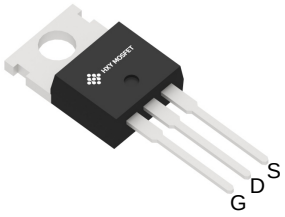
Description

The HXY11N40P uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

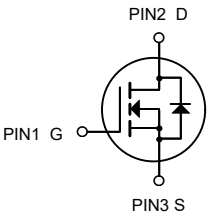


TO-220C
(TO-220AB)

General Features

V_{DS} = 420V,I_D = 11A

$R_{DS(ON)}$ < 0.5Ω @ V_{GS}=10V



N-Channel MOSFET

Application

High efficiency switch mode power supplies

Power factor correction

Electronic lamp ballast

Ordering Information

Product ID	Pack	Brand	Units Tube
HXY11N40P	TO-220C(TO-220AB)	HXY MOSFET	50

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	420	V
VGS	Gate-Source Voltage	±30	V
I_D@T_C=25°C	Drain Current, V_{GS} @ 4.5V	11	A
IDM	Pulsed Drain Current[1]	44	A
P_D@T_C=25°C	Total Power Dissipation	87	W
TSTG	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Electrical Characteristics (T_C =25°C, unless otherwise specified)

Parameter		Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250μA	420			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=650V, V_{GS}=0V			1	μA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{G}=30V, V_{DS}=0V			100	nA
	Reverse		V_{GS}=-30V, V_{DS}=0V			-100	nA
On Characteristics							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	2.0		4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=1A		0.36	0.5	Ω
Dynamic Characteristics							
Input Capacitance		C_{ISS}	V_{DS}=25V, V_{GS}=0V, f=1.0 MHz		1368		pF
Output Capacitance		C_{OSS}			90.3		pF
Reverse Transfer Capacitance		C_{RSS}			3		pF
Switching Characteristics							
Turn-On Delay Time		$t_{D(ON)}$	V_{DD} =250V, I_D =10A, R_G =25Ω (Note 1, 2)		16		ns
Turn-On Rise Time		t_R			25		ns
Turn-Off Delay Time		$t_{D(OFF)}$			40		ns
Turn-Off Fall Time		t_F			29		ns
Total Gate Charge		Q_G	V_{DS}=480V, I_D=12A, V_{GS}=10V (Note 1, 2)		8.1		nC
Gate-Source Charge		Q_{GS}			7.4		nC
Gate-Drain Charge		Q_{GD}			5		nC
Drain-Source Diode Characteristics and Maximum Ratings							
Drain-Source Diode Forward Voltage		V_{SD}	V_{GS} = 0 V, I_S = 11A			1.2	V
Maximum Continuous Drain-Source Diode Forward Current		I_S				11	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}				44	A
Reverse Recovery Time		t_{rr}	V_{GS}=0V, I_S=12A, dI_F/dt =100 A/μs (Note 1)		435		ns
Reverse Recovery Charge		Q_{RR}			4		μC

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

Typical Characteristics

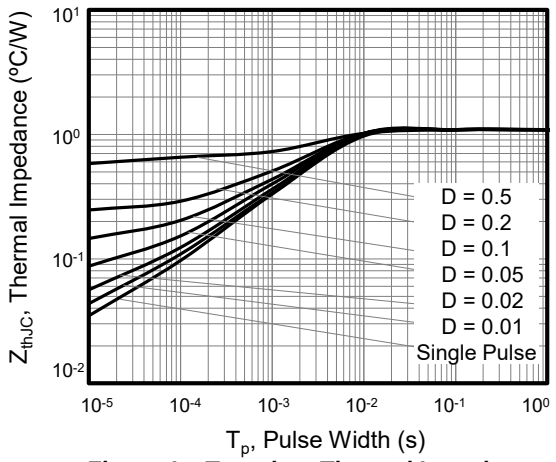


Figure 1. Transient Thermal Impedance

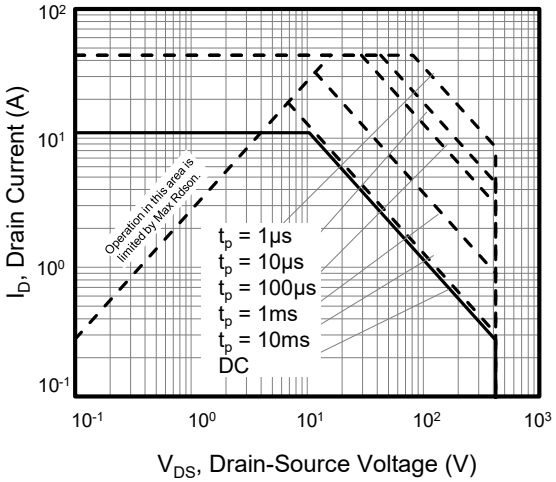


Figure 2. Safe Operation Area

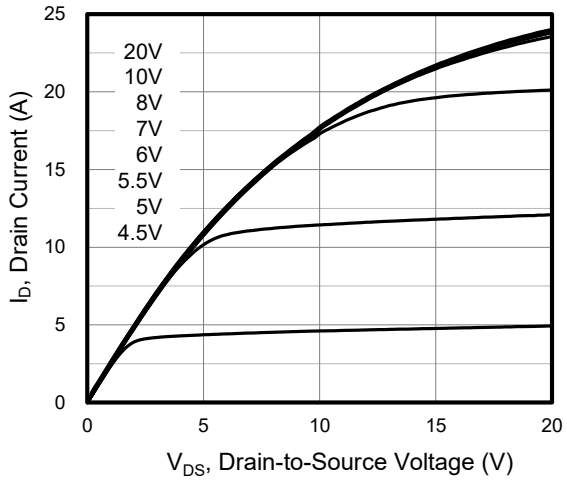


Figure 3. Output Characteristics

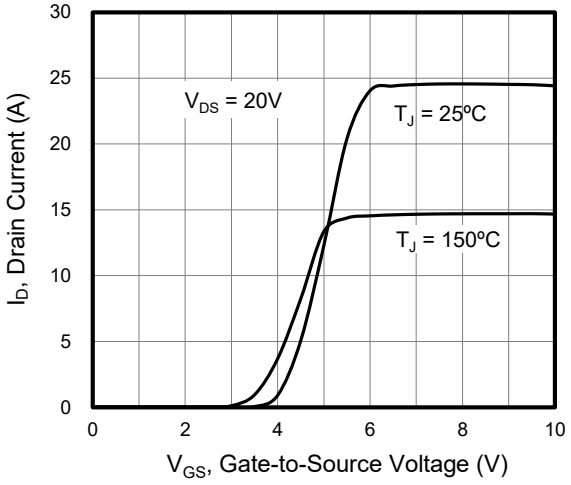


Figure 4. Transfer Characteristics

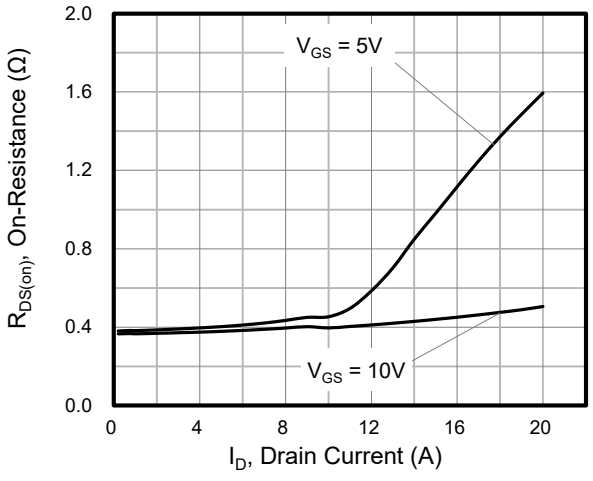


Figure 5. On-Resistance vs Drain Current

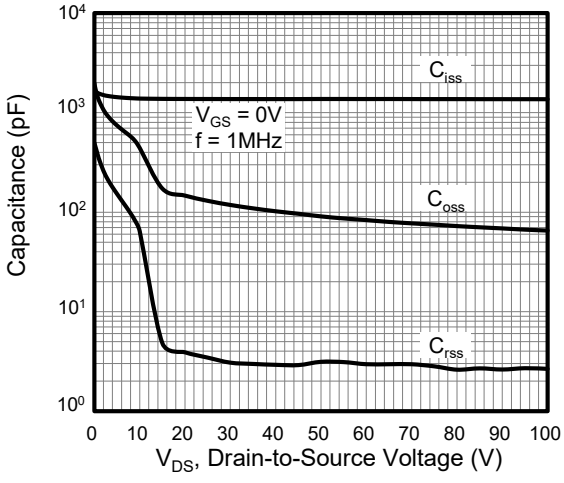


Figure 6. Capacitance

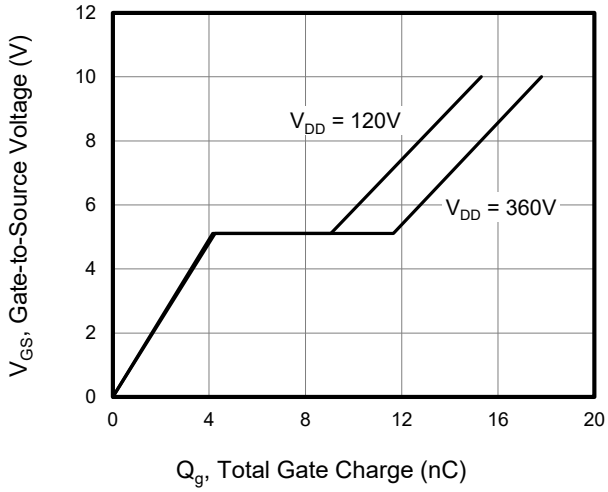


Figure 7. Gate Charge

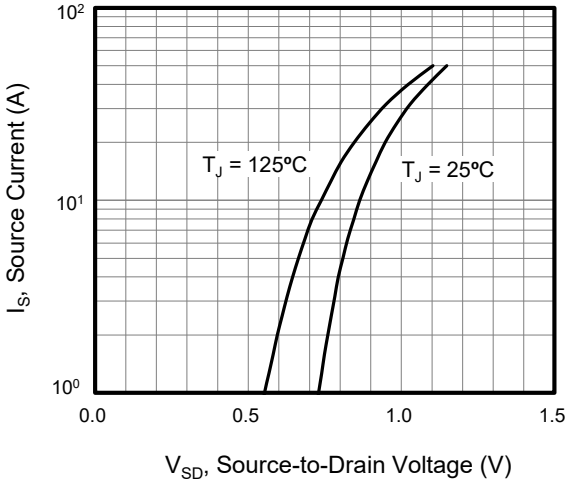


Figure 8. Body Diode Forward Voltage

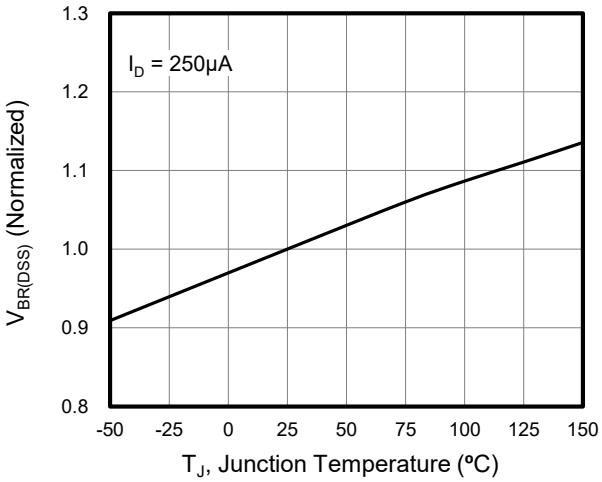


Figure 9. Breakdown Voltage vs Junction Temperature

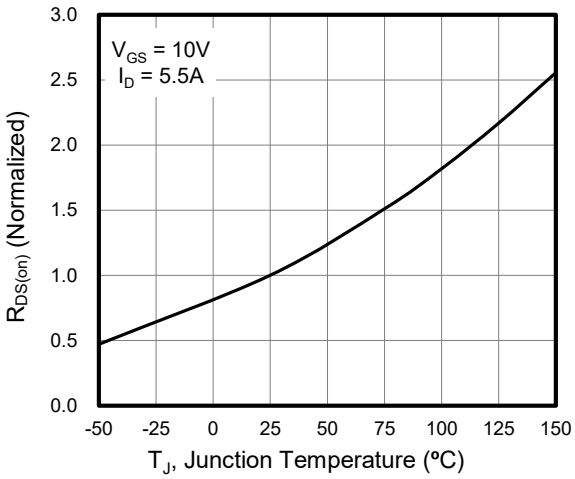
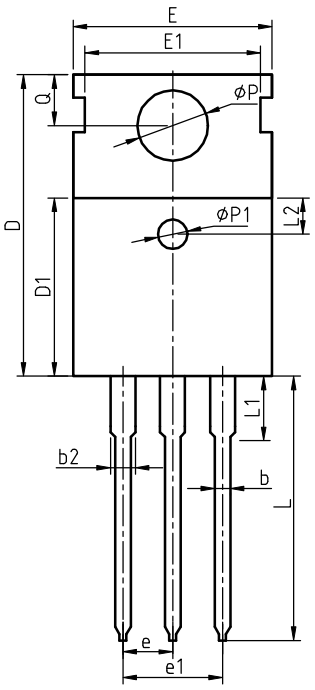
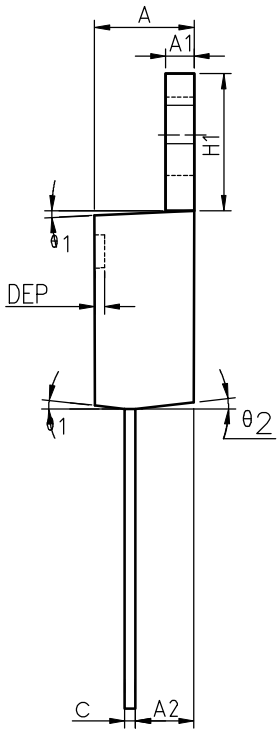


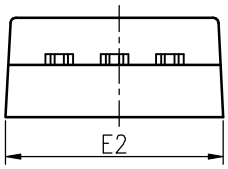
Figure 10. On-Resistance vs Temperature

Package Information

TO-220C(TO-220AB)







COMMON DIMENSIONS

SYMBOL	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	1.27	1.30	1.33	0.050	0.051	0.052
A2	2.35	2.40	2.50	0.093	0.094	0.098
b	0.77	0.80	0.90	0.030	0.031	0.035
b2	1.17	1.27	1.36	0.046	0.050	0.054
c	0.48	0.50	0.56	0.019	0.020	0.022
D	15.40	15.60	15.80	0.606	0.614	0.622
D1	9.00	9.10	9.20	0.354	0.358	0.362
DEP	0.05	0.10	0.20	0.002	0.004	0.008
E	9.80	10.00	10.20	0.386	0.394	0.402
E1	-	8.70	-	-	0.343	-
E2	9.80	10.00	10.20	0.386	0.394	0.402
e		2.54	BSC		0.100	BSC
e1		5.08	BSC		0.200	BSC
H1	6.40	6.50	6.60	0.252	0.256	0.260
L	12.75	13.50	13.65	0.502	0.531	0.537
L1	-	3.10	3.30	-	0.122	0.130
L2		2.50	REF		0.098	REF
P	3.50	3.60	3.63	0.138	0.142	0.143
P1	3.50	3.60	3.63	0.138	0.142	0.143
Q	2.73	2.80	2.87	0.107	0.110	0.113
θ1	5°	7°	9°	5°	7°	9°
θ2	1°	3°	5°	1°	3°	5°
θ3	1°	3°	5°	1°	3°	5°

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