



**Advanced Power
Electronics Corp.**

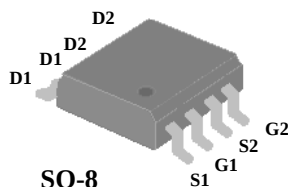
AP9962GM

RoHS-compliant Product

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

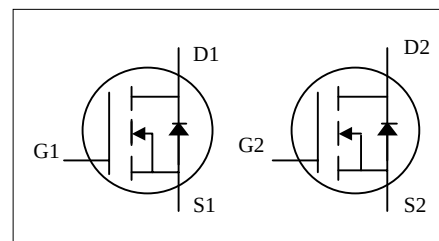
- ▼ Low On-resistance
- ▼ Single Drive Requirement
- ▼ Surface Mount Package



BV_{DSS}	40V
$R_{DS(ON)}$	25m Ω
I_D	7A

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.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current ³ , $V_{GS} @ 10\text{V}$	7	A
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current ³ , $V_{GS} @ 10\text{V}$	5.5	A
I_{DM}	Pulsed Drain Current ¹	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
Rthj-a	Maximum Thermal Resistance, Junction-ambient ³	62.5	$^\circ\text{C}/\text{W}$



AP9962GM

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
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =1mA	-	0.1	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =7A	-	-	25	mΩ
		V _{GS} =4.5V, I _D =5A	-	-	40	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 =7A	-	11	-	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, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =7A	-	25.8	-	nC
Q _{gs}	Gate-Source Charge	V _{DS} =32V	-	4.4	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =10V	-	9.1	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =20V	-	10.6	-	ns
t _r	Rise Time	I _D =1A	-	6.8	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =5.7Ω, V _{GS} =10V	-	26.3	-	ns
t _f	Fall Time	R _D =20Ω	-	12	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	1165	-	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	205	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	142	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =1.7A, V _{GS} =0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time ²	I _S =7A, V _{GS} =0V,	-	21.2	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	16	-	nC

Notes:

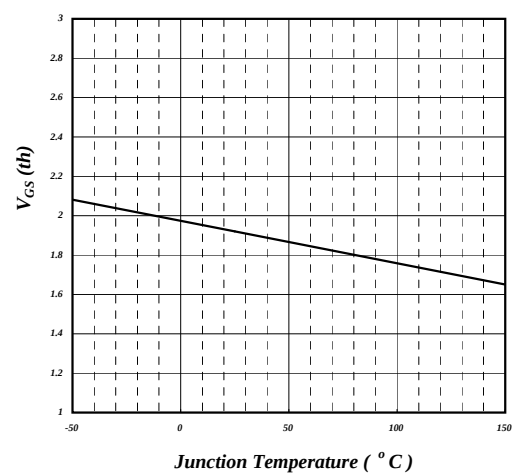
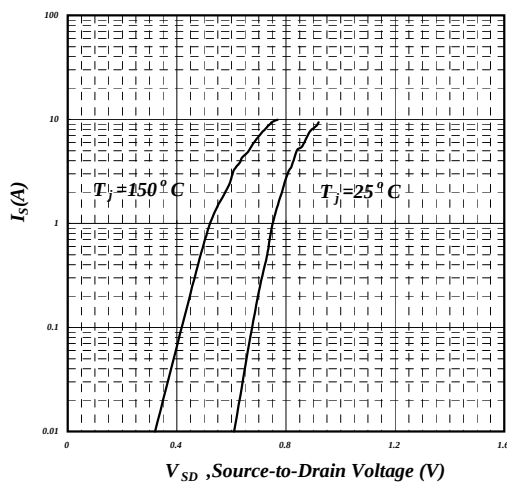
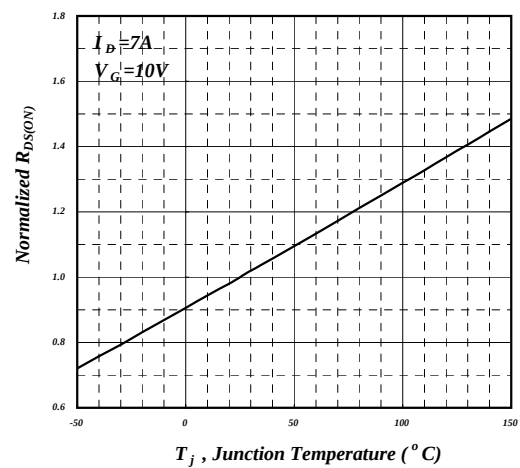
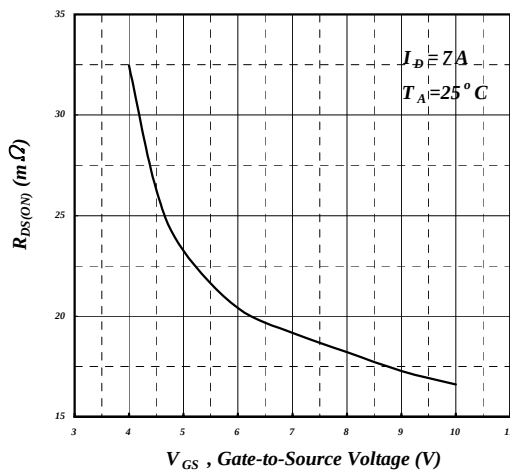
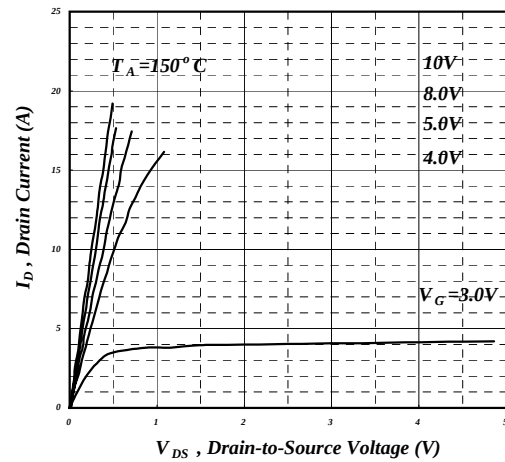
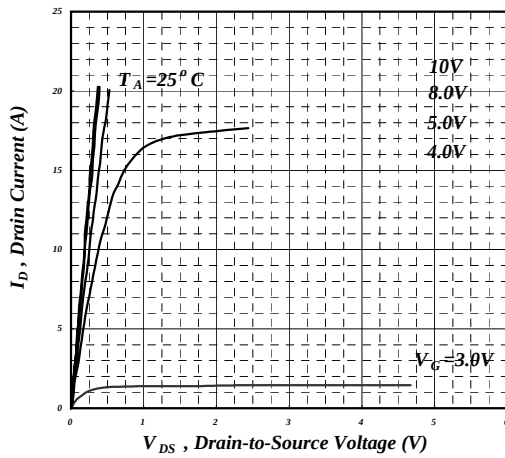
- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board ; 135°C/W when mounted on min. copper pad.

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

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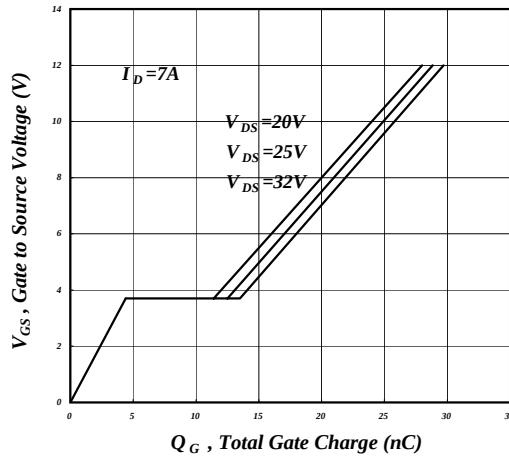


Fig 7. Gate Charge Characteristics

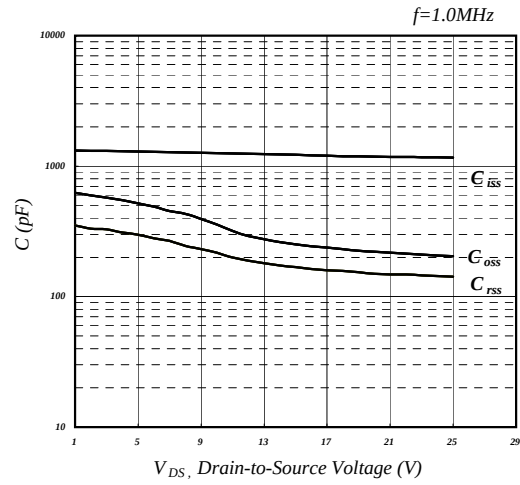


Fig 8. Typical Capacitance Characteristics

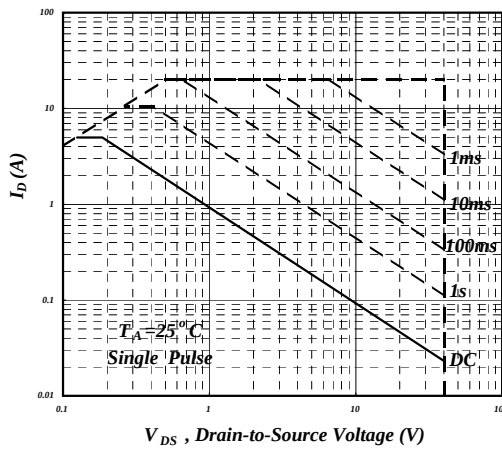


Fig 9. Maximum Safe Operating Area

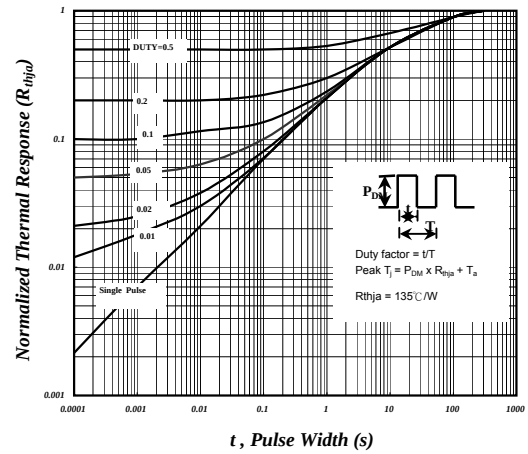


Fig 10. Effective Transient Thermal Impedance

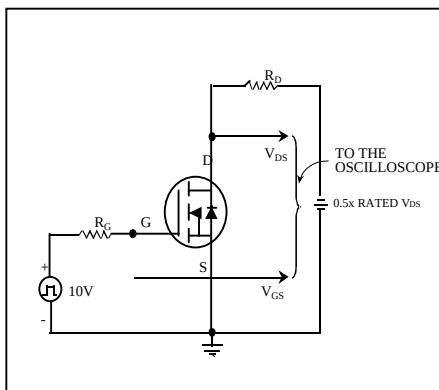


Fig 11. Switching Time Circuit

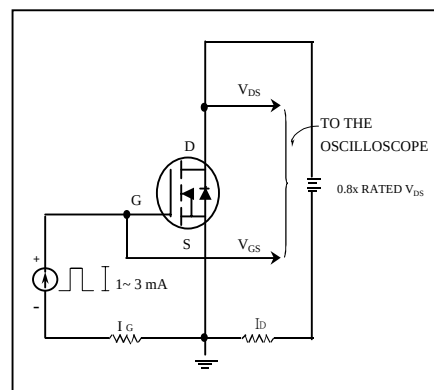
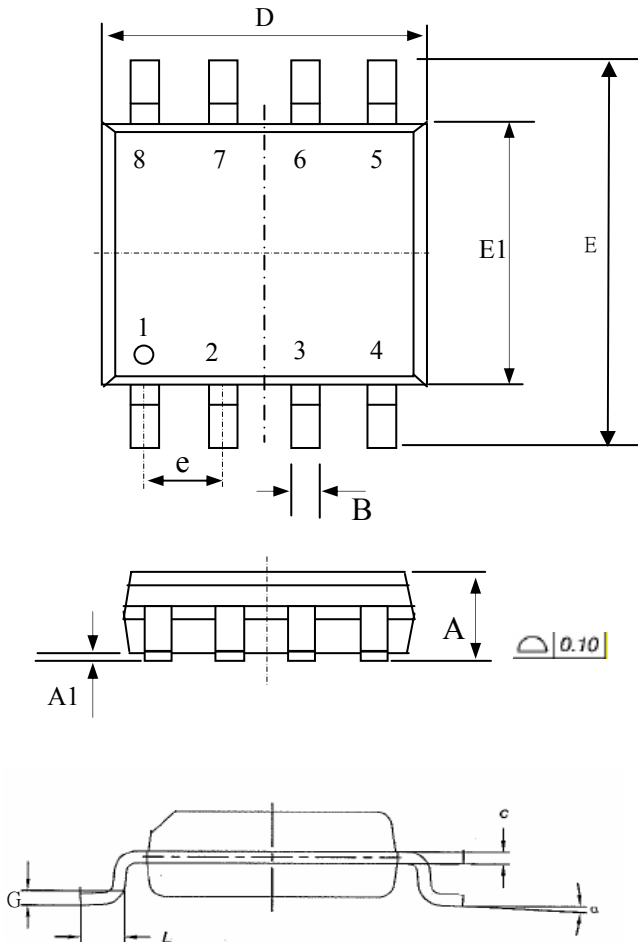


Fig 12. Gate Charge Circuit



Package Outline : SO-8



	Millimeters		
SYMBOLS	MIN	NOM	MAX
A	1.35	1.55	1.75
A1	0.10	0.18	0.25
B	0.33	0.41	0.51
c	0.19	0.22	0.25
D	4.80	4.90	5.00
E	5.80	6.15	6.50
E1	3.80	3.90	4.00
e	1.27 TYP		
G	0.254 TYP		
L	0.38	—	0.90
α	0.00	4.00	8.00

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

Part Marking Information & Packing : SO-8

