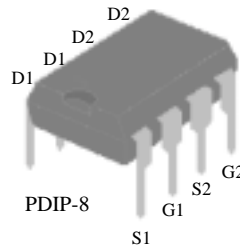


AP9971GD**Pb Free Plating Product****Advanced Power
Electronics Corp.***N-CHANNEL ENHANCEMENT MODE**POWER MOSFET*

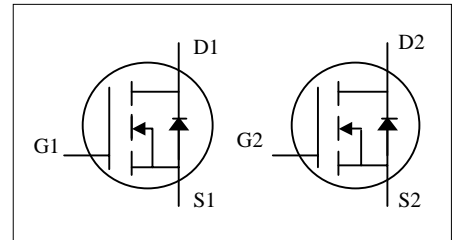
- ▼ Low On-resistance
- ▼ Fast Switching Speed
- ▼ PDIP-8 Package



BV_{DSS}	60V
$R_{DS(ON)}$	50m Ω
I_D	5A

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.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 25	V
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current ³ , V_{GS} @ 10V	5	A
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current ³ , V_{GS} @ 10V	3.2	A
I_{DM}	Pulsed Drain Current ^{1,2}	20	A
$P_D @ T_A = 25^\circ\text{C}$	Total Power Dissipation	2	W
	Linear Derating Factor	0.016	W/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Value	Unit
R_{thj-a}	Thermal Resistance Junction-ambient ³	Max. 62.5	$^\circ\text{C}/\text{W}$



AP9971GD

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
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =1mA	-	0.06	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =5A	-	-	50	mΩ
		V _{GS} =4.5V, I _D =2.5A	-	-	60	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 =5A	-	7	-	S
I _{DSS}	Drain-Source Leakage Current (T _j =25°C)	V _{DS} =60V, V _{GS} =0V	-	-	1	uA
	Drain-Source Leakage Current (T _j =70°C)	V _{DS} =48V, V _{GS} =0V	-	-	25	uA
I _{GSS}	Gate-Source Leakage	V _{GS} = ± 25V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =5A	-	32.5	-	nC
Q _{gs}	Gate-Source Charge	V _{DS} =48V	-	4.9	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =10V	-	8.8	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =30V	-	9.6	-	ns
t _r	Rise Time	I _D =5A	-	10	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω, V _{GS} =10V	-	30	-	ns
t _f	Fall Time	R _D =6Ω	-	5.5	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	1560	-	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	156	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	110	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =1.6A, V _{GS} =0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _S =5A, V _{GS} =0V,	-	29.2	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	48	-	nC

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse width ≤300us, duty cycle ≤2%.
3. Mounted on 1 in² copper pad of FR4 board ;90°C/W when mounted on min. copper pad.

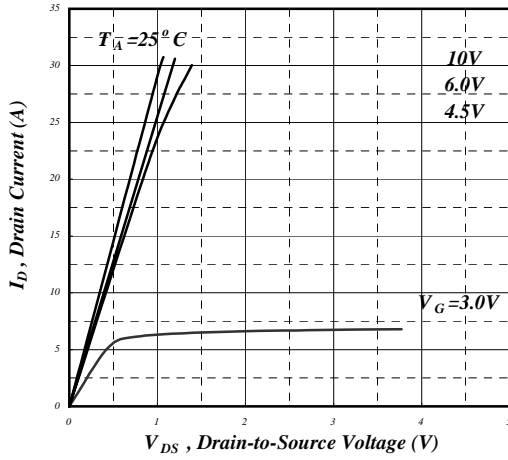


Fig 1. Typical Output Characteristics

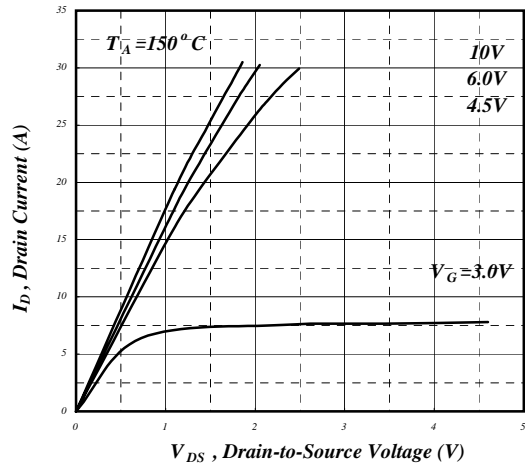


Fig 2. Typical Output Characteristics

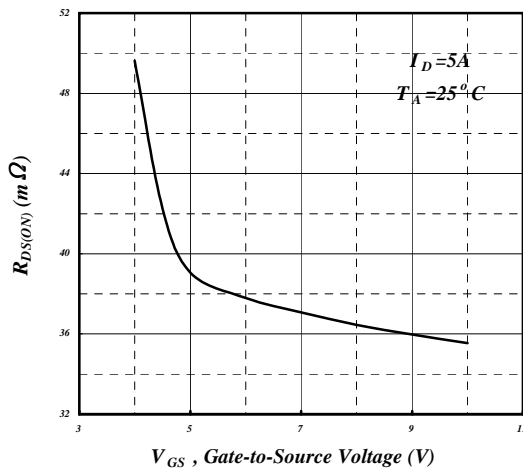


Fig 3. On-Resistance v.s. Gate Voltage

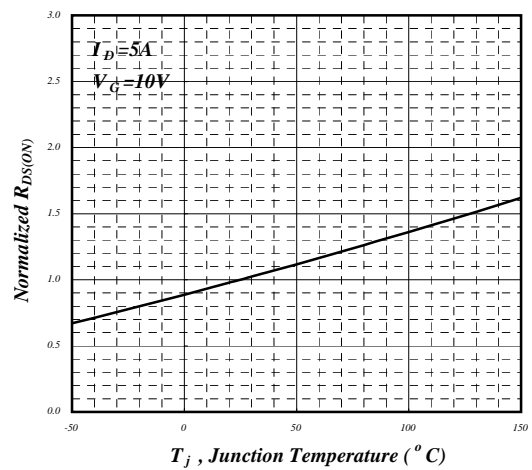


Fig 4. Normalized On-Resistance v.s. Junction Temperature

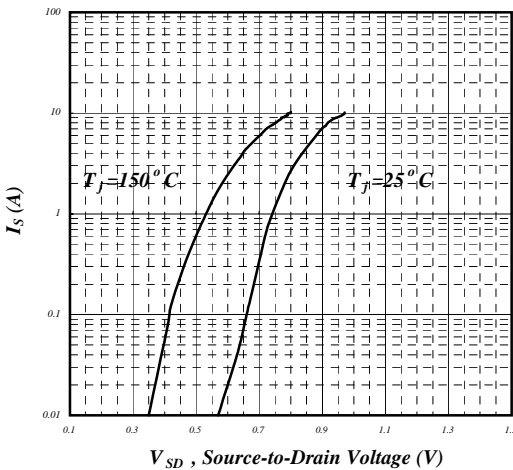


Fig 5. Forward Characteristic of Reverse Diode

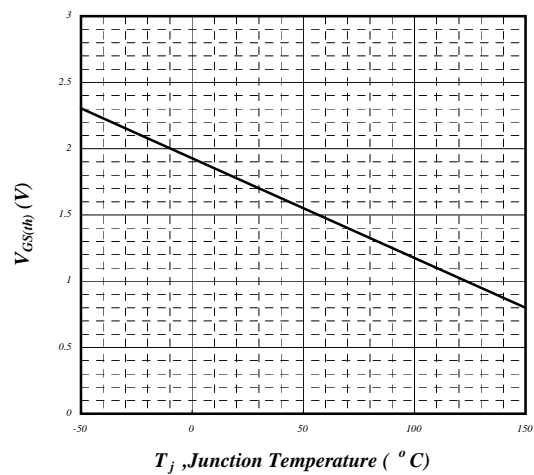


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

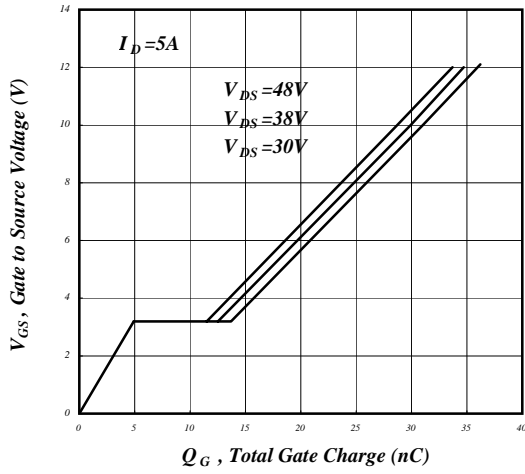


Fig 7. Gate Charge Characteristics

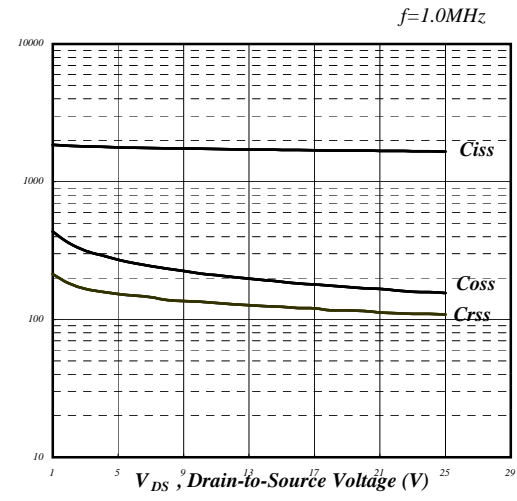


Fig 8. Typical Capacitance Characteristics

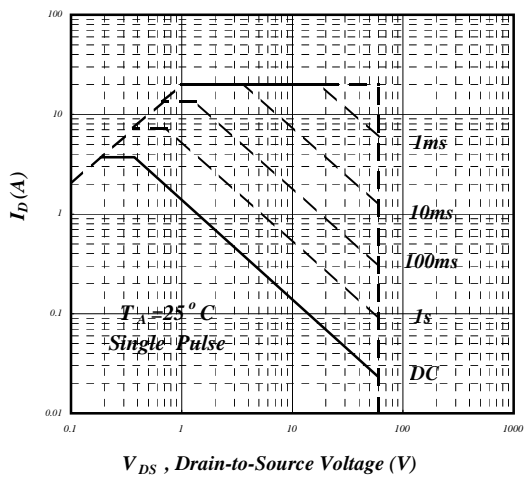


Fig 9. Maximum Safe Operating Area

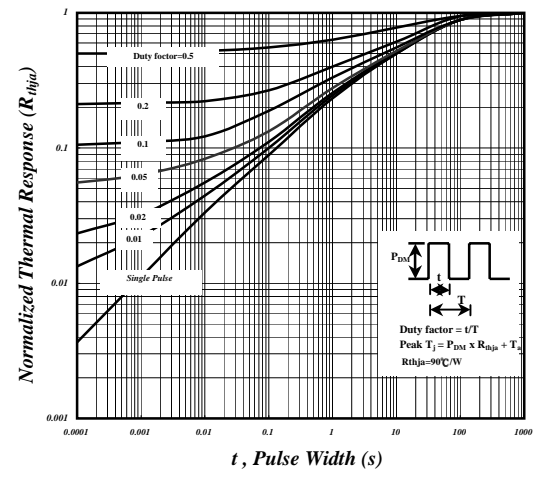


Fig 10. Effective Transient Thermal Impedance

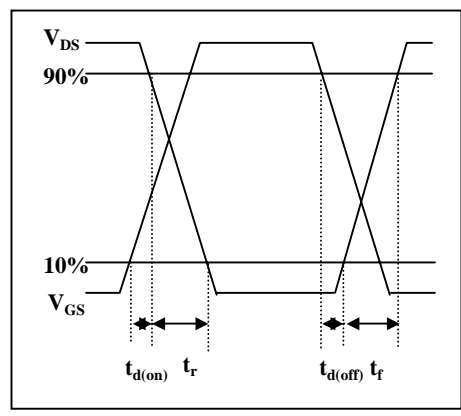


Fig 11. Switching Time Waveform

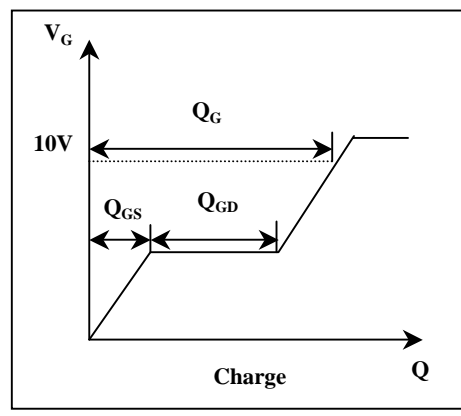
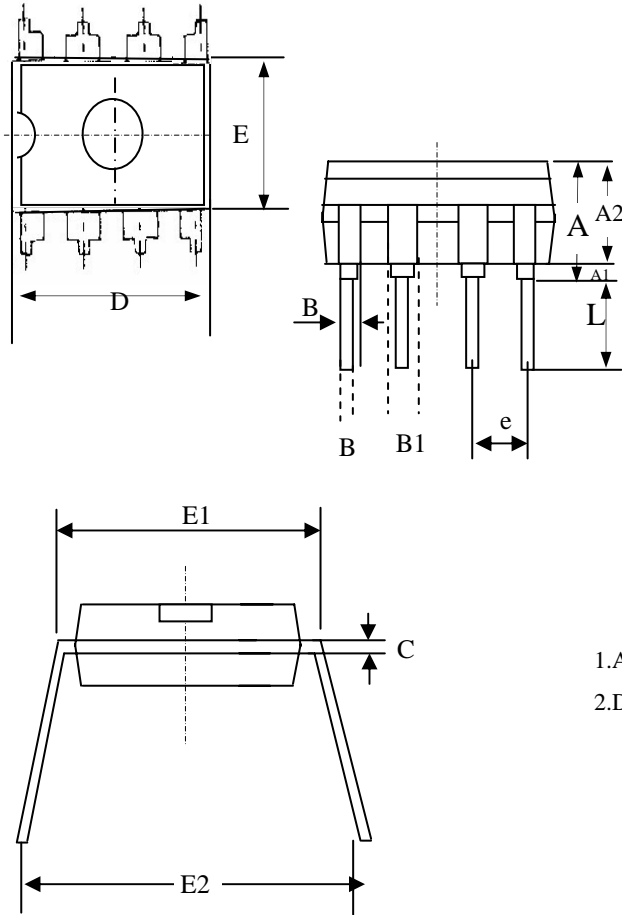


Fig 12. Gate Charge Waveform



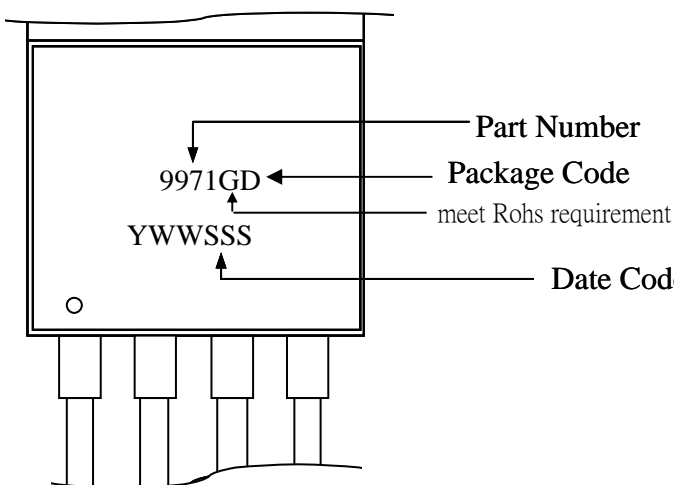
Package Outline : DIP-8



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	3.60	4.50	5.40
A1	0.38	----	----
A2	2.90	3.95	5.00
B	0.36	0.46	0.56
B1	1.10	1.45	1.80
B2	0.76	0.98	1.20
C	0.20	0.28	0.36
D	9.00	9.60	10.20
E	6.10	6.65	7.20
E1	7.62	7.94	8.26
E2	8.3	9.65	11
e	2.540BSC		
L	3.18	----	----

- 1.All Dimensions Are in Millimeters.
- 2.Dimension Does Not Include Mold Protrusions.

Part Marking Information & Packing : DIP-8




Y : Last Digit Of The Year
 WW : Week
 SSS : Sequence


富鼎先進電子股份有限公司 包裝規範

附件七：外箱標籤

有鉛產品標籤(For Pb-Sn Product)：

	富鼎先進電子股份有限公司 ADVANCED POWER ELECTRONICS CORP.
P/N :	<input type="text"/>
DateCode :	<input type="text"/>
Q'TY	<input type="text"/>
QC :	檢 查 合 格

無鉛產品標籤(For Pb Free Product)：

	富鼎先進電子股份有限公司 ADVANCED POWER ELECTRONICS CORP.
P/N :	<input type="text"/>
DateCode :	<input type="text"/>
Q'TY	<input type="text"/>
QC :	檢 查 合 格

貼於產品標籤面右上角：



文件編號：QWMP-7801

版 別：11

頁 碼：3



Pb-free /PbPorduct Identify

Carton/Inner Box

Pb-free Product



G.P PASS

Green Label



Pb Product



Blue label

