Halogen-Free Product

Advanced Power Electronics Corp.
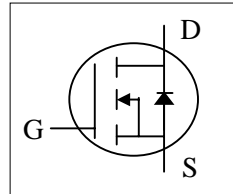
N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

▼ **Lower Gate Charge**

▼ **Simple Drive Requirement**

▼ **Fast Switching Characteristic**

▼ **RoHS Compliant & Halogen-Free**

BV_{DSS}		40V
$R_{DS(ON)}$		7mΩ
$I_D{}^3$		75A

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G

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TO-252(H)

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D S

TO-251(J)

Description

AP9468 series are from Advanced Power innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

The TO-252 package is widely preferred for all commercial-industrial surface mount applications using infrared reflow technique and suited for high current application due to the low connection resistance. The through-hole version (AP9468GJ) are available for low-profile applications.
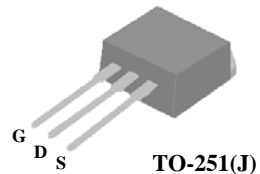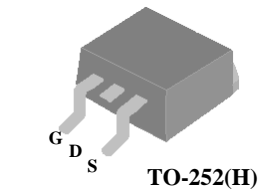
Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	$\pm$20	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V[3]	75	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 10V	57	A
I_{DM}	Pulsed Drain Current[1]	300	A
P_D@T_C=25℃	Total Power Dissipation	89	W
	Linear Derating Factor	0.7	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	Maximum Thermal Resistance, Junction-case	1.4	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient (PCB mount)[4]	62.5	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient	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	40	-	-	V
$\triangle$BV$_{DSS}$/$\triangle$T$_j$	Breakdown Voltage Temperature Coefficient	Reference to 25℃, I$_D$=250uA	-	0.01	-	V/℃
R$_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V$_{GS}$=10V, I$_D$=45A	-	-	7	mΩ
		V$_{GS}$=4.5V, I$_D$=30A	-	-	9	mΩ
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_D$=250uA	0.5	-	1.5	V
g$_{fs}$	Forward Transconductance	V$_{DS}$=10V, I$_D$=30A	-	75	-	S
I$_{DSS}$	Drain-Source Leakage Current	V$_{DS}$=40V, V$_{GS}$=0V	-	-	1	uA
	Drain-Source Leakage Current (T$_j$=70°C)	V$_{DS}$=32V, V$_{GS}$=0V	-	-	25	uA
I$_{GSS}$	Gate-Source Leakage	V$_{GS}$=±20V	-	-	±100	nA
Q$_g$	Total Gate Charge[2]	I$_D$=30A	-	36	58	nC
Q$_{gs}$	Gate-Source Charge	V$_{DS}$=30V	-	4	-	nC
Q$_{gd}$	Gate-Drain ("Miller") Charge	V$_{GS}$=4.5V	-	20	-	nC
t$_{d(on)}$	Turn-on Delay Time[2]	V$_{DS}$=20V	-	8	-	ns
t$_r$	Rise Time	I$_D$=30A	-	62	-	ns
t$_{d(off)}$	Turn-off Delay Time	R$_G$=1.0Ω,V$_{GS}$=10V	-	36	-	ns
t$_f$	Fall Time	R$_D$=0.67Ω	-	16	-	ns
C$_{iss}$	Input Capacitance	V$_{GS}$=0V	-	2235	3580	pF
C$_{oss}$	Output Capacitance	V$_{DS}$=25V	-	365	-	pF
C$_{rss}$	Reverse Transfer Capacitance	f=1.0MHz	-	325	-	pF
R$_g$	Gate Resistance	f=1.0MHz	-	1.8	2.7	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V$_{SD}$	Forward On Voltage[2]	I$_S$=30A, V$_{GS}$=0V	-	-	1.2	V
t$_{rr}$	Reverse Recovery Time[2]	I$_S$=20A, V$_{GS}$=0V,	-	38	-	ns
Q$_{rr}$	Reverse Recovery Charge	dI/dt=100A/µs	-	30	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.Package limitation current is 75A

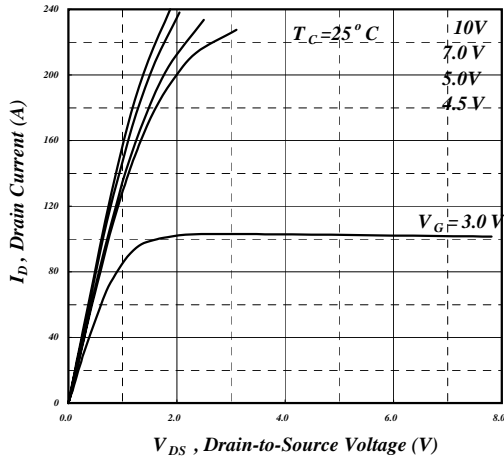4.Surface mounted on 1 in^2 copper pad of FR4 board

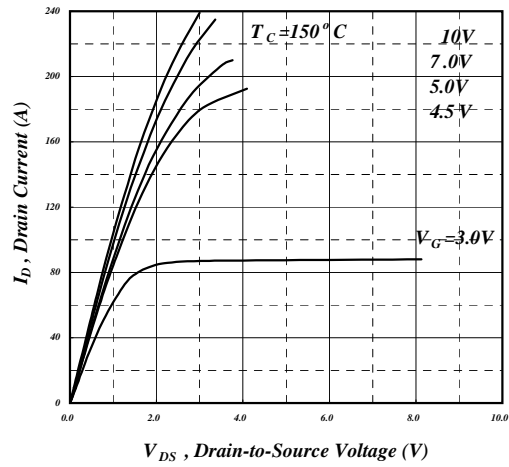**Fig 1. Typical Output Characteristics**

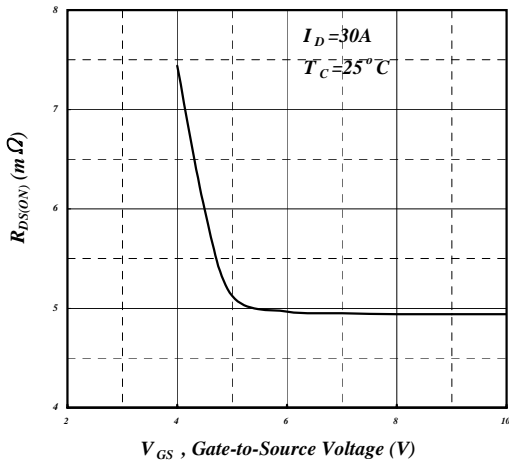

Fig 2. Typical Output Characteristics

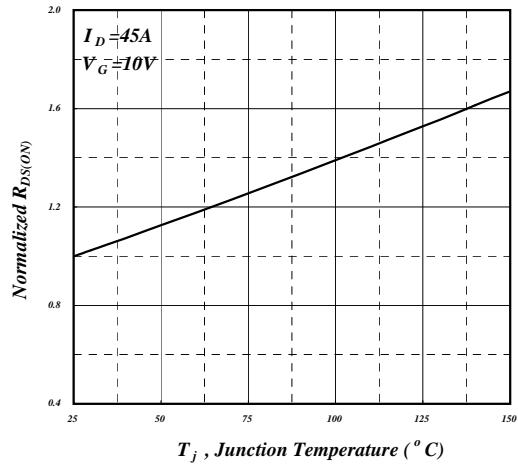**Fig 3. On-Resistance v.s. Gate Voltage**

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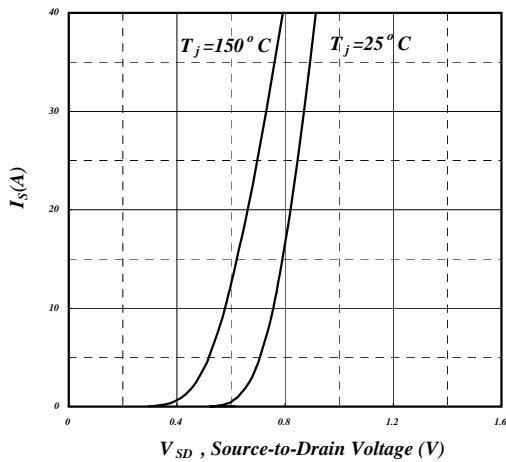v.s. Junction Temperature**
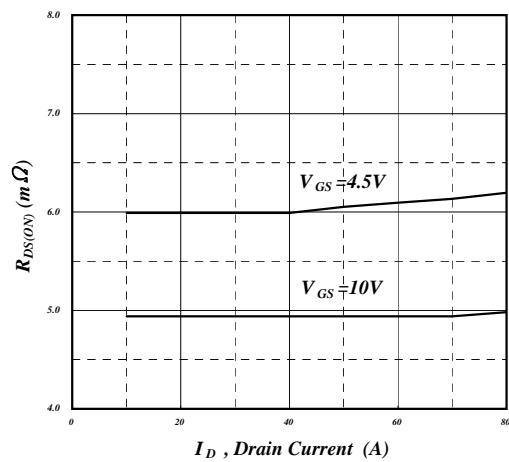

**Fig 5. Forward Characteristic of
Reverse Diode**

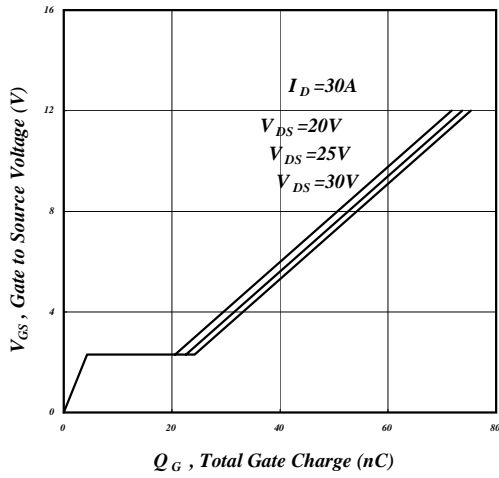

Fig 6. On-Resistance vs. Drain Current
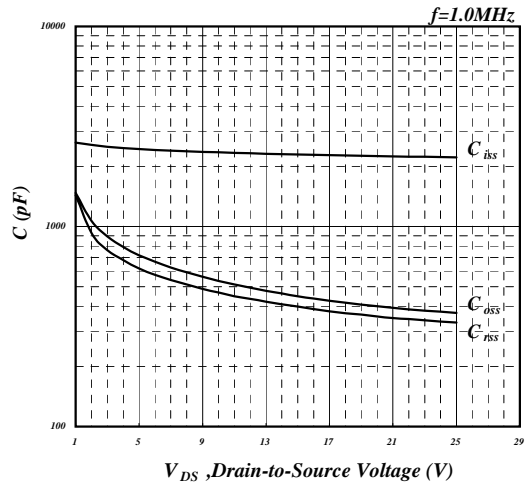
Fig 7. Gate Charge Characteristics

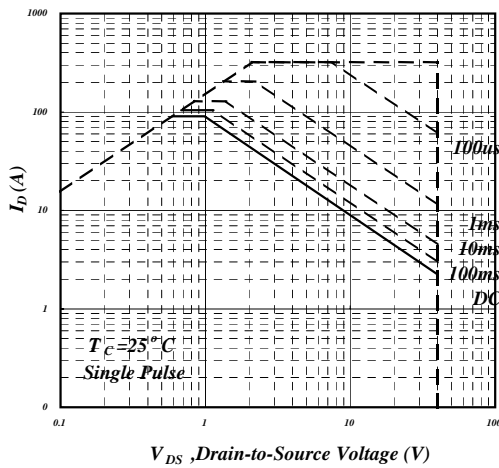**Fig 8. Typical Capacitance Characteristics**
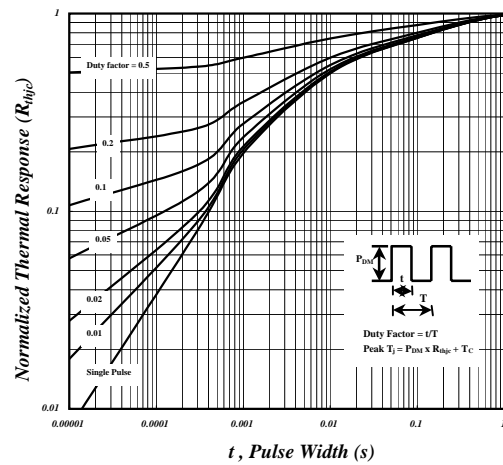

Fig 9. Maximum Safe Operating Area

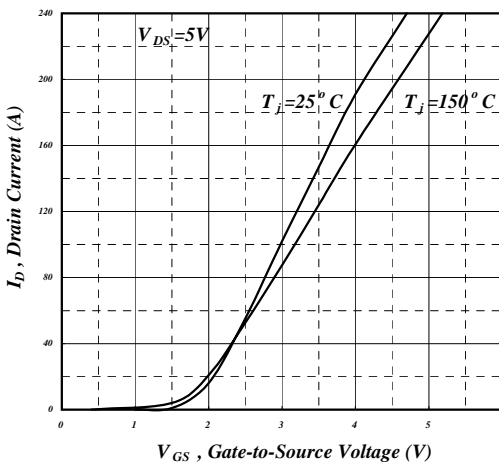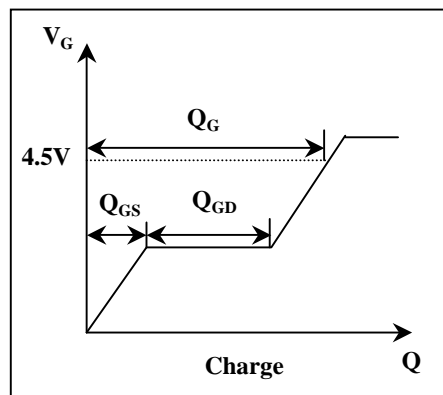**Fig 10. Effective Transient Thermal Impedance**
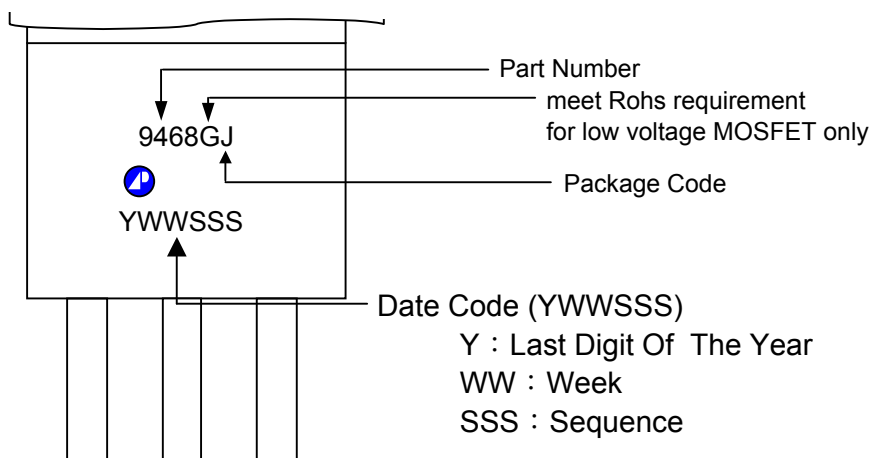

Fig 11. Transfer Characteristics

Fig 12. Gate Charge Waveform

MARKING INFORMATION

TO-251

9468GJ

YWWSSS

Part Number

meet Rohs requirement
for low voltage MOSFET only

Package Code

Date Code (YWWSSS)
Y：Last Digit Of The Year
WW：Week
SSS：Sequence

TO-252

9468GH

YWWSSS

Part Number

meet Rohs requirement
for low voltage MOSFET only

Package Code

Date Code (YWWSSS)
Y：Last Digit Of The Year
WW：Week
SSS：Sequence