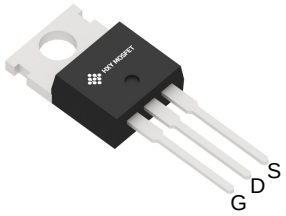
Description

The HXY70N07P 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.

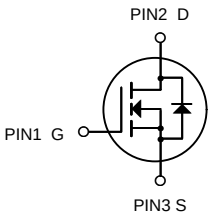


TO-220

General Features

V_{DS} = 70V,I_D = 70A

$R_{DS(ON)}$ < 8.5mΩ @ 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
HXY70N07P	TO-220	HXY MOSFET	50

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	70	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	70	A
Drain Current-Continuous(T_C=100°C)	I_D (100°C)	52	A
Pulsed Drain Current	I_{DM}	320	A
Maximum Power Dissipation	P_D	103	W
Single pulse avalanche energy	E_{AS}	110	mJ
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.46	°C/W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	°C

Electrical Characteristics T_J= 25°C unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	70		---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=70V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	2	3	4	V
$R_{DS(ON)}$	Drain-Source On Resistance note3	V_{GS}=10V,I_D=30A	---	7.5	8.5	mΩ
C_{iss}	Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1MHz	---	3900	---	pF
C_{oss}	Output Capacitance		---	260	--	
C_{rss}	Reverse Transfer Capacitance		---	240	---	
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=30V, I_D=30A, R_{GEN}=3Ω,V_{GS}=10V	---	15	---	ns
t_r	Rise Time		---	90	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	45	---	ns
t_f	Fall Time		---	30	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=30V, I_D=30A	---	35	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	9	---	nC
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V, I_S=30A	---	---	1.2	V
Is	Diode Forward Current	VD=VG=0V	---	---	70	A
I_{SM}	Plused Diode Forward Current	VD=VG=0V	---	---	320	A
Trr	Reverse Recovery Time	I_F=20A,dI/dt=100A/us	---	78	---	NS
Qrr	Reverse Recovery Charge	I_F=20A,dI/dt=100A/us	---	51	---	NC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J=25°C, V_{DD}=30V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=21A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics

Figure1: Output Characteristics

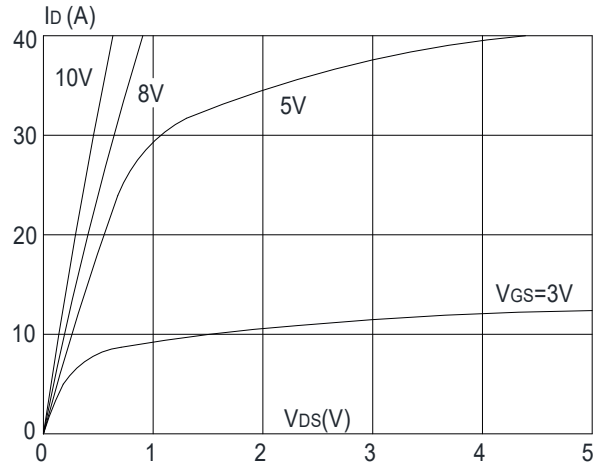


Figure 2: Typical Transfer Characteristics

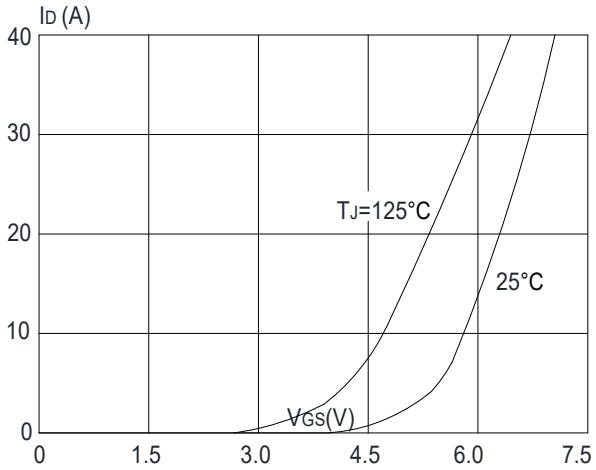


Figure 3: On-resistance vs. Drain Current

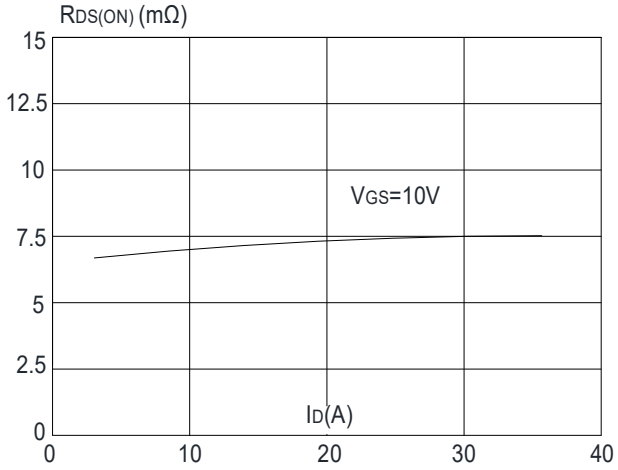


Figure 4: Body Diode Characteristics

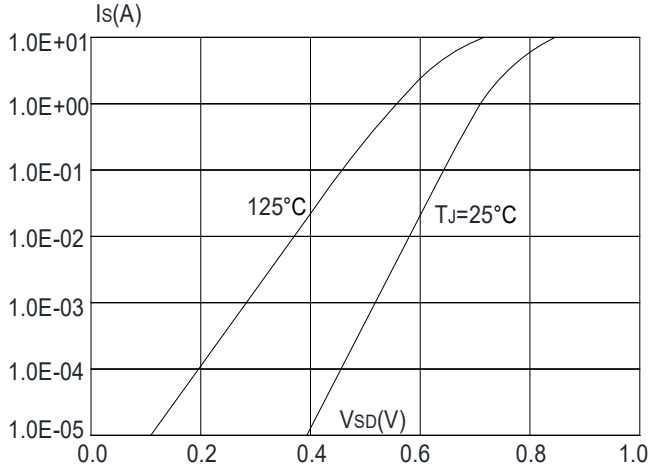


Figure 5: Gate Charge Characteristics

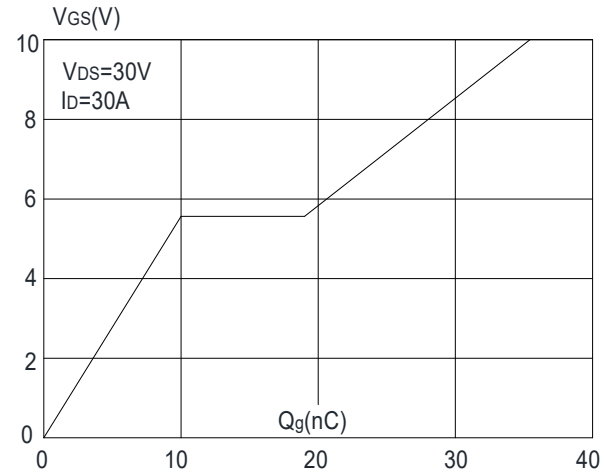


Figure 6: Capacitance Characteristics

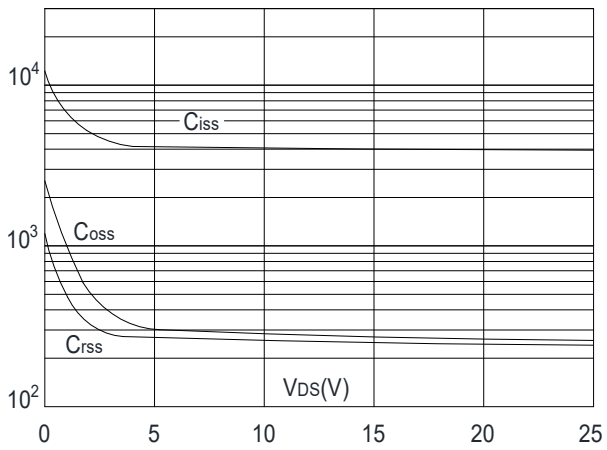


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

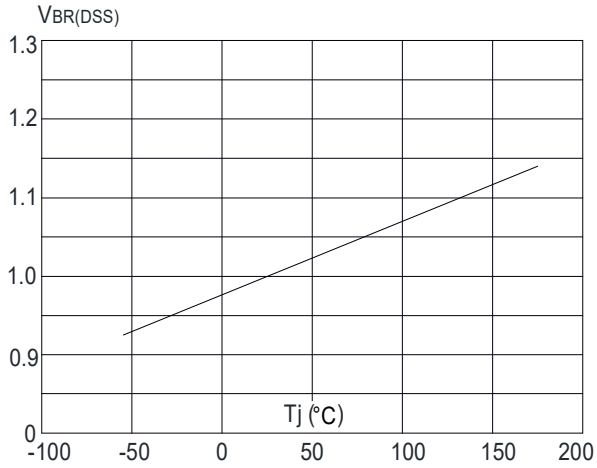


Figure 8: Normalized on Resistance vs. Junction Temperature

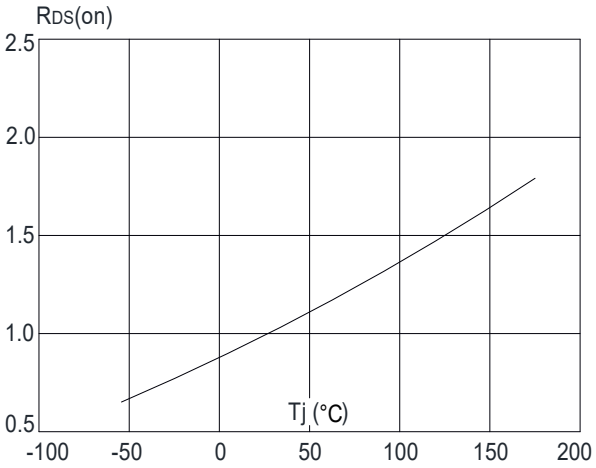


Figure 9: Maximum Safe Operating Area

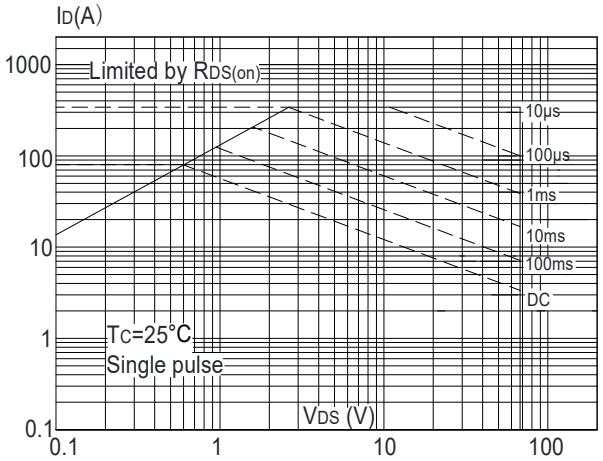


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

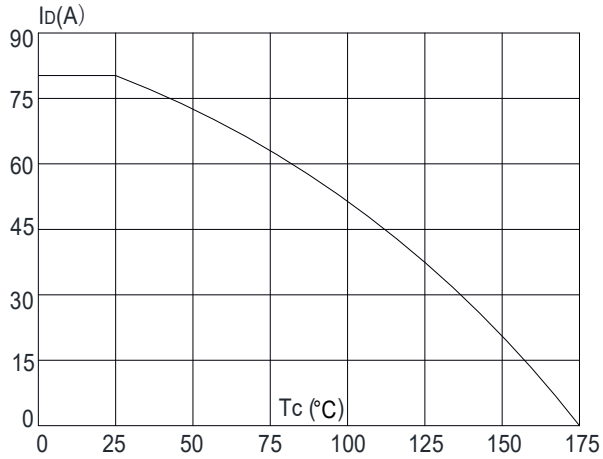
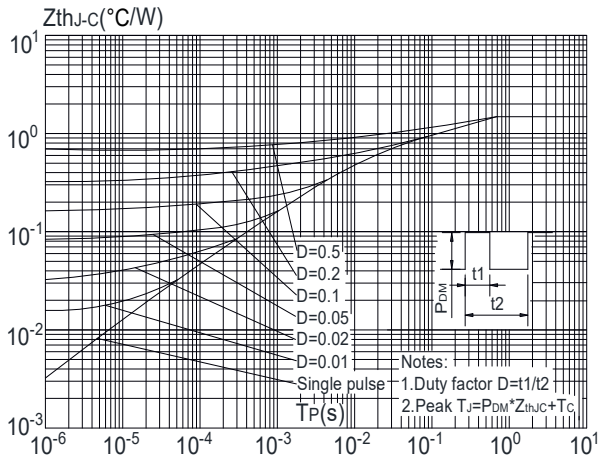


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Package Information
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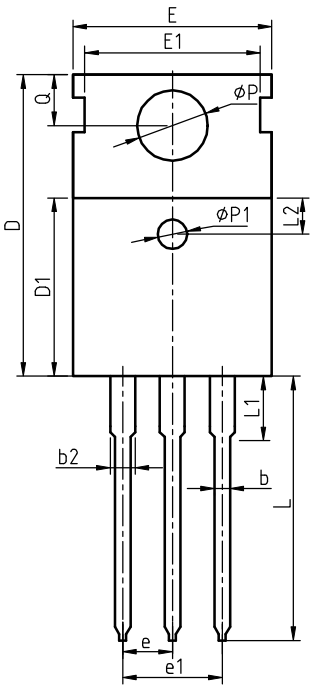

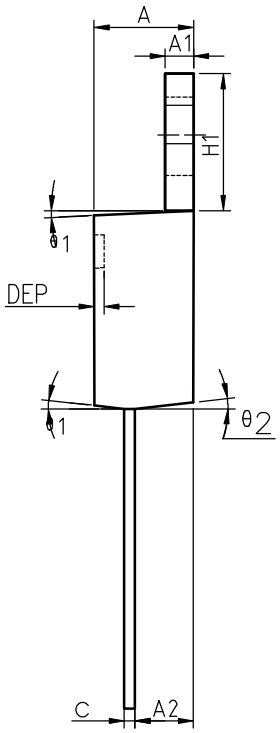

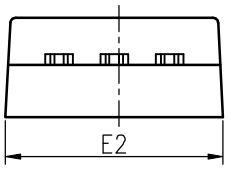

COMMON DIMENSIONS

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
θ 1	5°	7°	9°	5°	7°	9°
θ 2	1°	3°	5°	1°	3°	5°
θ 3	1°	3°	5°	1°	3°	5°

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