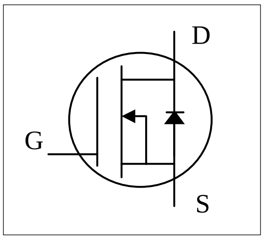
AP9916GH/J

Pb Free Plating Product

Advanced Power Electronics Corp.

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

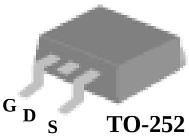
- ▼ **Low on-resistance**
- ▼ **Capable of 2.5V gate drive**
- ▼ **Low drive current**
- ▼ **Surface mount package**



BV_{DSS}	18V
$R_{DS(ON)}$	25mΩ
I_D	35A

Description

The Advanced Power MOSFETs from APEC provide the designer with the best combination of fast switching, ruggedized device design, ultra low on-resistance and cost-effectiveness.



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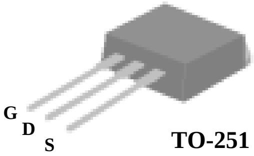


TO-251

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	18	V
V_{GS}	Gate-Source Voltage	± 8	V
$I_D@T_C=25$℃	Continuous Drain Current, V_{GS} @ 4.5V	35	A
$I_D@T_C=125$℃	Continuous Drain Current, V_{GS} @ 4.5V	16	A
I_{DM}	Pulsed Drain Current[1]	90	A
$P_D@T_C=25$℃	Total Power Dissipation	50	W
	Linear Derating Factor	0.4	W/℃
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	Thermal Resistance Junction-case	Max.	2.5	℃/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	18	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25℃, I_D=1mA	-	0.03	-	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=4.5V, I_D=6A	-	-	25	mΩ
		V_{GS}=2.5V, I_D=5.2A	-	-	40	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.5	-	1	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=6A	-	18	-	S
I_{DSS}	Drain-Source Leakage Current (T_j=25°C)	V_{DS}=18V, V_{GS}=0V	-	-	25	uA
	Drain-Source Leakage Current (T_j=125°C)	V_{DS}=18V ,V_{GS}=0V	-	-	250	uA
I_{GSS}	Gate-Source Leakage	V_{GS}= ± 8V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=18A	-	17.5	-	nC
Q_{gs}	Gate-Source Charge	V_{DS}=18V	-	1.2	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=5V	-	7.9	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=10V	-	7.3	-	ns
t_r	Rise Time	I_D=18A	-	98	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=5V	-	25.6	-	ns
t_f	Fall Time	R_D=0.56Ω	-	98	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	527	-	pF
C_{oss}	Output Capacitance	V_{DS}=18V	-	258	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	112	-	pF

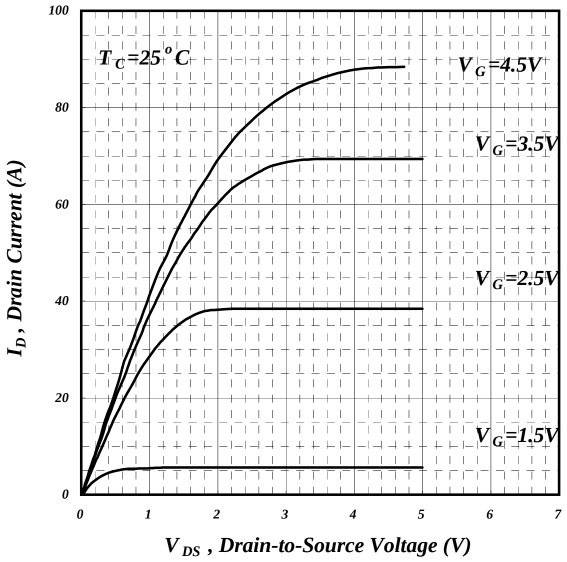
Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_S	Continuous Source Current (Body Diode)	V_D=V_G=0V , V_S=1.3V	-	-	35	A
I_{SM}	Pulsed Source Current (Body Diode)[1]		-	-	90	A
V_{SD}	Forward On Voltage[2]	T_j=25℃, I_S=35A, V_{GS}=0V	-	-	1.3	V

Notes:

1.Pulse width limited by safe operating area.

2.Pulse width $\leq$300us , duty cycle $\leq$2%.



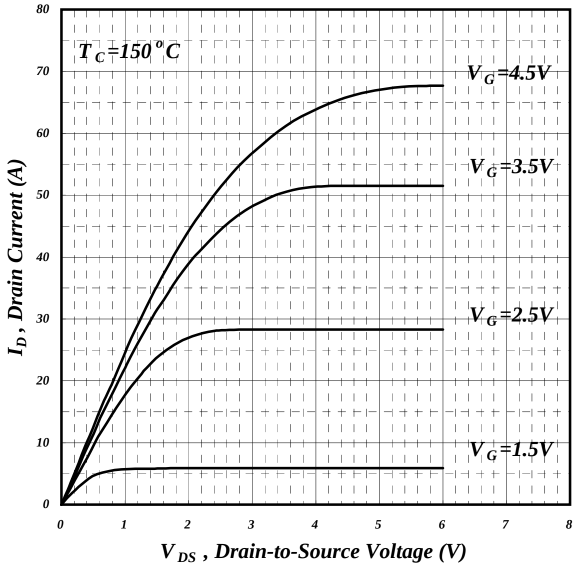
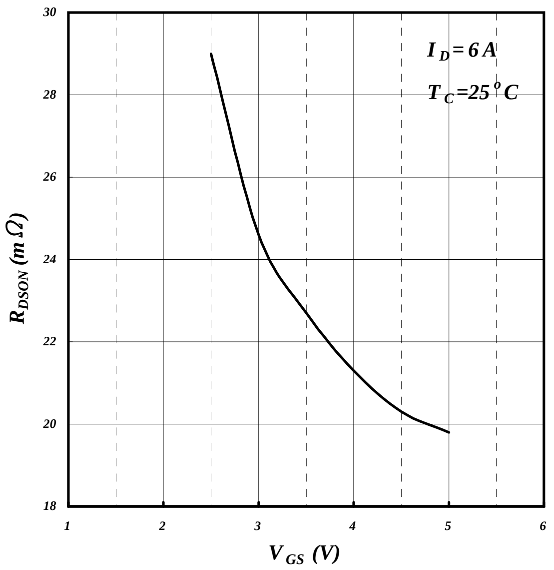
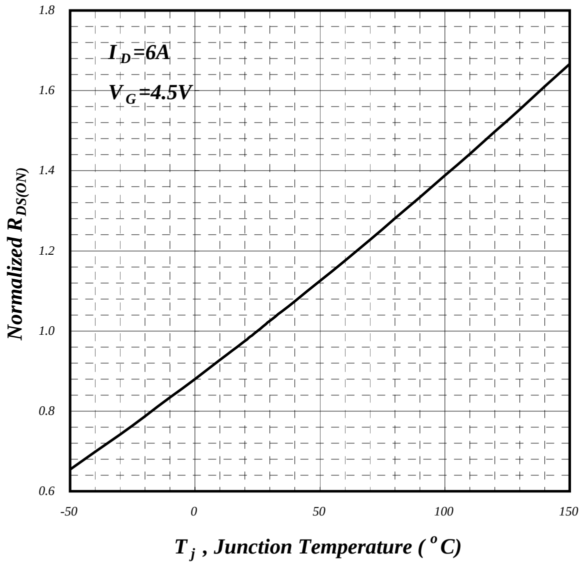


Fig 1. Typical Output Characteristics

Fig 2. Typical Output Characteristics





v.s. Junction Temperature

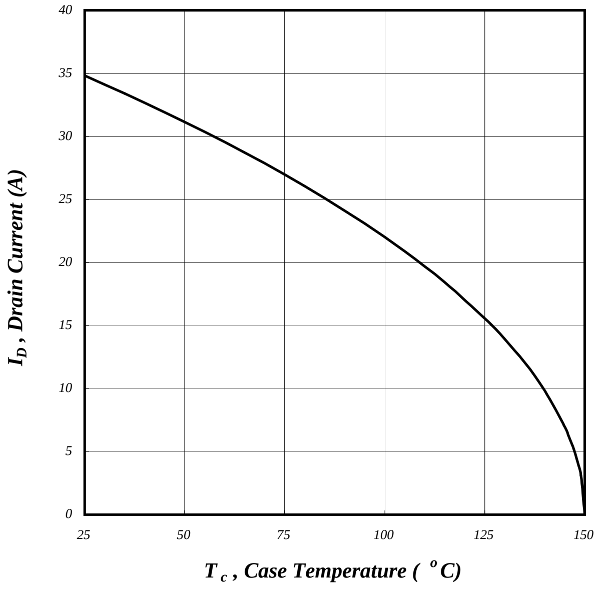


Fig 5. Maximum Drain Current v.s. Case Temperature

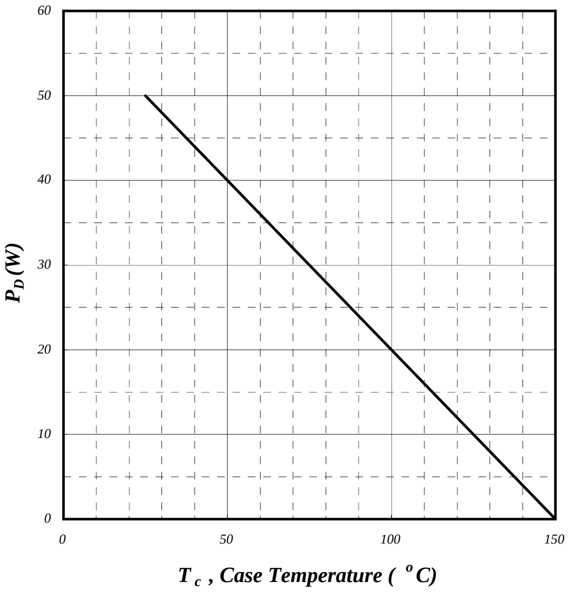
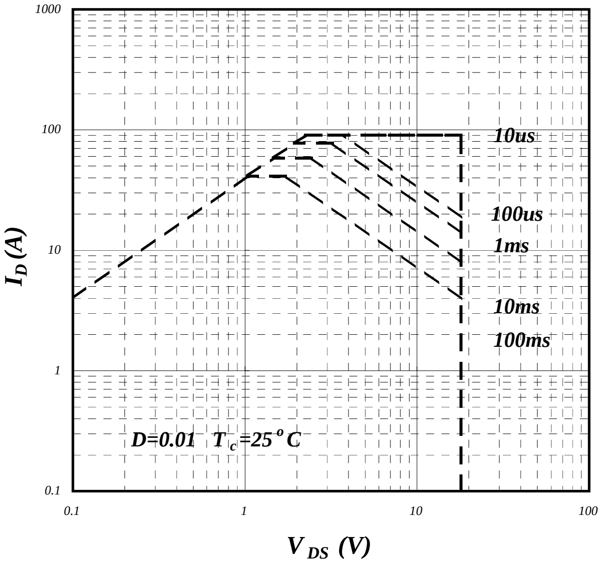
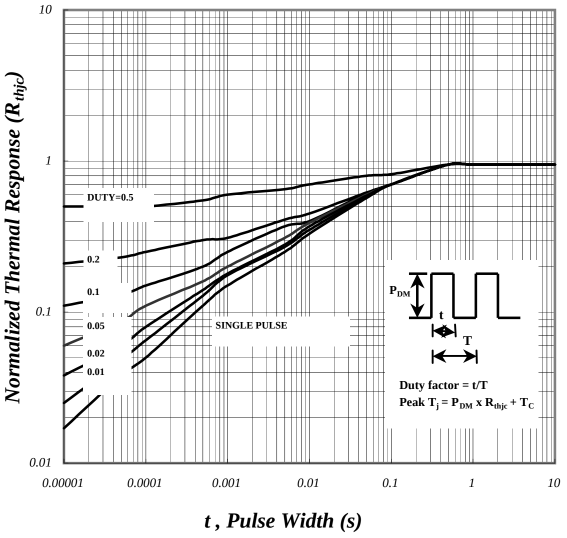


Fig 6. Typical Power Dissipation





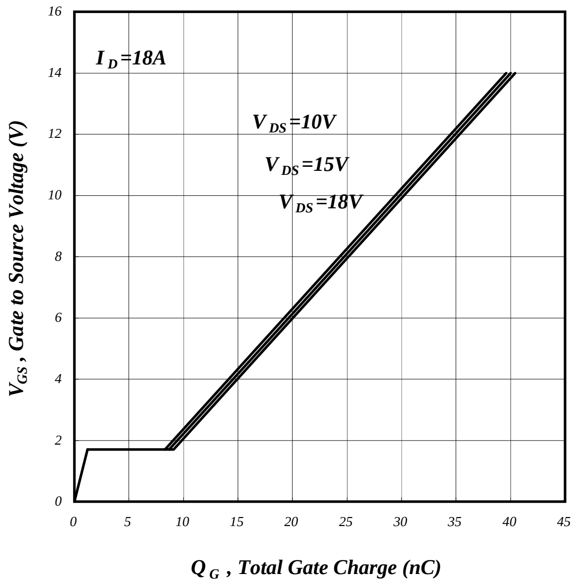


Fig 9. Gate Charge Characteristics

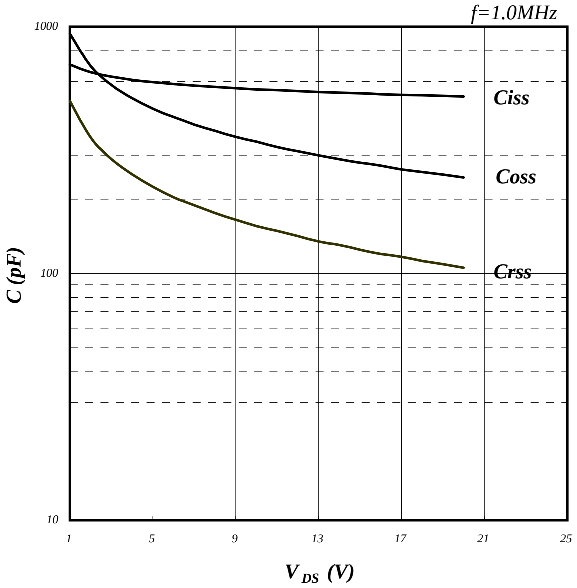
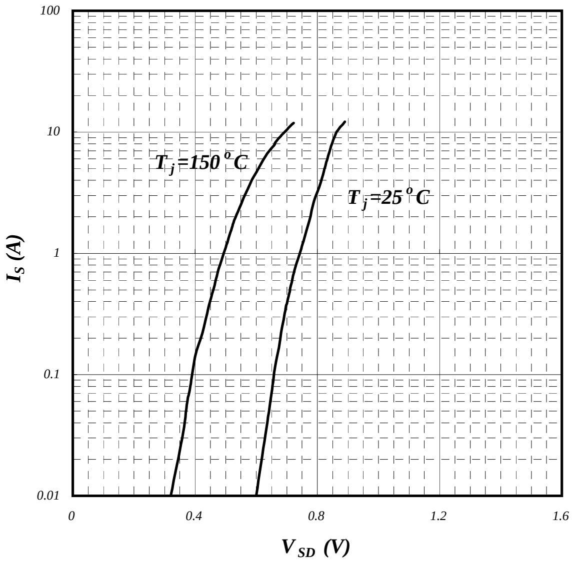
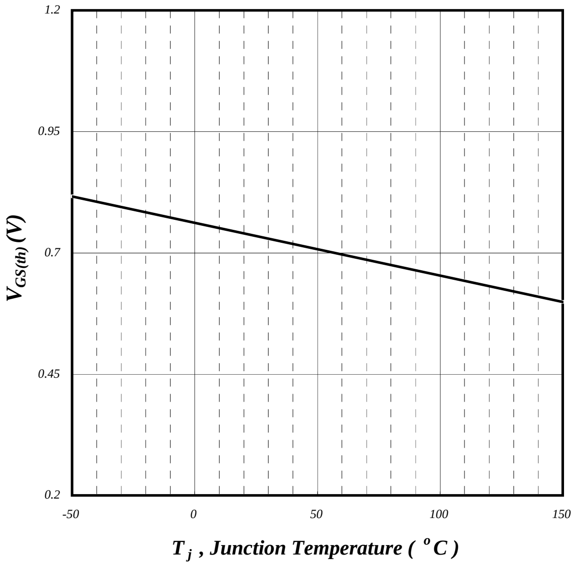


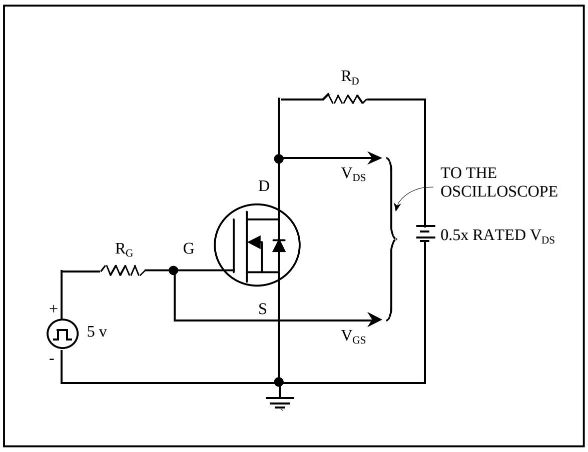
Fig 10. Typical Capacitance Characteristics



Reverse Diode



Junction Temperature



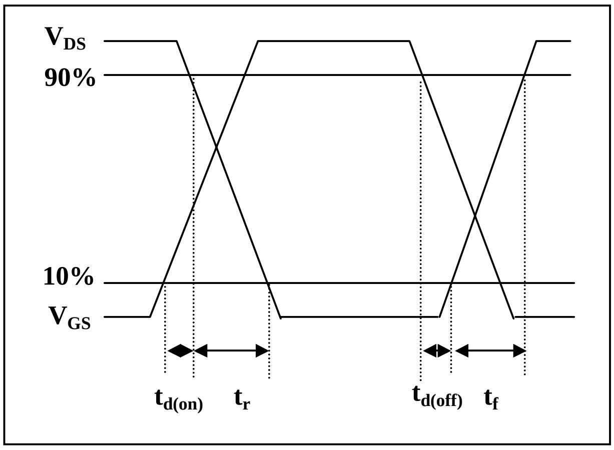


Fig 13. Switching Time Circuit

Fig 14. Switching Time Waveform