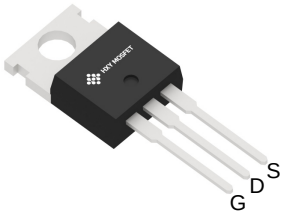
Description

The AOT416 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.

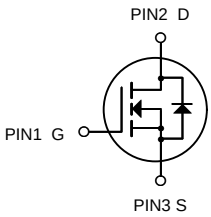


TO-220
(TO-220AB)

General Features

V_{DS} = 100V,I_D = 33A

$R_{DS(ON)}$ < 38mΩ @ 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
AOT416	TO-220(TO-220AB)	HXY MOSFET	50

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	100	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Drain Current	33	A
IDM	Pulsed Drain Current	120	A
P_D@T_C=25°C	Total Power Dissipation	130	W
TSTG	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Electrical Characteristics (T_C=25°Cunless 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	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V	-	-	1	μA
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=15A	-	30	38	mΩ
Forward Transconductance	g_{FS}	V_{DS}=10V,I_D=20A	45	-	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=50V,V_{GS}=0V, F=1.0MHz	-	1280	-	PF
Output Capacitance	C_{oss}		-	300	-	PF
Reverse Transfer Capacitance	C_{rss}		-	26	-	PF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=50V,I_D=15A R_G=4.7Ω (Note 2)	-	12	-	nS
Turn-on Rise Time	t_r		-	18	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	23	-	nS
Turn-Off Fall Time	t_f		-	6	-	nS
Total Gate Charge	Q_g	V_{DS}=50V,I_D=30A, V_{GS}=10V (Note 2)	-	20	-	nC
Gate-Source Charge	Q_{gs}		-	10	-	nC
Gate-Drain Charge	Q_{gd}		-	5	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=15A	-		1.4	V
Diode Forward Current (Note 2)	I_S		-	-	33	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

Typical Characteristics

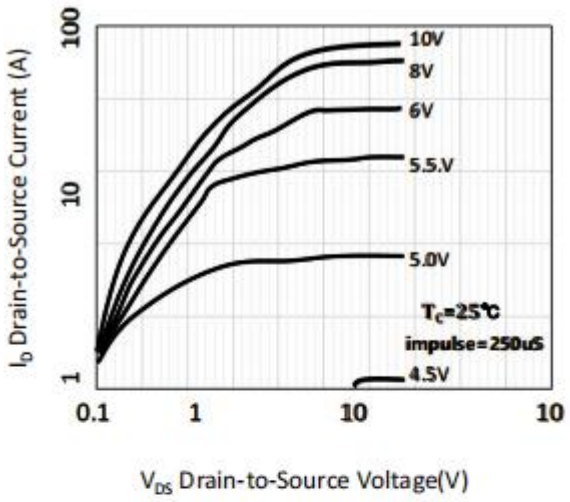


Figure 1. Typical Output Characteristics

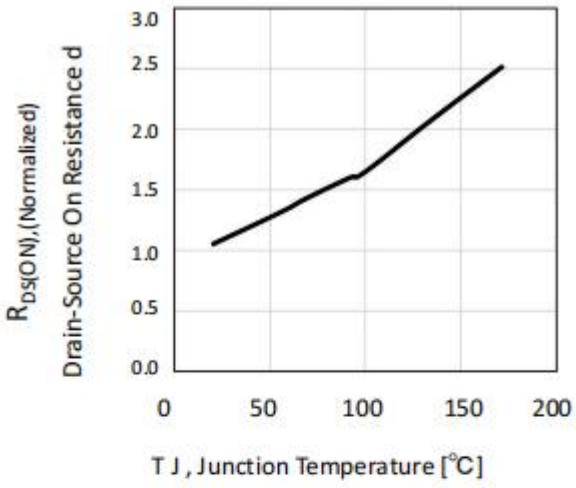


Figure 2. Typical Output Characteristics

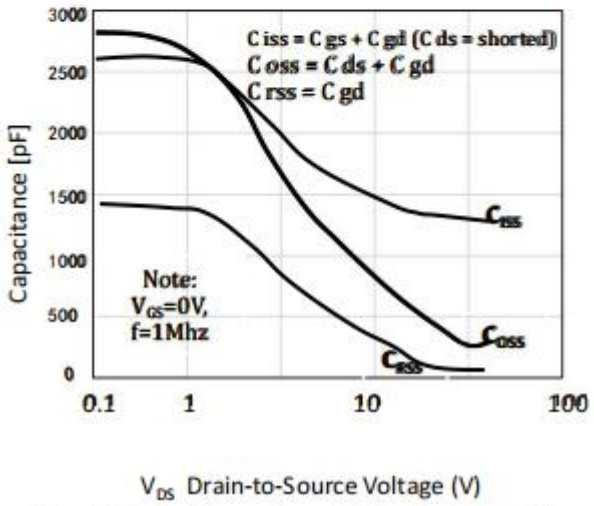


Figure3. Typical Capacitance Vs Drain-Source Voltage

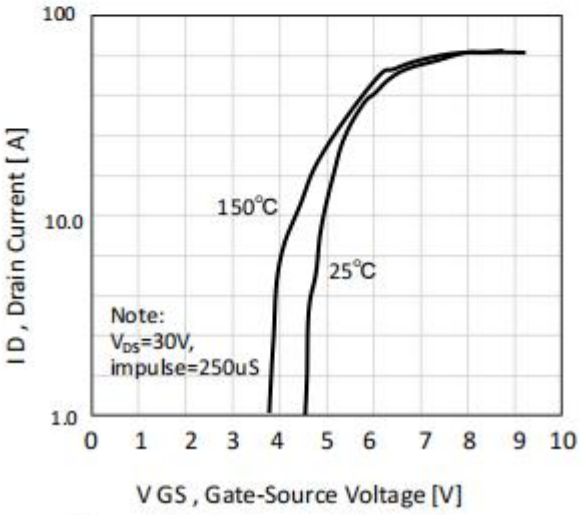


Figure 4. On-Resistance Vs Drain Current

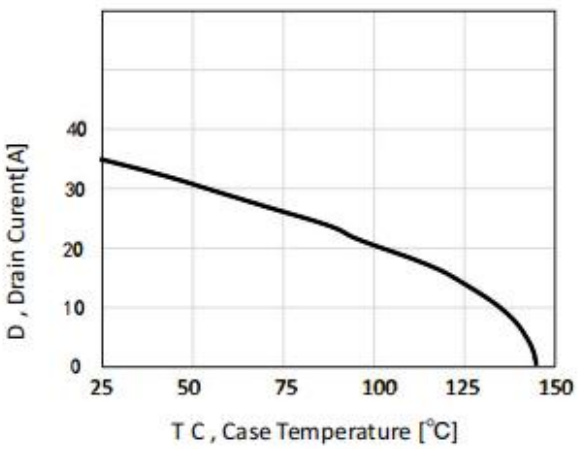


Figure 5. Maximum Drain Current Vs Temperature

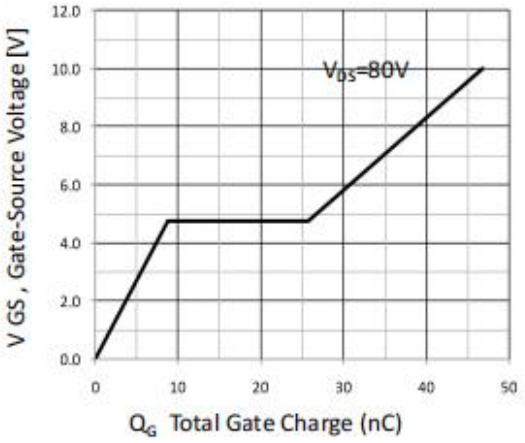


Figure 6. Typical Gate Charge Vs Gate-Source Voltage

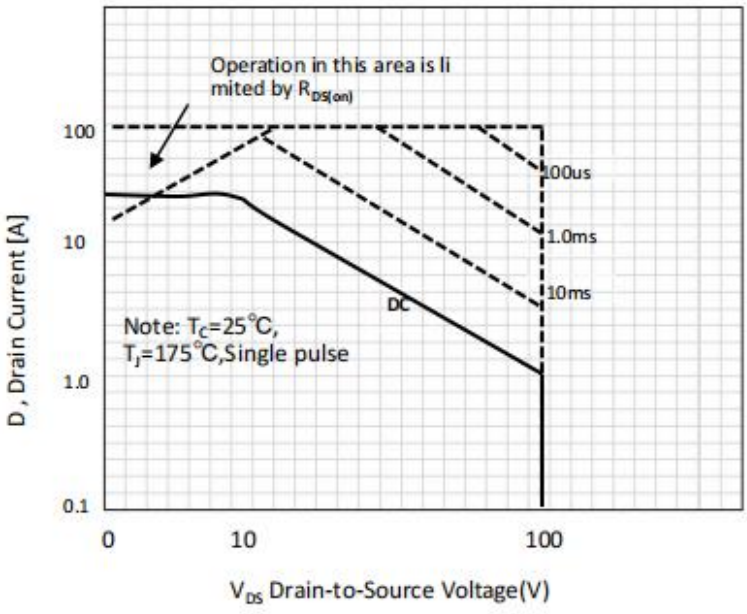
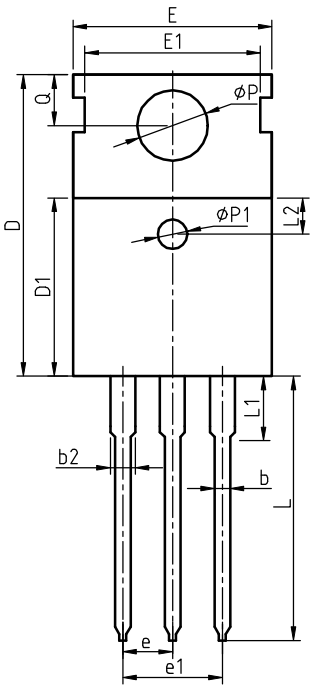
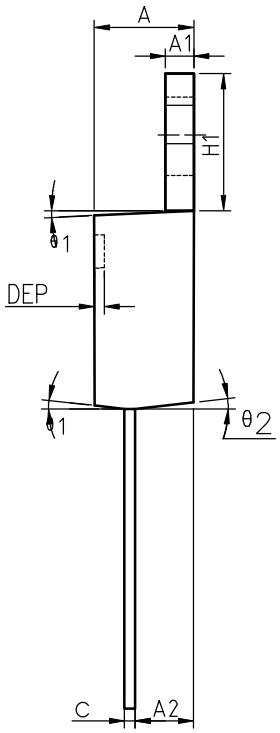
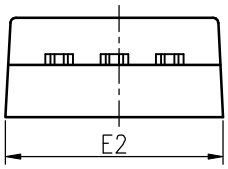


Figure 7. Maximum Safe Operating Area

Package Information
TO-220(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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