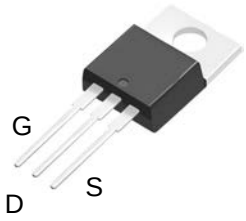
Description

The 60N06 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gat e charge. It can be used in a wide variety of applications.



TO-220H

General Features

V_{DS} =60V,I_D =60A

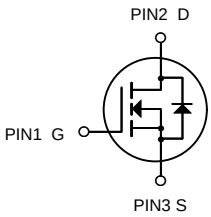
$R_{DS(ON)}$ < 20mΩ @ V_{GS}=10V

Application

High efficiency switch mode power supplies

Power factor correction

Electronic lamp ballast



N-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Marking	Units Tube
60N06	TO-220H	HXY 60N06 YYYY	50

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	60	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Drain Current	60	A
IDM	Pulsed Drain Current[1]	240	A
P_D@T_C=25℃	Total Power Dissipation	120	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Electrical Characteristics (T_C=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage (Note 1)	BV_{DSS}	V_{GS}=0V I_D=250μA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	60	68	-	nA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,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
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=25A	-	17	20	mΩ
Forward Transconductance	g_{FS}	V_{DS}=30V,I_D=40A	15	-	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=25V,V_{GS}=0V, F=1.0MHz	-	4050	-	PF
Output Capacitance	C_{oss}		-	430	-	PF
Reverse Transfer Capacitance	C_{rss}		-	110	-	PF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=30V,I_D=40A R_G=50Ω (Note 2)	-	60	-	nS
Turn-on Rise Time	t_r		-	185	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	75	-	nS
Turn-Off Fall Time	t_f		-	60	-	nS
Total Gate Charge	Q_g	V_{DS}=30V,I_D=40A, V_{GS}=10V (Note 2)	-	39	-	nC
Gate-Source Charge	Q_{gs}		-	9.3	-	nC
Gate-Drain Charge	Q_{gd}		-	13	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=60A	-		1.5	V
Diode Forward Current (Note 2)	I_S		-	-	60	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

Typical Electrical

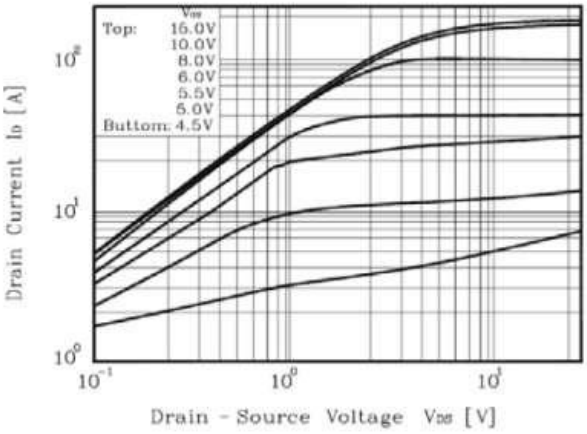


Figure 1. On Region Characteristics

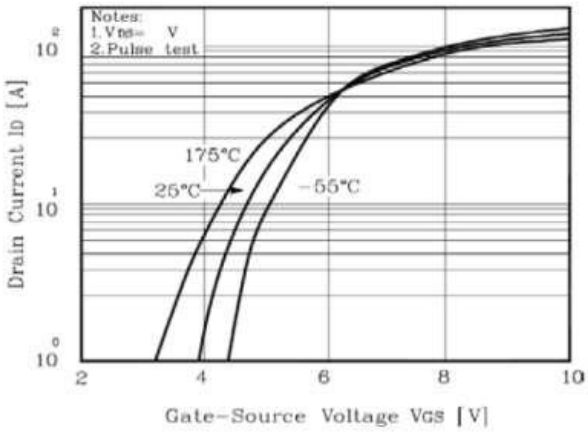


Figure 2. Transfer Characteristics

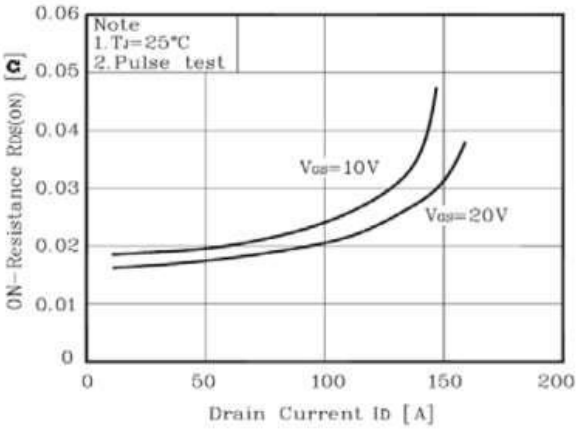


Figure 3. On Resistance Variation vs Drain Current and Gate Voltage

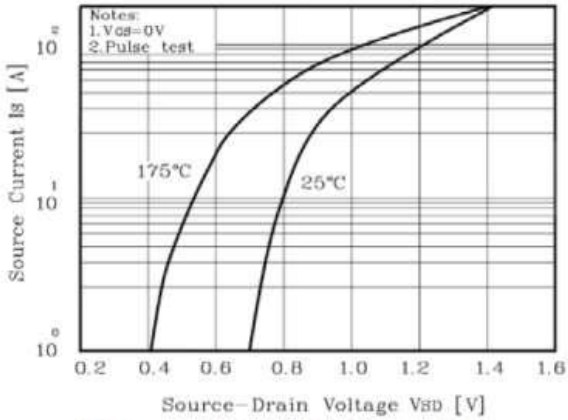


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

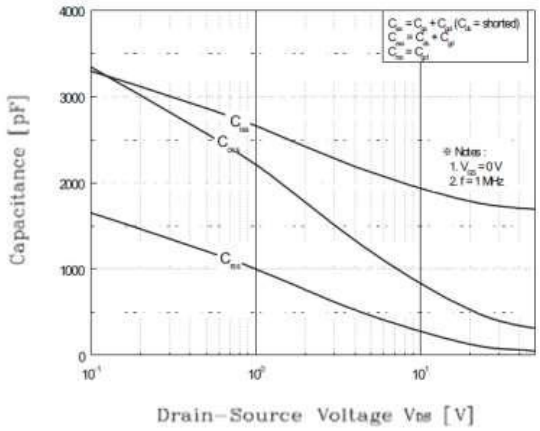


Figure 5. Capacitance Characteristics

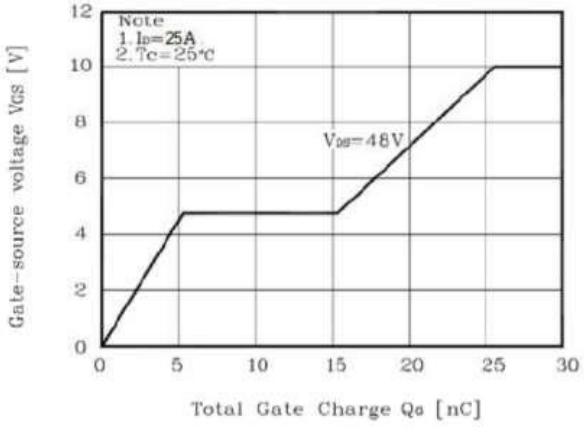


Figure 6. Gate Charge Characteristics

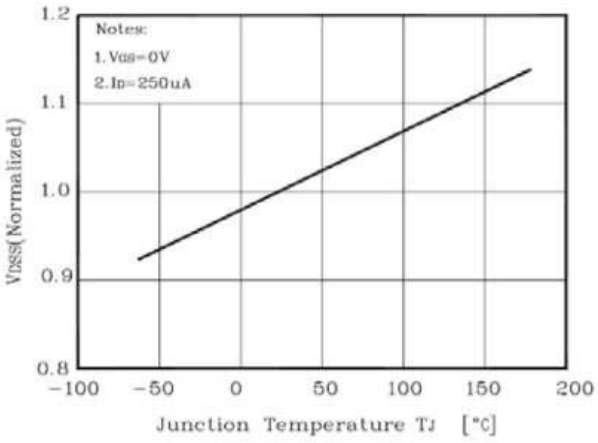


Figure 7. Breakdown Voltage Variation vs Temperature

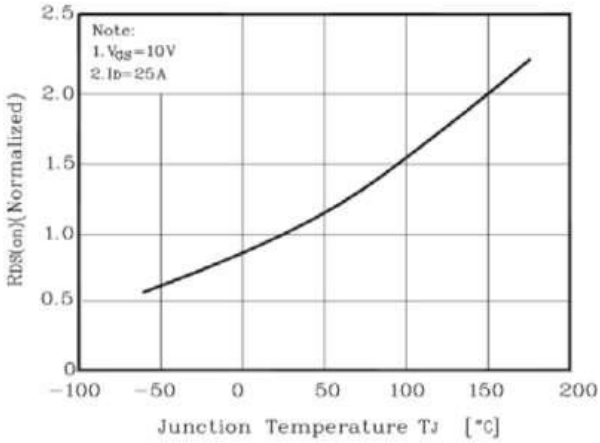


Figure 8. On-Resistance Variation vs Temperature

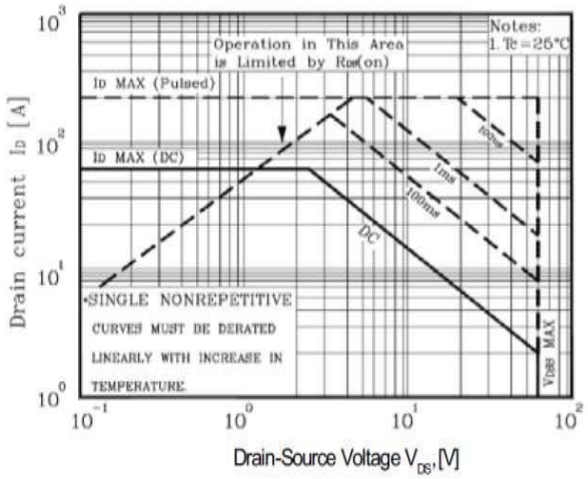


Figure 9. Maximum Safe Operating Area

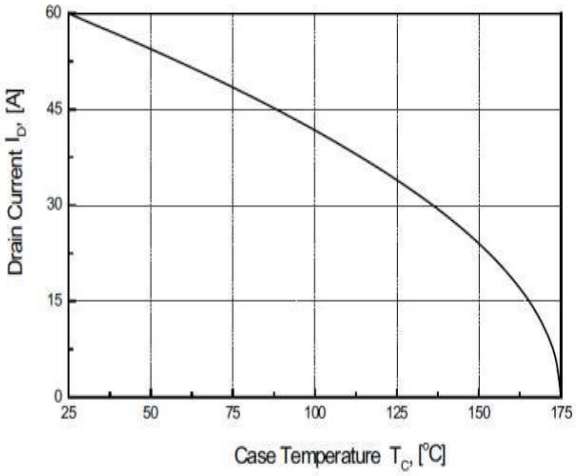


Figure 10. Maximum Drain Current vs Case Temperature

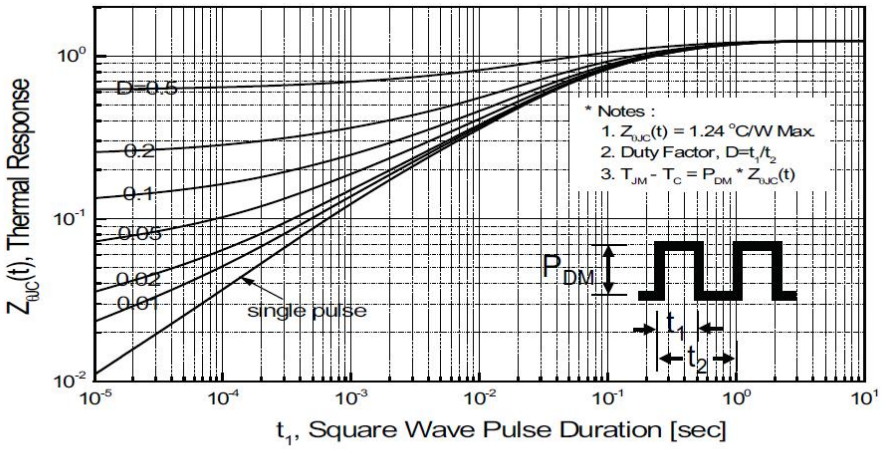
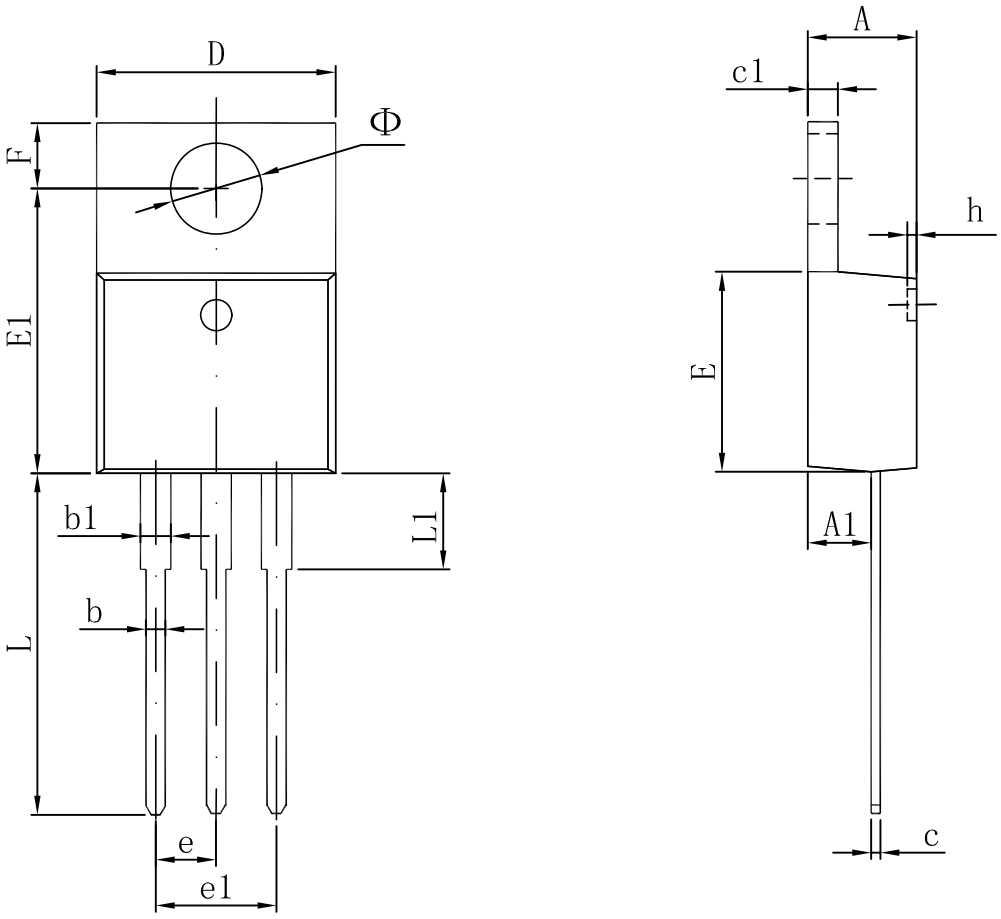


Figure 11. Transient Thermal Response Curve

Package Information
TO-220H



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155

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