



General Description

The HXYG70N10D 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

$V_{DS} = 100V$ $I_D = 70A$

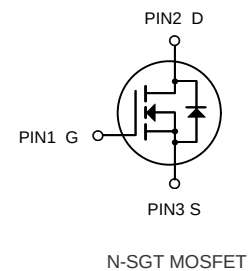
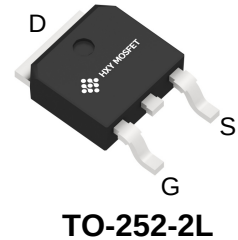
$R_{DS(ON)} < 10.5m\Omega @ V_{GS}=10V$

Applications

DC-DC Converters

Power management functions

Synchronous-rectification applications



Ordering Information

Product ID	Pack	Brand	Qty(PCS)
HXYG70N10D	TO-252-2L	HXY MOSFET	2500

Absolute Maximum Ratings at $T_J=25^{\circ}C$ unless otherwise noted

Symbol	Parameter	Value	Unit
V_{DS}	Drain source voltage	100	V
V_{GS}	Gate source voltage	± 20	V
I_D	Continuous drain current, $T_C=25^{\circ}C$	70	A
P_D	Power dissipation, $T_C=25^{\circ}C$	100	W
EAS	Single pulsed avalanche energy	110	mJ
T_{stg}, T_J	Operation and storage temperature	-55 to 150	$^{\circ}C$
$R_{\theta JC}$	Thermal resistance, junction-case	1.25	$^{\circ}C/W$
$R_{\theta JA}$	Thermal resistance, junction-ambient	64	$^{\circ}C/W$



Electrical Characteristics at $T_j=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	--	--	1	μA
$I_{GSS}(F)$	Gate to Source Forward Leakage	$V_{GS}=+20V, V_{DS}=0V$	--	--	100	nA
$I_{GSS}(R)$	Gate to Source Reverse Leakage	$V_{GS}=-20V, V_{DS}=0V$	--	--	-100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.3	1.8	2.3	V
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=20A$	--	8.5	10.5	$m\Omega$
		$V_{GS}=4.5V, I_D=15A$		9.5	15	$m\Omega$
C_{iss}	Input Capacitance	$V_{GS}=0V$ $V_{DS}=50V$ $f=1.0MHz$	--	1368	--	pF
C_{oss}	Output Capacitance		--	451	--	
C_{rss}	Reverse Transfer Capacitance		--	12.9	--	
R_g	Gate resistance	$V_{GS}=0V, V_{DS}$ Open	--	0.48	--	Ω
$t_{d(ON)}$	Turn-on Delay Time	$I_D=10A$ $V_{DS}=50V$ $V_{GS}=10V$ $R_G=4\Omega$	--	16	--	ns
t_r	Rise Time		--	10	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	40	--	
t_f	Fall Time		--	6	--	
Q_g	Total Gate Charge	$V_{GS}=10V$ $V_{DS}=50V$ $I_D=10A$	--	31.3	--	nC
Q_{gs}	Gate Source Charge		--	3.49	--	
Q_{gd}	Gate Drain Charge		--	7.63	--	
I_S	Diode Forward Current	$T_C=25^{\circ}\text{C}$	--	--	70	A
V_{SD}	Diode Forward Voltage	$I_S=10A, V_{GS}=0V$	--	--	1.2	V
t_{rr}	Reverse Recovery time	$I_S=10A, V_{DD}=50V$ $dI/dt=100A/\mu s$	--	103	--	ns
Q_{rr}	Reverse Recovery Charge		--	187	--	nC

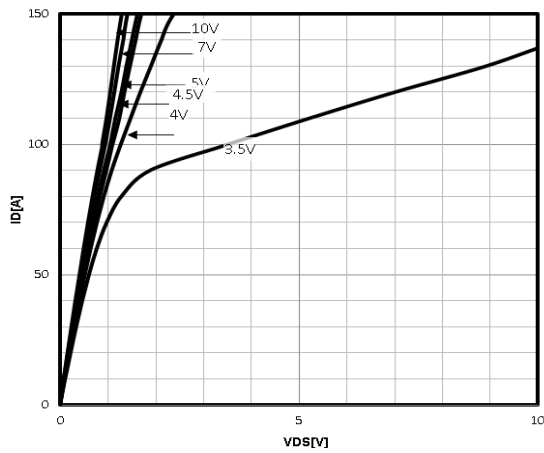
a1: Repetitive rating; pulse width limited by maximum junction temperature

a2: $V_{DD}=50V, L=0.3mH, R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$.

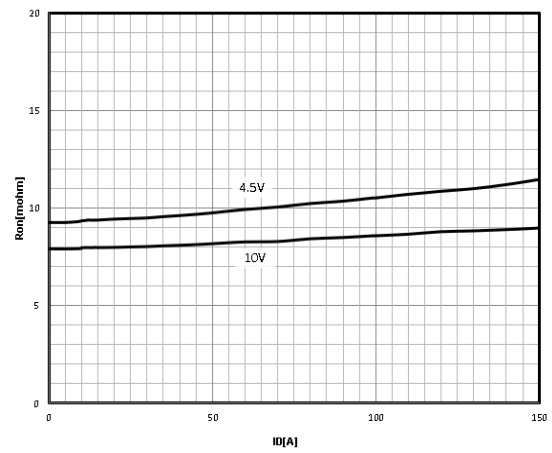


Typical Characteristics

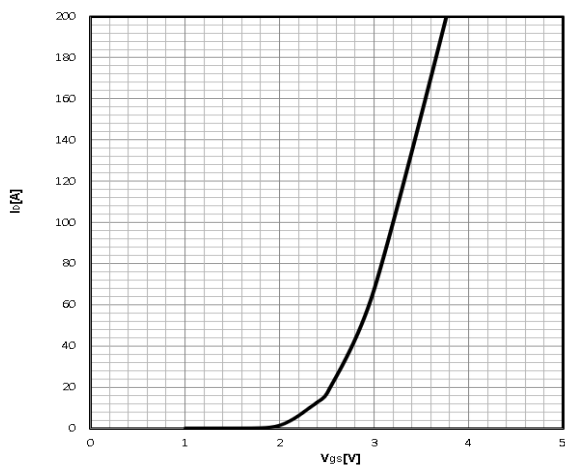
Typ. output characteristics
 $I_D = f(V_{DS})$



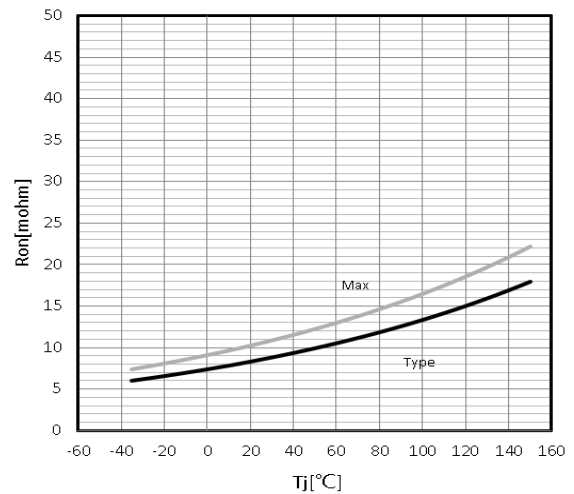
Typ. drain-source on resistance
 $R_{DS(on)} = f(I_D)$



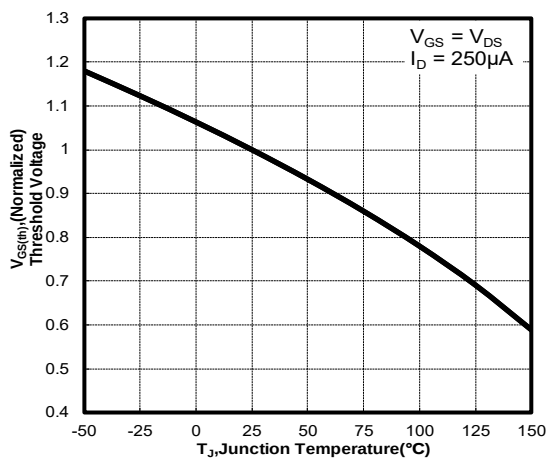
Typ. transfer characteristics
 $I_D = f(V_{GS})$



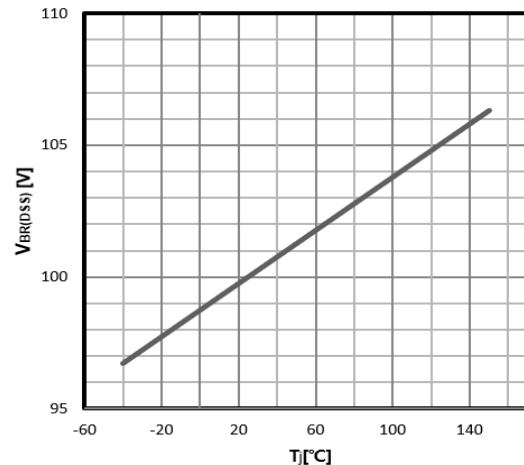
Drain-source on-state resistance
 $R_{DS(on)} = f(T_J); I_D = 20A; V_{GS} = 10V$



Gate Threshold Voltage
 $V_{TH} = f(T_J); I_D = 250\mu A$



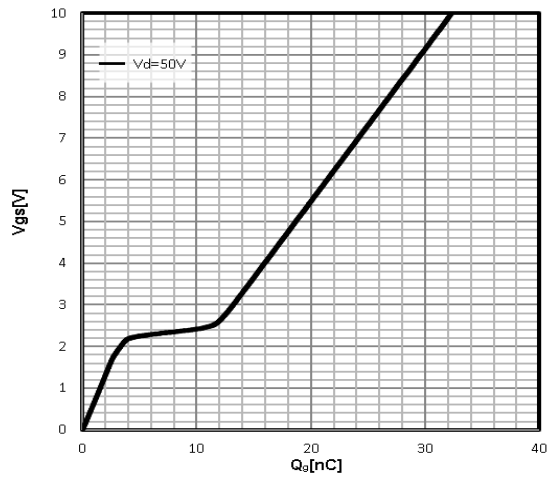
Drain-source breakdown voltage
 $V_{BR(DSS)} = f(T_J); I_D = 250\mu A$





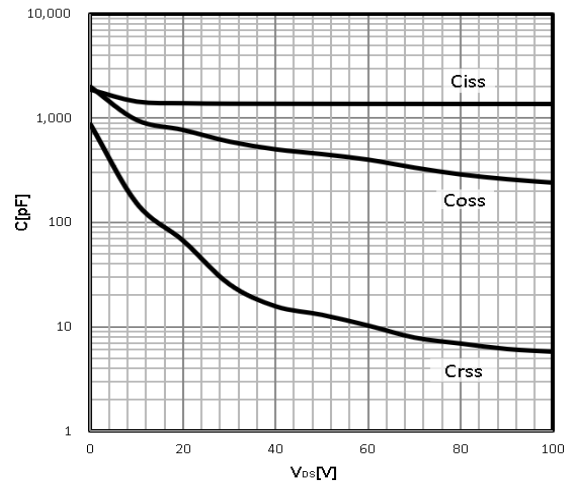
Typ. gate charge

$$V_{GS}=f(Q_g); I_D=10A$$



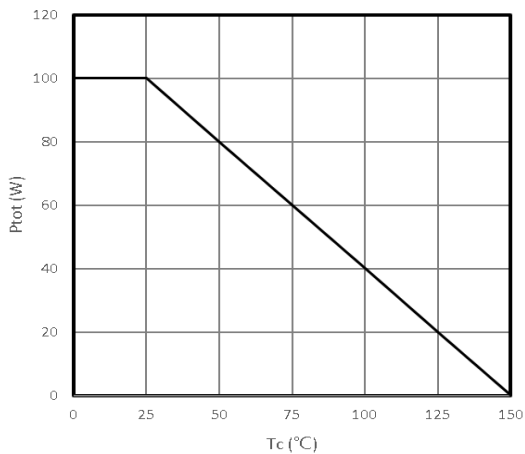
Typ. capacitances

$$C=f(V_{DS}); V_{GS}=0V; f=1MHz$$



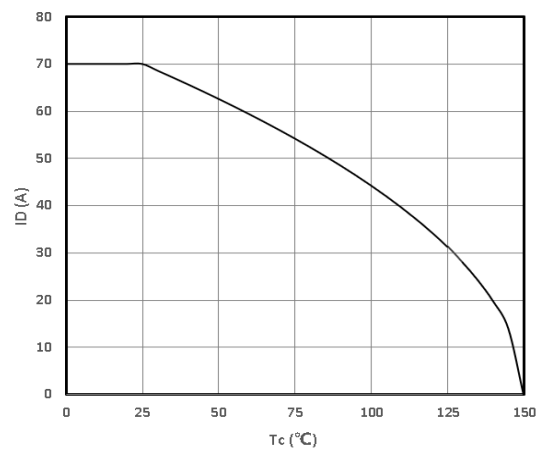
Power Dissipation

$$P_{tot}=f(T_C)$$



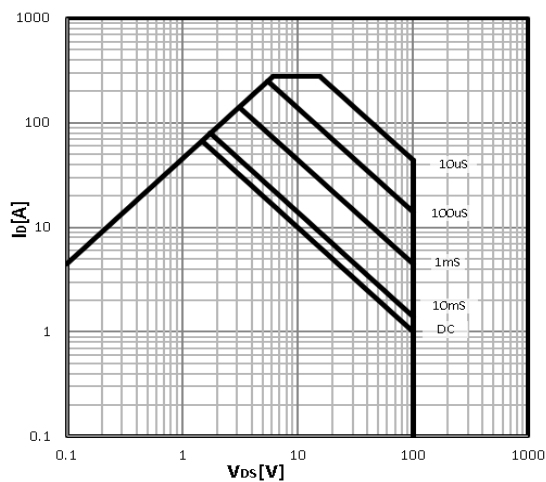
Maximum Drain Current

$$I_D=f(T_C)$$



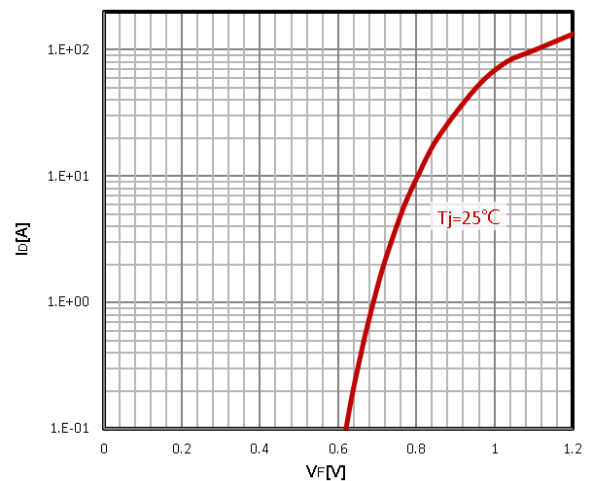
Safe operating area

$$I_D=f(V_{DS})$$

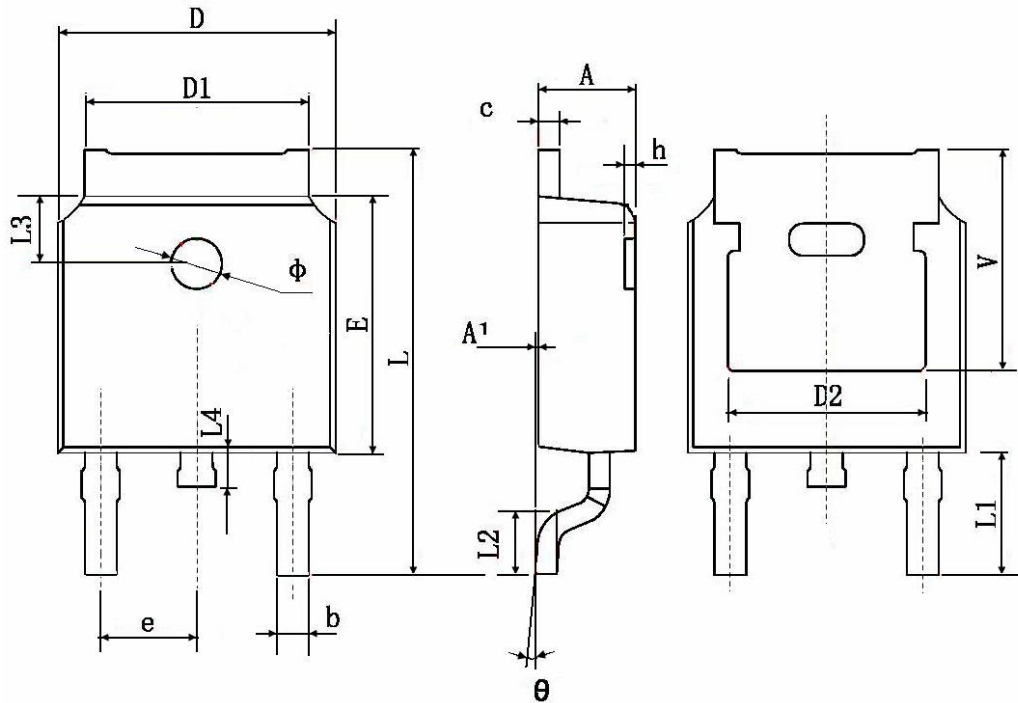


Body Diode Forward Voltage Variation

$$I_F=f(V_{GS})$$



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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