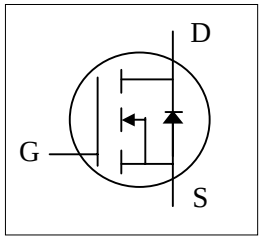
AP10N60W

RoHS-compliant Product

Advanced Power Electronics Corp.

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

- **100% Avalanche Test**
- **Fast Switching Characteristic**
- **Simple Drive Requirement**

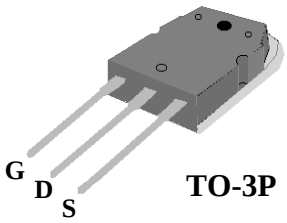


BV_{DSS}	600V
$R_{DS(ON)}$	0.75Ω
I_D	10A

Description

AP10N60 series are specially designed as main switching devices for universal 90~265VAC off-line AC/DC converter applications. The TO-3P type provide high blocking voltage to overcome voltage surge and sag in the toughest power system with the best combination of fast switching,ruggedized design and cost-effectiveness.

The TO-3P package is widely preferred for commercial-industrial applications. The device is suited for switch mode power supplies, DC-AC converters and high current high speed switching circuits.



TO-3P

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	10	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	5.8	A
I_{DM}	Pulsed Drain Current[1]	36	A
P_D@T_C=25℃	Total Power Dissipation	156	W
E_{AS}	Single Pulse Avalanche Energy[2]	50	mJ
I_{AR}	Avalanche Current	10	A
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-c	Maximum Thermal Resistance, Junction-case	0.8	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient	40	℃/W

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=1mA	600	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[3]	V_{GS}=10V, I_D=4A	-	-	0.75	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	2	-	4	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=4A	-	3.8	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=480V, V_{GS}=0V	-	-	25	uA
	Drain-Source Leakage Current (T_j=150°C)	V_{DS}=480V, V_{GS}=0V	-	-	250	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±30V	-	-	±100	nA
Q_g	Total Gate Charge[3]	I_D=8A	-	45	72	nC
Q_{gs}	Gate-Source Charge	V_{DS}=480V	-	11	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=10V	-	15	-	nC
$t_{d(on)}$	Turn-on Delay Time[3]	V_{DD}=300V	-	16	-	ns
t_r	Rise Time	I_D=4A	-	9	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=10Ω,V_{GS}=4.7V	-	48	-	ns
t_f	Fall Time	R_D=75Ω	-	11	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	2380	3800	pF
C_{oss}	Output Capacitance	V_{DS}=15V	-	475	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	4.3	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[3]	T_j=25℃, I_S=8A, V_{GS}=0V	-	-	1.5	V
t_{rr}	Reverse Recovery Time[3]	I_S=8A, V_{GS}=0V,	-	550	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	9.2	-	uC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Starting T_j=25°C , V_{DD}=50V , L=1.0mH , R_G=25Ω , I_{AS}=10A.

3.Pulse test

THIS PRODUCT IS AN ELECTROSTATIC SENSITIVE, PLEASE HANDLE WITH CAUTION.

THIS PRODUCT HAS BEEN QUALIFIED FOR CONSUMER MARKET. APPLICATIONS OR USES AS CRITERIAL COMPONENT IN LIFE SUPPORT DEVICE OR SYSTEM ARE NOT AUTHORIZED.

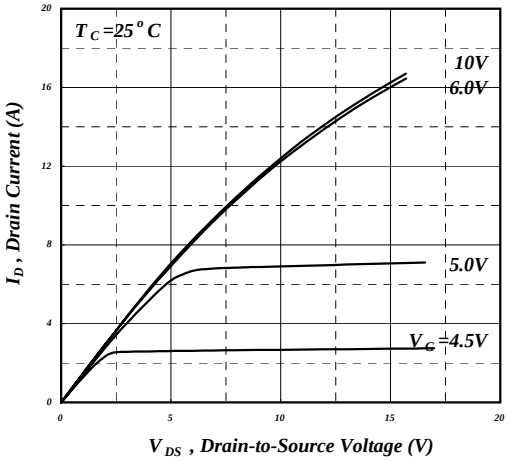


Fig 1. Typical Output Characteristics

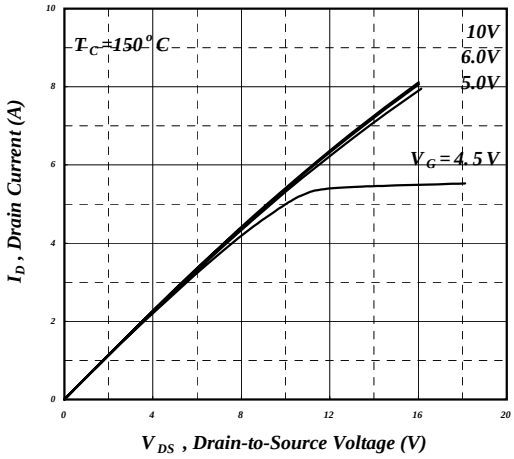


Fig 2. Typical Output Characteristics

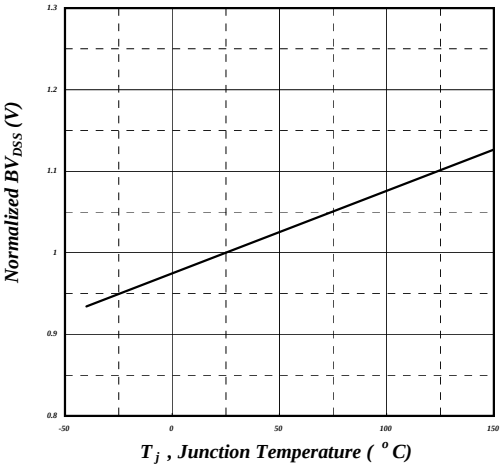


Fig 3. Normalized BV_{DSS} v.s. Junction Temperature

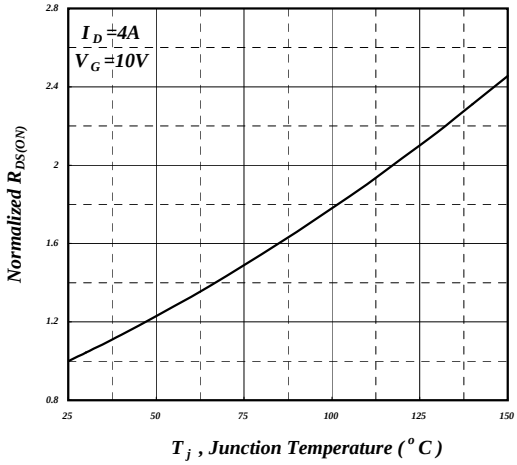


Fig 4. Normalized On-Resistance v.s. Junction Temperature

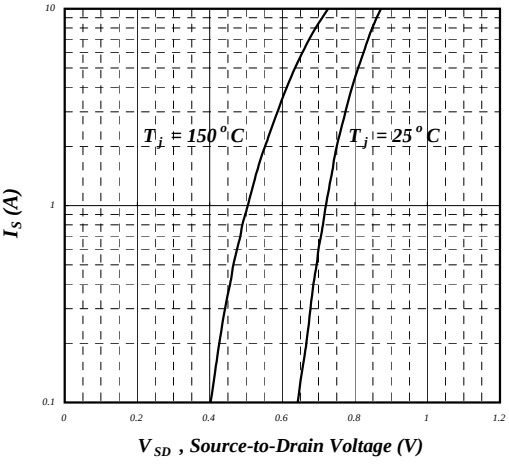


Fig 5. Forward Characteristic of Reverse Diode

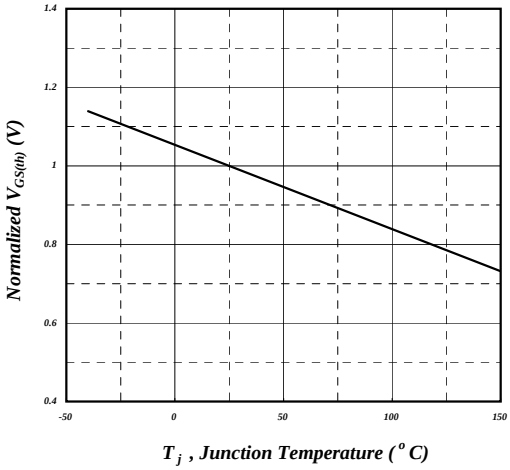


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

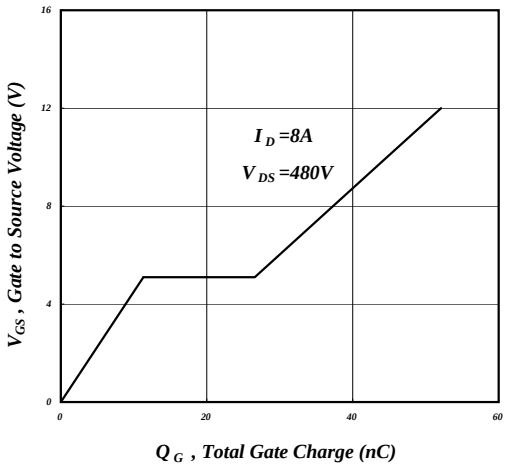


Fig 7. Gate Charge Characteristics

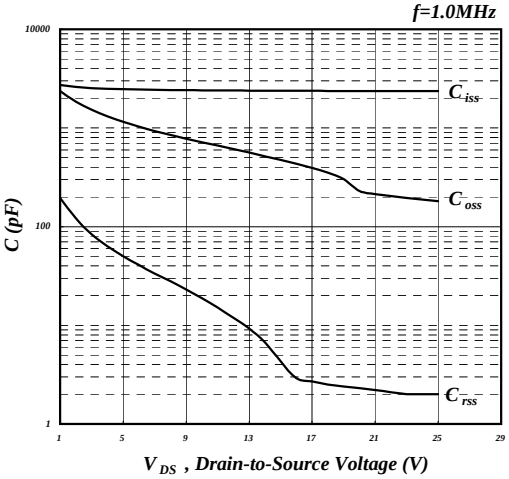


Fig 8. Typical Capacitance Characteristics

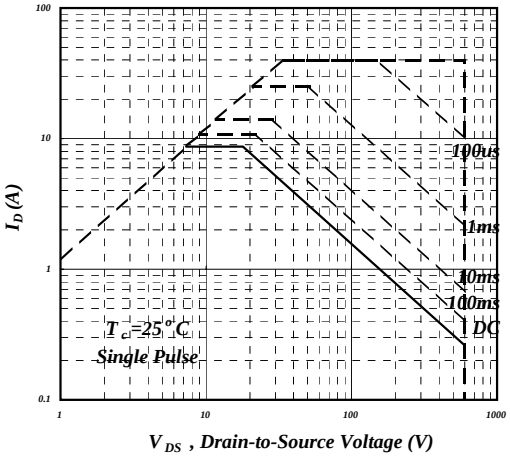


Fig 9. Maximum Safe Operating Area

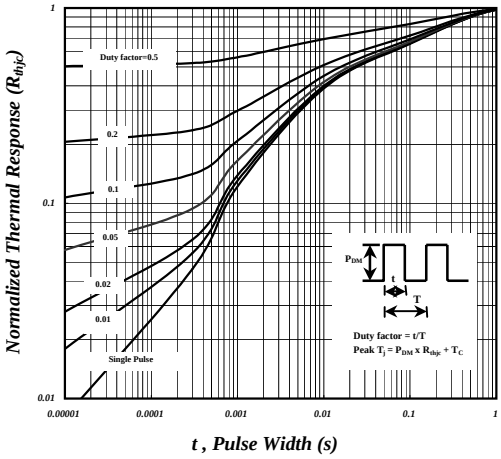


Fig 10. Effective Transient Thermal Impedance

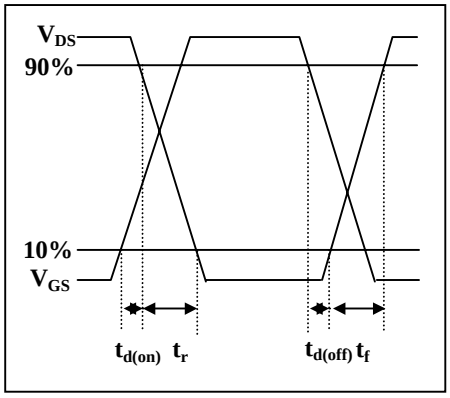


Fig 11. Switching Time Waveform

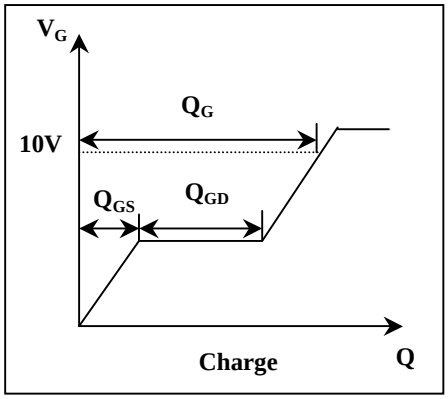
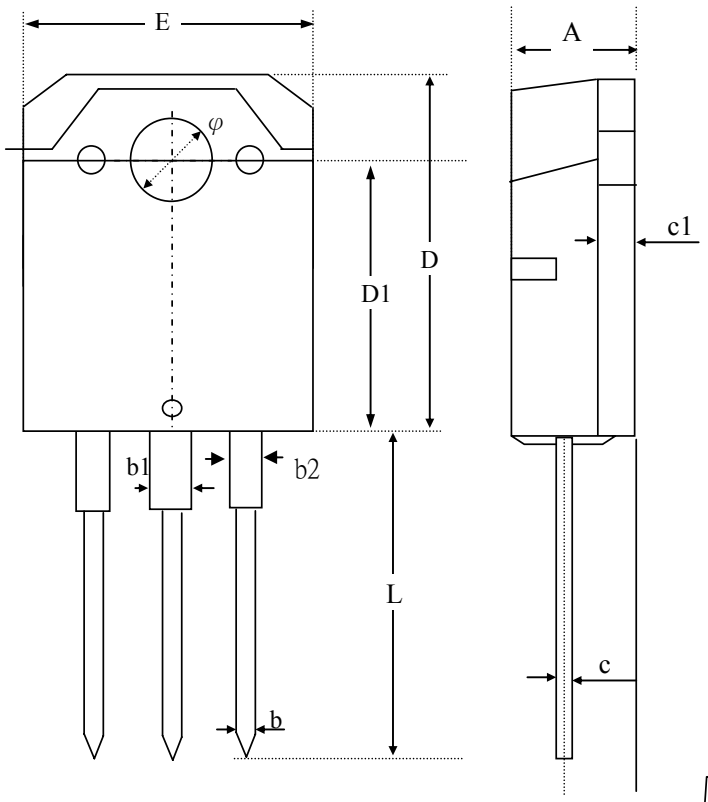


Fig 12. Gate Charge Waveform

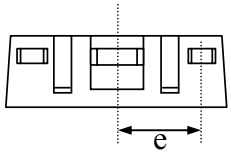
Package Outline : TO-3P



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	4.50	4.80	5.10
b	0.90	1.00	1.30
b1	1.80	2.50	3.20
b2	1.30	--	2.30
c	0.40	0.60	0.90
c1	1.40	--	2.20
D	19.70	20.00	20.30
D1	14.70	15.00	15.30
E	15.30	--	16.10
e	4.45	5.45	6.45
L	17.50	--	20.50
φ	3.00	3.20	3.40

1.All Dimensions Are in Millimeters.

2.Dimension Does Not Include Mold Protrusions.



Part Marking Information & Packing : TO-3P

