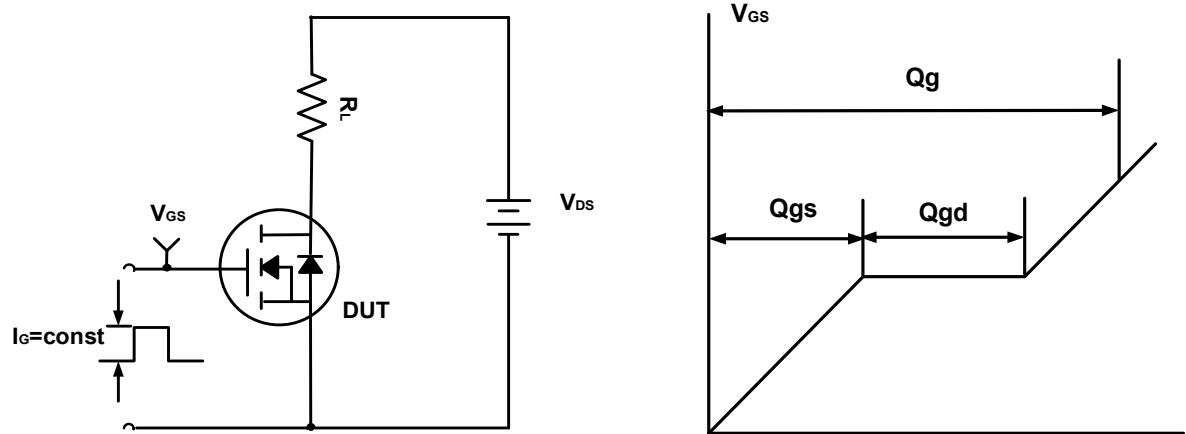


Figure A. Gate Charge Test Circuit & Waveforms

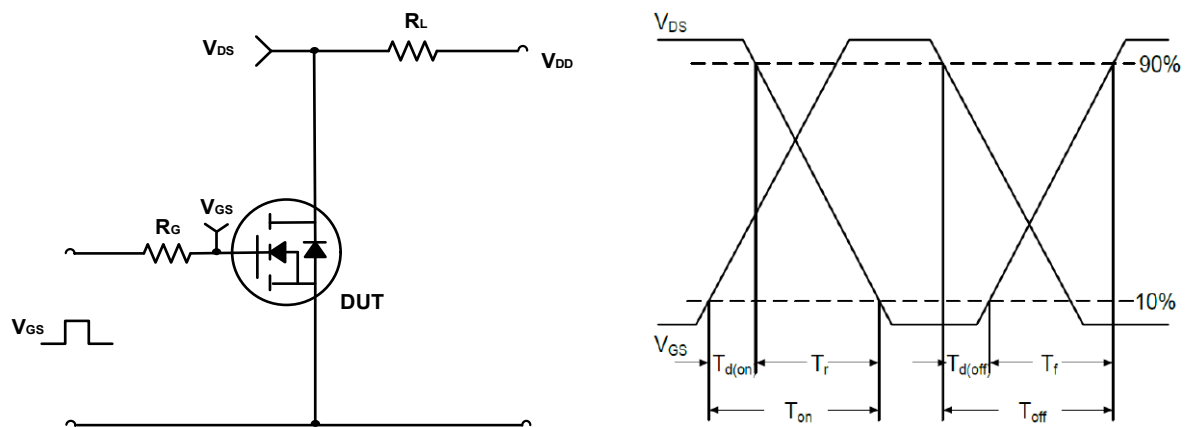


Figure B. Switching Test Circuit & Waveforms

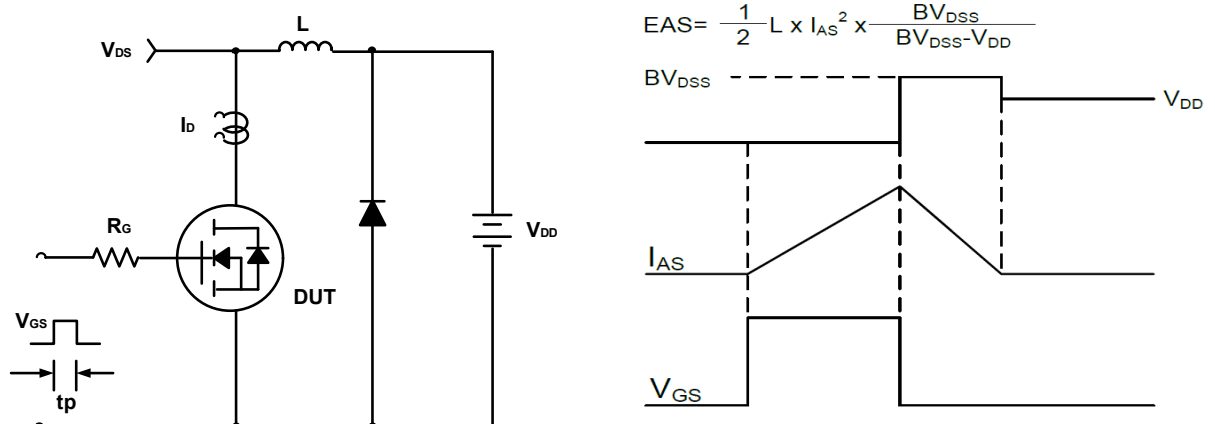
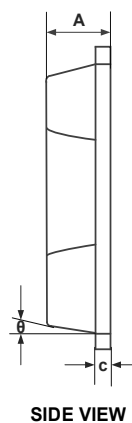
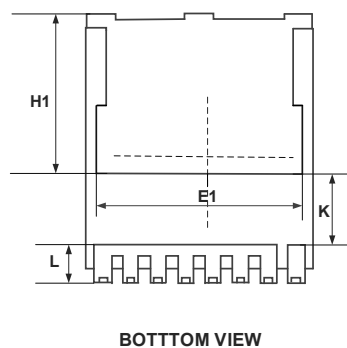
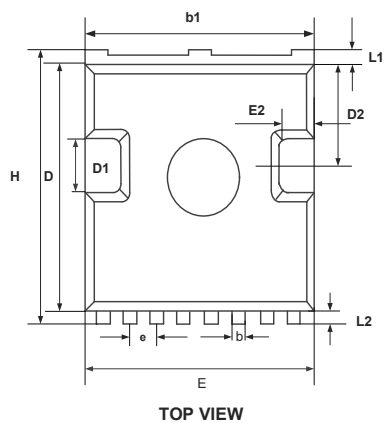


Figure C. Unclamped Inductive Switching Circuit & Waveforms



TOLL Package Information



COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	2.20	2.40
b	0.60	0.90
b1	9.70	9.90
c	0.40	0.60
D	10.20	10.60
D1	3.10	3.50
D2	4.45	4.75
E	9.70	10.10
E1	7.80BSC	
E2	0.50	0.70
e	1.200 BSC	
H	11.45	11.90
H1	6.75 BSC	
K	3.10 REF	
L	1.70	2.10
L1	0.60	0.80
L2	0.50	0.70
θ	10° REF	



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