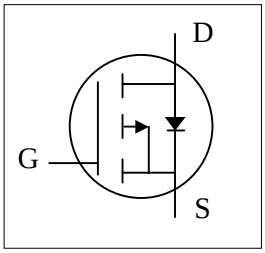
AP9575AGJ

RoHS-compliant Product

Advanced Power Electronics Corp.

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

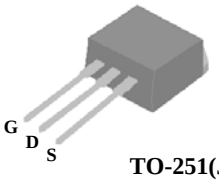
- ▼ **Higher Gate-Source Voltage**
- ▼ **Simple Drive Requirement**
- ▼ **Fast Switching Characteristic**



BV_{DSS}	-60V
$R_{DS(ON)}$	64mΩ
I_D	-17A

Description

The TO-251 package is universally preferred for all commercial-industrial applications and suited for low voltage applications such as DC/DC converters.



TO-251(J)

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	±30	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	-17	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	-11	A
I_{DM}	Pulsed Drain Current[1]	-60	A
P_D@T_C=25℃	Total Power Dissipation	36	W
	Linear Derating Factor	0.29	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter		Value	Units
Rthj-c	Thermal Resistance Junction-case	Max.	3.5	℃/W
Rthj-a	Thermal Resistance Junction-ambient	Max.	110	℃/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=-250uA	-60	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V, I_D=-12A	-	-	64	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	-1	-	-3	V
g_{fs}	Forward Transconductance	V_{DS}=-10V, I_D=-9A	-	8.8	-	S
I_{DSS}	Drain-Source Leakage Current (T_j=25°C)	V_{DS}=-60V, V_{GS}=0V	-	-	-10	uA
	Drain-Source Leakage Current (T_j=150°C)	V_{DS}=-48V, V_{GS}=0V	-	-	-25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}= ±30V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=-9A	-	25	40	nC
Q_{gs}	Gate-Source Charge	V_{DS}=-48V	-	3.4	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=-10V	-	10	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=-30V	-	11	-	ns
t_r	Rise Time	I_D=-9A	-	38	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=-10V	-	26	-	ns
t_f	Fall Time	R_D=3.3Ω	-	64	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	970	1550	pF
C_{oss}	Output Capacitance	V_{DS}=-25V	-	150	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	115	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=-9A, V_{GS}=0V	-	-	-1.2	V
t_{rr}	Reverse Recovery Time[2]	I_S=-9A, V_{GS}=0V,	-	35	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=-100A/μs	-	50	-	nC

Notes:

1.Pulse width limited Max. junction temperature.

2.Pulse test

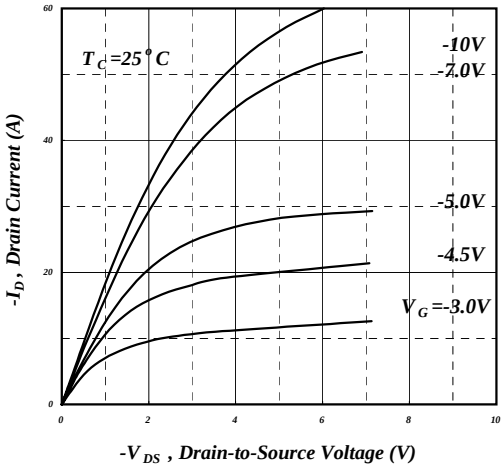


Fig 1. Typical Output Characteristics

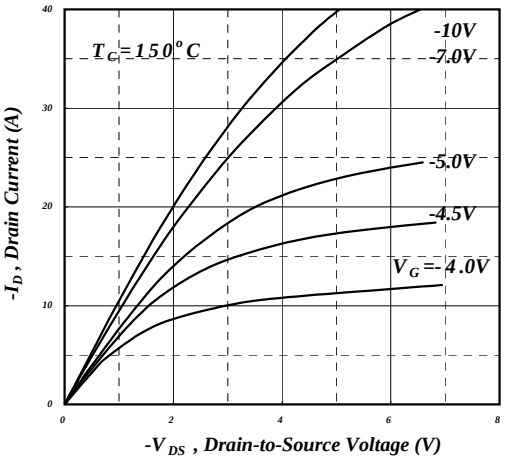


Fig 2. Typical Output Characteristics

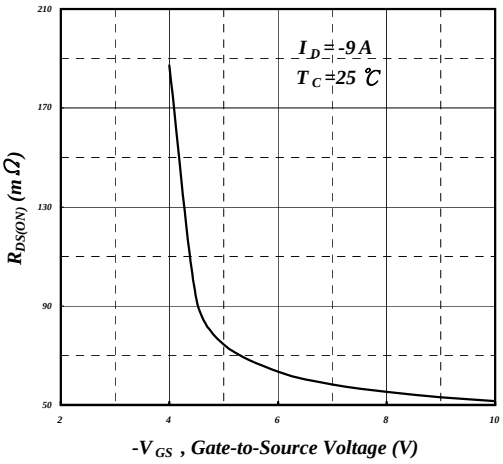


Fig 3. On-Resistance v.s. Gate Voltage

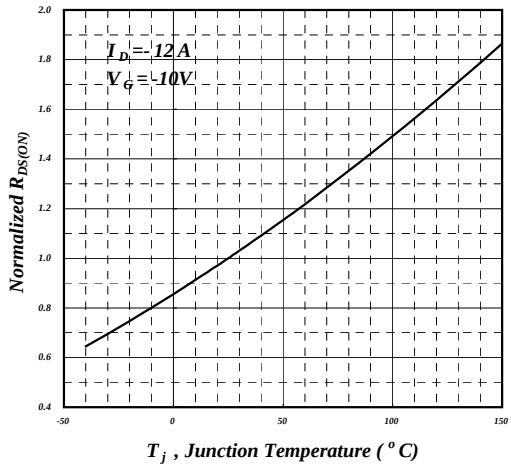


Fig 4. Normalized On-Resistance v.s. Junction Temperature

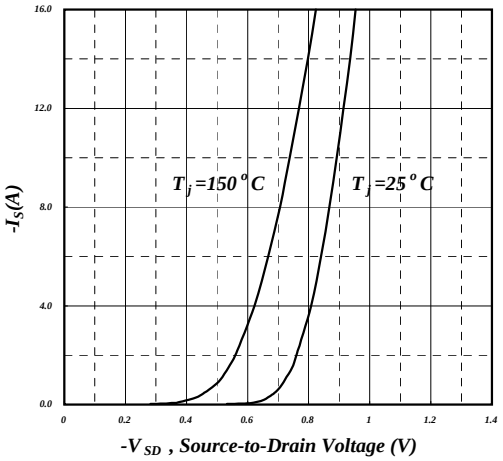


Fig 5. Forward Characteristic of Reverse Diode

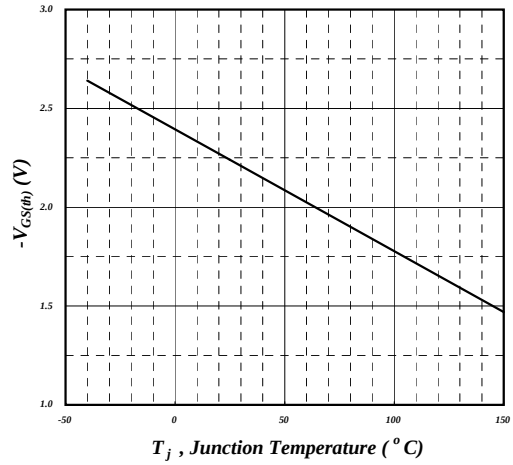


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

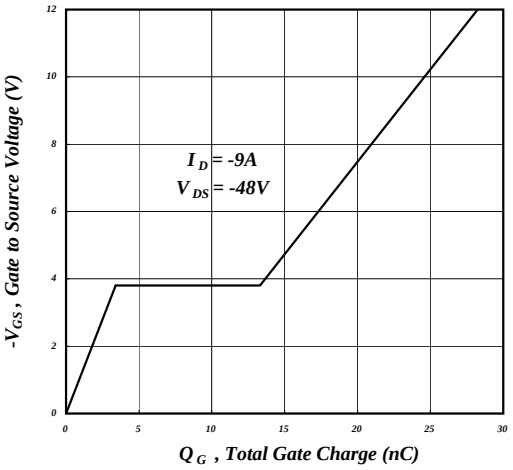


Fig 7. Gate Charge Characteristics

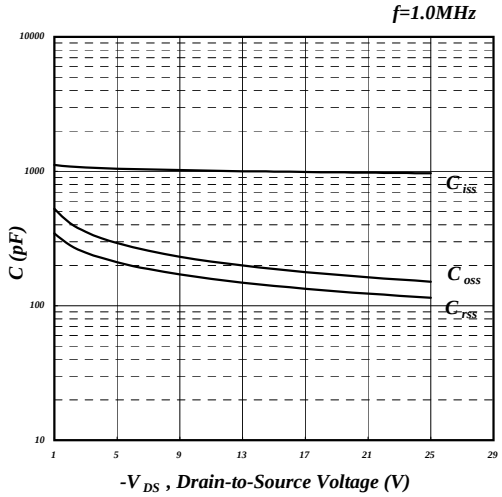


Fig 8. Typical Capacitance Characteristics

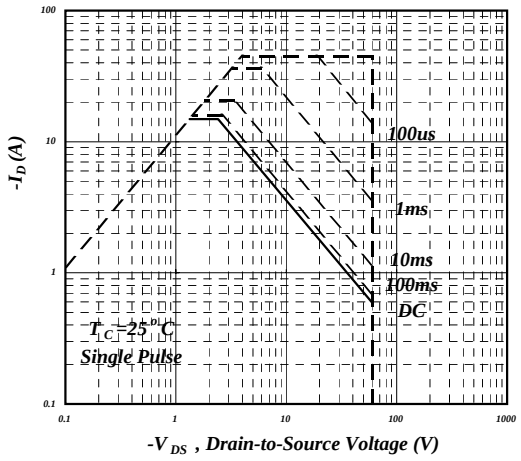


Fig 9. Maximum Safe Operating Area

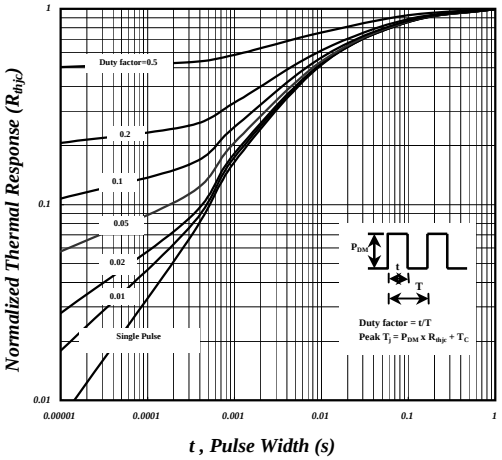


Fig 10. Effective Transient Thermal Impedance

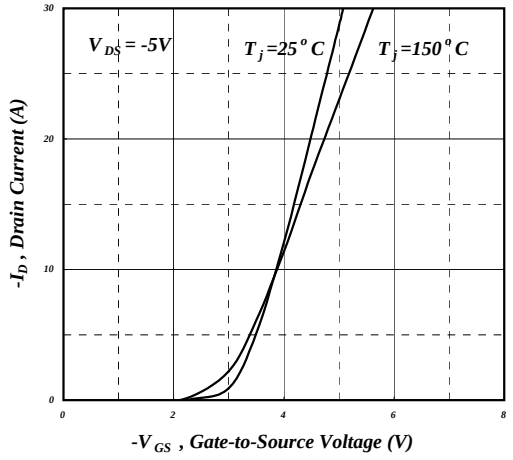


Fig 11. Transfer Characteristics

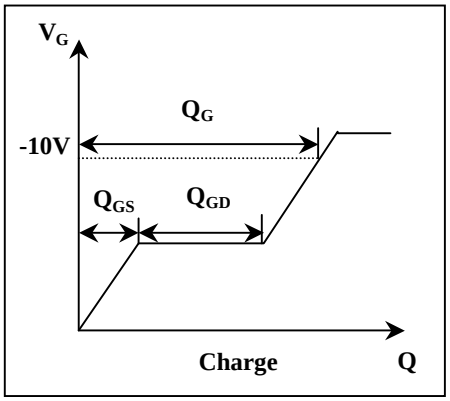
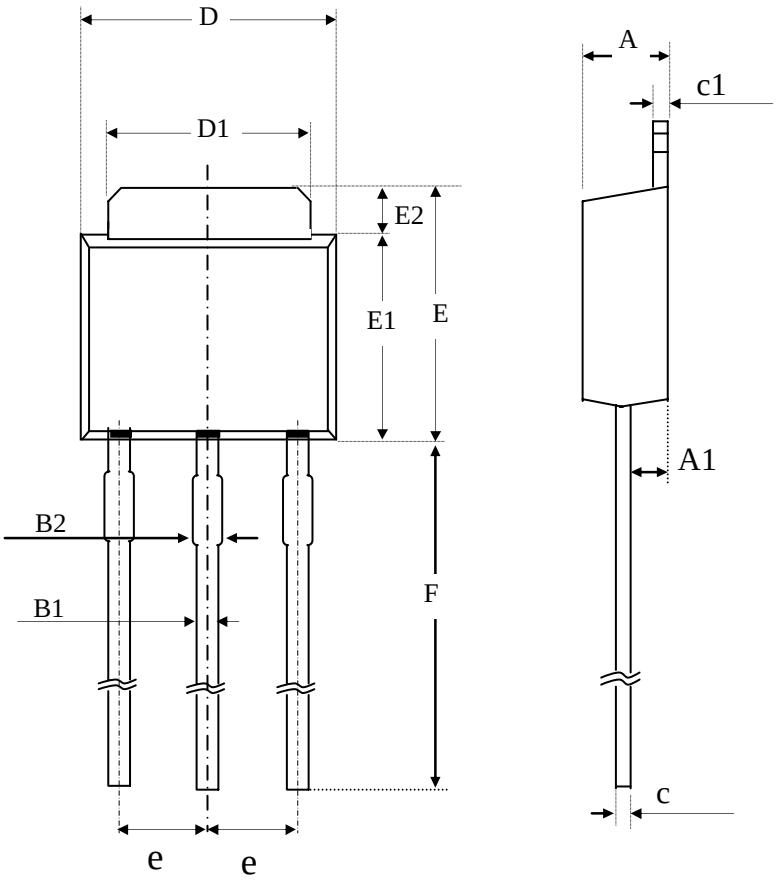


Fig 12. Gate Charge Waveform



SYMBOLS	Millimeters		
	MIN	NOM	MAX
	Original	Original	Original
A	2.10	2.30	2.50
A1	0.60	1.20	1.80
B1	0.40	0.60	0.80
B2	0.60	0.95	1.25
c	0.40	0.50	0.65
c1	0.40	0.55	0.70
D	6.00	6.50	7.00
D1	4.80	5.40	5.90
E1	5.00	5.50	6.00
E2	1.20	1.70	2.20
e	----	2.30	----
F	7.00	---	16.70

1.All Dimensions Are in Millimeters.

2.Dimension Does Not Include Mold Protrusions.

Part Marking Information & Packing : TO-251