深圳市信德意电子有限公司
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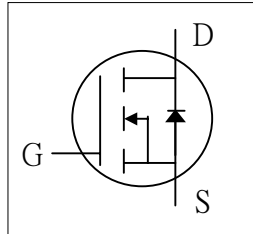
Advanced Power Electronics Corp.

AP9T18GH/J

RoHS-compliant Product
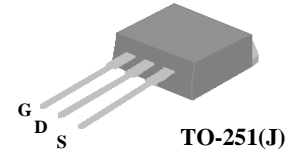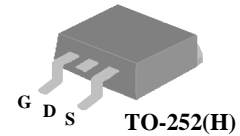
N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

▼ **Low Gate Charge**

▼ **Capable of 2.5V gate drive**

▼ **Surface mount package**

BV_{DSS}	20V
$R_{DS(ON)}$	14mΩ
I_D	38A

Description

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.

TO-252(H)

G D S

TO-251(J)

G D S

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	$\pm$16	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 4.5V	38	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 4.5V	24	A
I_{DM}	Pulsed Drain Current[1]	140	A
P_D@T_C=25℃	Total Power Dissipation	31.3	W
	Linear Derating Factor	0.25	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	4	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient	110	℃/W

AP9T18GH/J

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	20	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25℃, I_D=1mA	-	0.1	-	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V, I_D=18A	-	-	14	mΩ
		V_{GS}=2.5V, I_D=9A	-	-	28	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}=5V, I_D=18A	-	33	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V, V_{GS}=0V	-	-	1	uA
	Drain-Source Leakage Current (T_j=150°C)	V_{DS}=16V ,V_{GS}=0V	-	-	25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±16V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=18A	-	16	25	nC
Q_{gs}	Gate-Source Charge	V_{DS}=16V	-	3	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	9	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=10V	-	12	-	ns
t_r	Rise Time	I_D=18A	-	80	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=5V	-	22	-	ns
t_f	Fall Time	R_D=0.56Ω	-	12	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	1115	1790	pF
C_{oss}	Output Capacitance	V_{DS}=20V	-	280	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	220	-	pF
R_g	Gate Resistance	f=1.0MHz	-	1.54	-	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=18A, V_{GS}=0V	-	-	1.3	V
t_{rr}	Reverse Recovery Time[2]	I_S=18A, V_{GS}=0V,	-	19	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	11	-	nC

Notes:

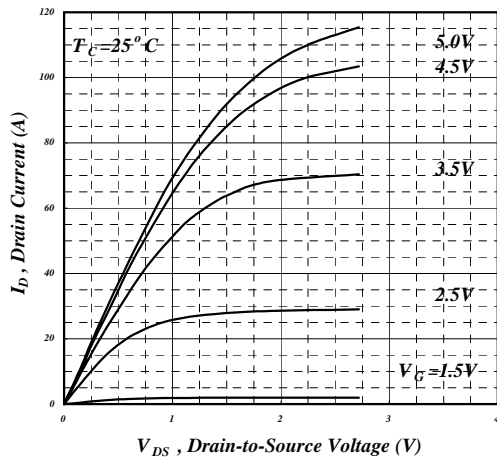1.Pulse width limited by Max. junction temperature.

2.Pulse test

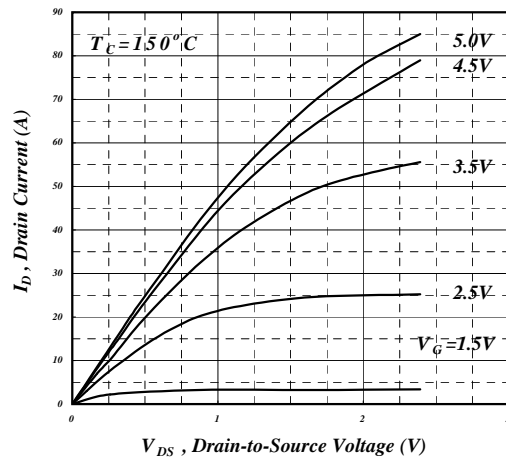Fig 1. Typical Output Characteristics
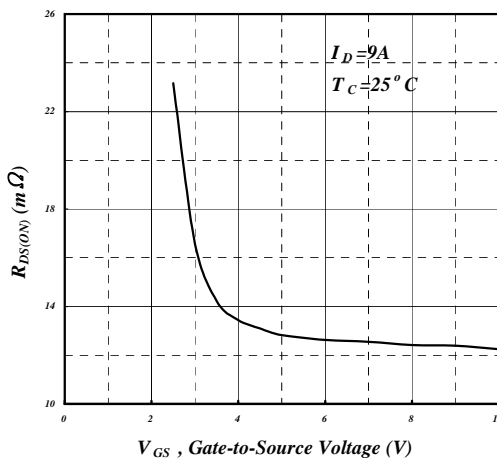
Fig 2. Typical Output Characteristics
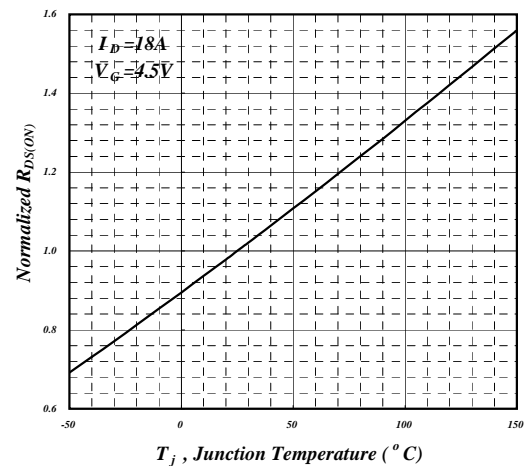
Fig 3. On-Resistance v.s. Gate Voltage

Fig 4. Normalized On-Resistance
v.s. Junction Temperature
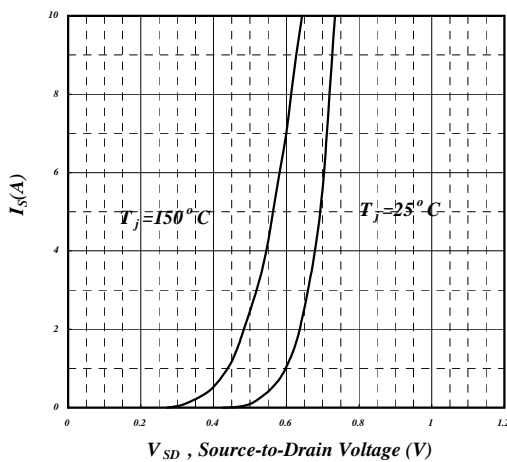
Fig 5. Forward Characteristic of
Reverse Diode

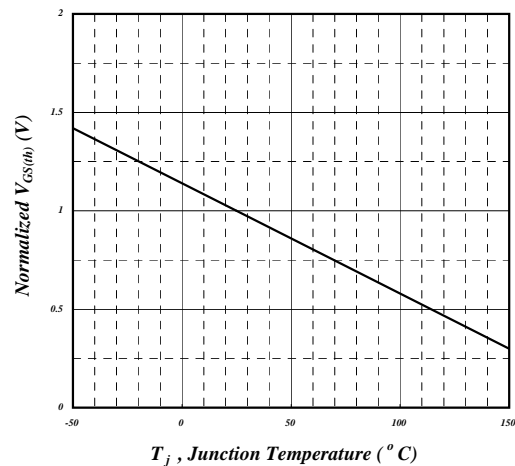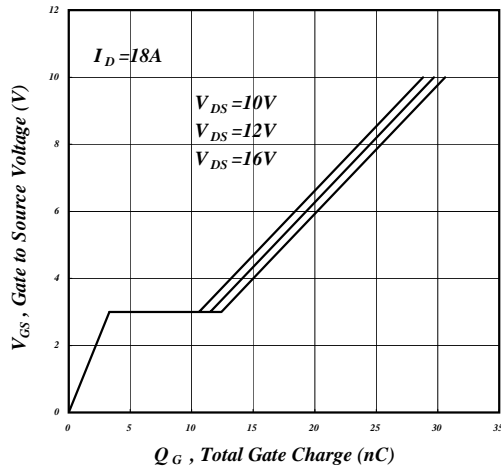Fig 6. Gate Threshold Voltage v.s.
Junction Temperature
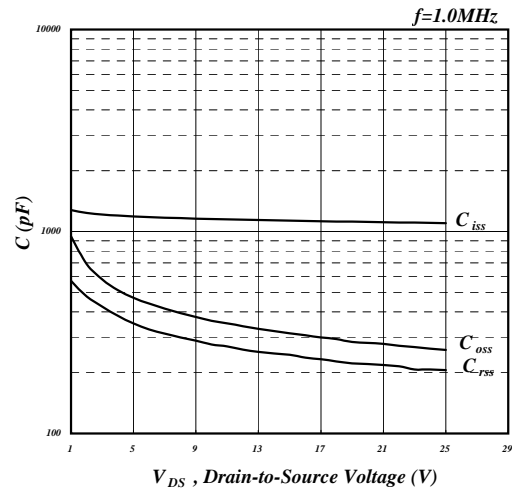
Fig 7. Gate Charge Characteristics

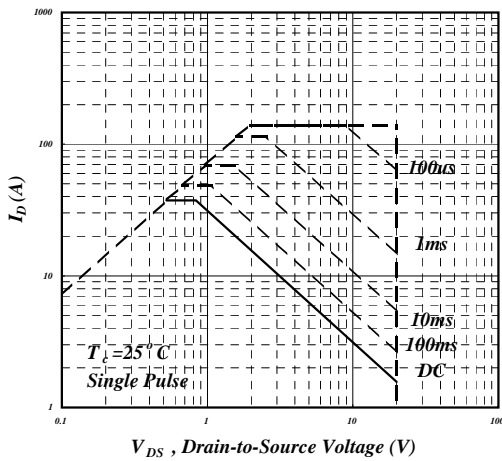Fig 8. Typical Capacitance Characteristics
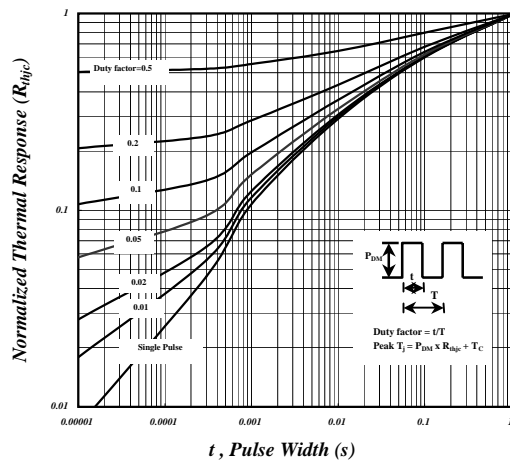

Fig 9. Maximum Safe Operating Area
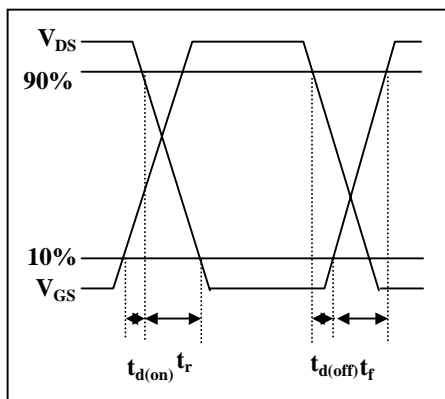

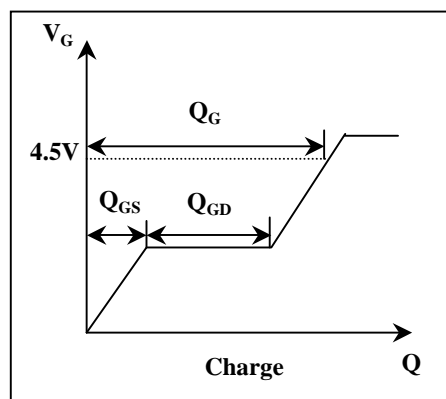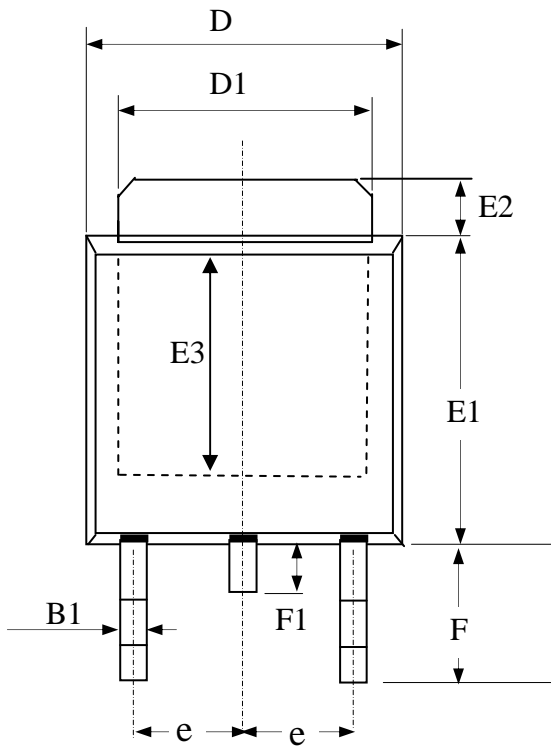Fig 10. Effective Transient Thermal Impedance

Fig 11. Switching Time Waveform

Fig 12. Gate Charge Waveform

Package Outline : TO-252

SYMBOLS	Millimeters		
	MIN	NOM	MAX
A2	1.80	2.30	2.80
A3	0.40	0.50	0.60
B1	0.40	0.70	1.00
D	6.00	6.50	7.00
D1	4.80	5.35	5.90
E3	3.50	4.00	4.50
F	2.20	2.63	3.05
F1	0.5	0.85	1.20
E1	5.10	5.70	6.30
E2	0.50	1.10	1.80
e	--	2.30	--
C	0.35	0.50	0.65

1.All Dimensions Are in Millimeters.

2.Dimension Does Not Include Mold Protrusions.

R : 0.127~0.381

Part Marking Information & Packing : TO-252

Part Number

Package Code
meet Rohs requirement

9T18GH

LOGO

YWWSSS

Date Code (YWWSSS)

Y：Last Digit Of The Year

WW：Week

SSS：Sequence

5

Package Outline : TO-251

SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	2.20	2.30	2.40
A1	0.90	1.20	1.50
B1	0.50	0.69	0.88
B2	0.60	0.87	1.14
c	0.40	0.50	0.60
c1	0.40	0.50	0.60
D	6.40	6.60	6.80
D1	5.20	5.35	5.50
E	6.70	7.00	7.30
E1	5.40	5.80	6.20
e	----	2.30	----
F	5.88	6.84	7.80

1.All Dimensions Are in Millimeters.

2.Dimension Does Not Include Mold Protrusions.

Part Marking Information & Packing : TO-251

Part Number
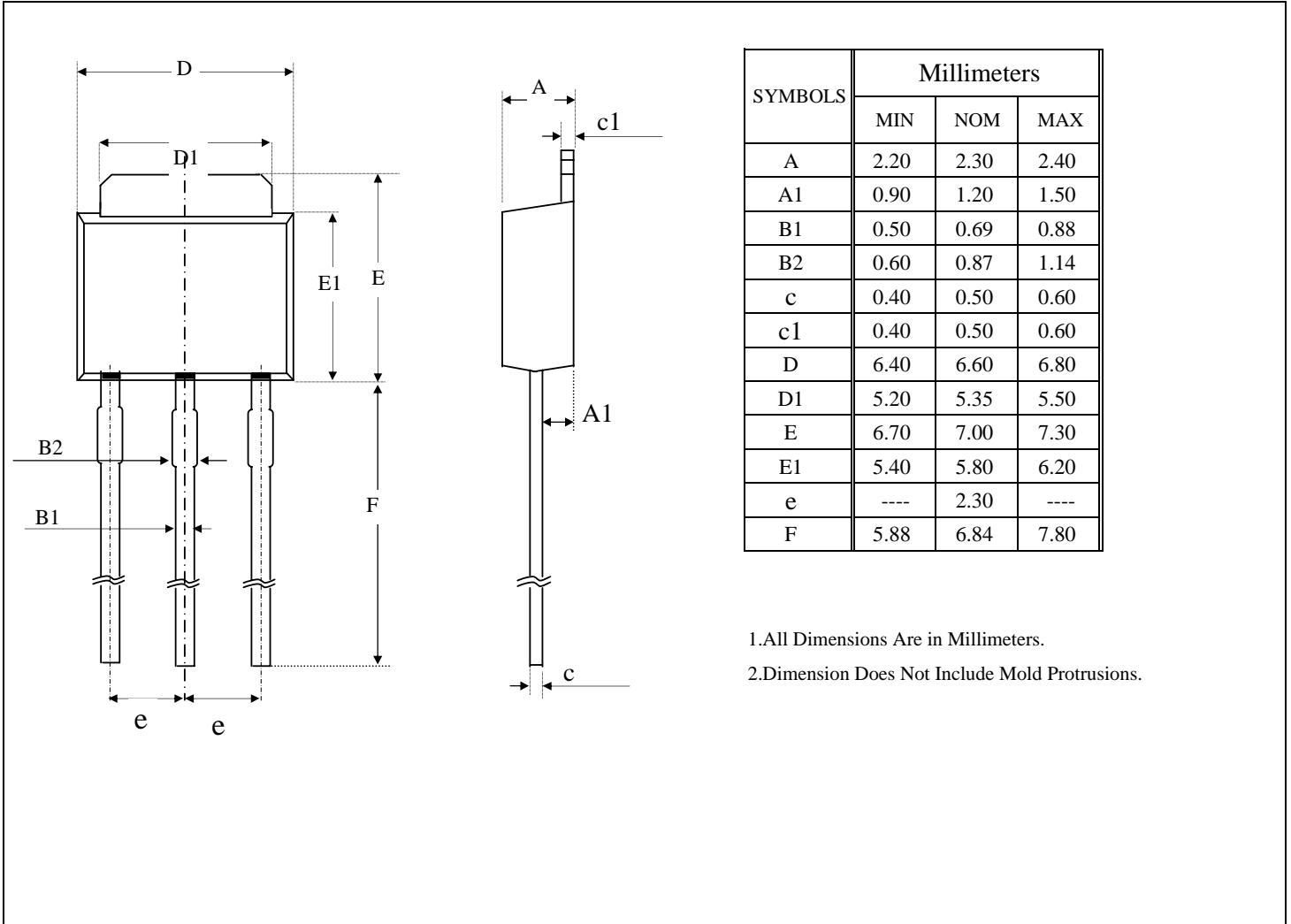
meet Rohs requirement
for low voltage MOSFET only

9T18GJ

Package Code

LOGO

YWWSSS

Date Code (YWWSSS)

Y ：Last Digit Of The Year

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