



Advanced Power
Electronics Corp.

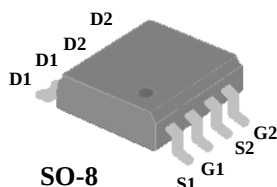
AP9936GM

RoHS-compliant Product

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

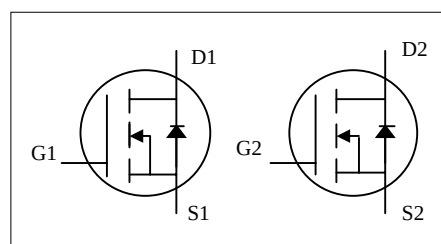
- ▼ DC-DC Application
- ▼ Dual N-channel Device
- ▼ Surface Mount Package



BV_{DS}	30V
$R_{DS(ON)}$	50m Ω
I_D	5A

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	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current ³	5	A
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current ³	4	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
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient ³	62.5	$^\circ\text{C}/\text{W}$



AP9936GM

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	30	-	-	V
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =1mA	-	0.037	-	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 =3.9A	-	-	80	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =15V, I _D =5A	-	6	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V	-	-	1	uA
	Drain-Source Leakage Current (T _j =70°C)	V _{DS} =24V, 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 =5A	-	6.1	-	nC
Q _{gs}	Gate-Source Charge	V _{DS} =15V	-	1.4	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =5V	-	3.3	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =15V	-	6.7	-	ns
t _r	Rise Time	I _D =1.5A	-	6.4	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω, V _{GS} =10V	-	22.1	-	ns
t _f	Fall Time	R _D =10Ω	-	2.1	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	240	-	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	145	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	55	-	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 =1.2V	-	-	1.67	A
V _{SD}	Forward On Voltage ²	T _j =25°C, I _S =1.7A, V _{GS} =0V	-	-	1.2	V

Notes:

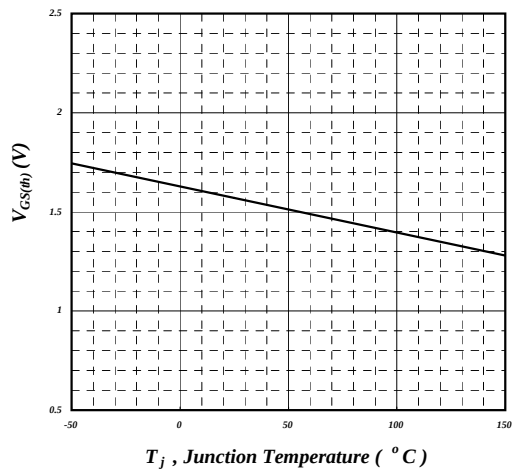
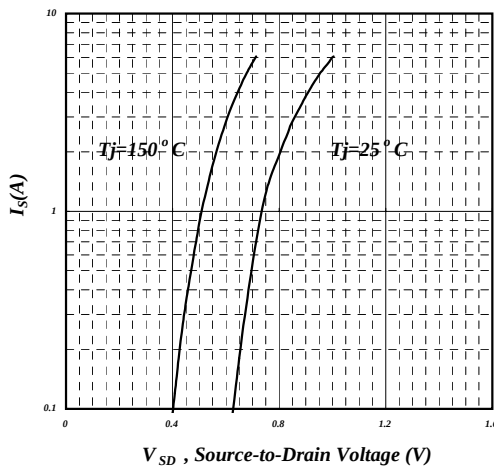
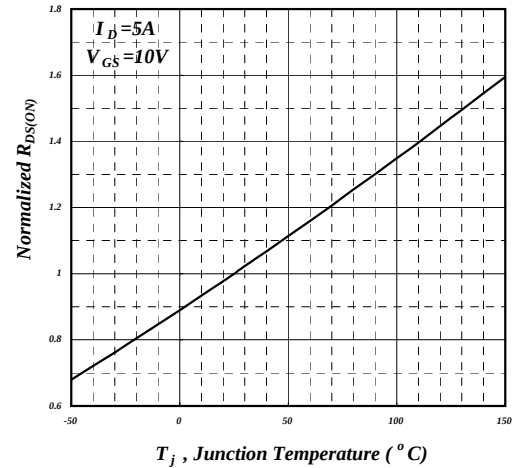
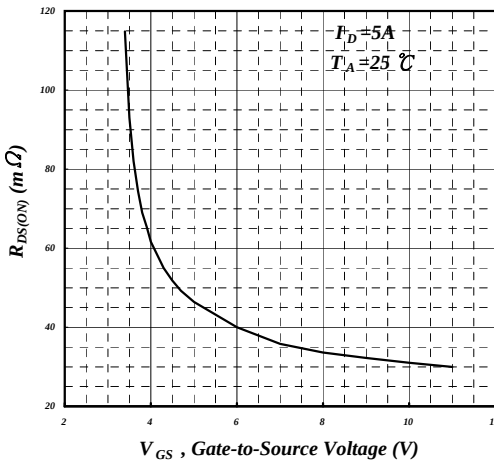
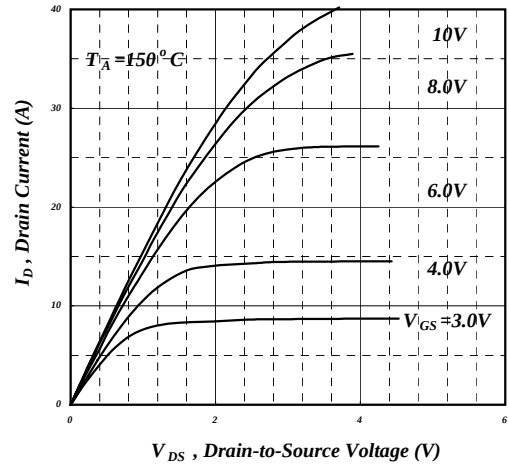
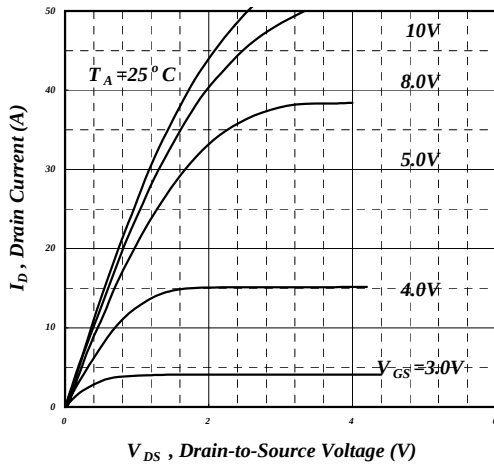
- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board ; 135°C/W when mounted on Min. copper pad.

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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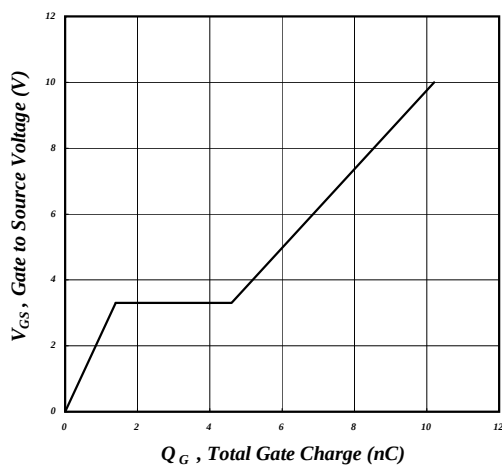


Fig7. Gate Charge Characteristics

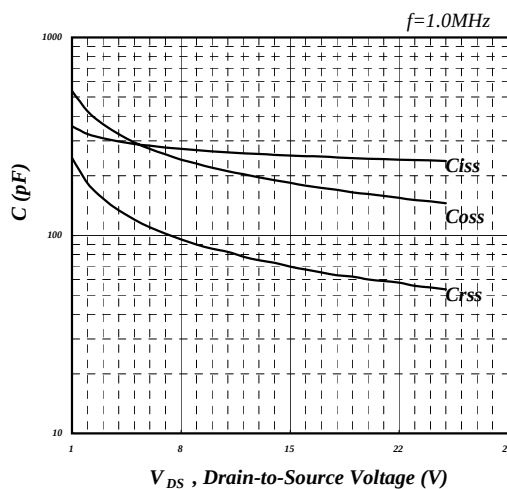


Fig 8 . Typical Capacitance Characteristics

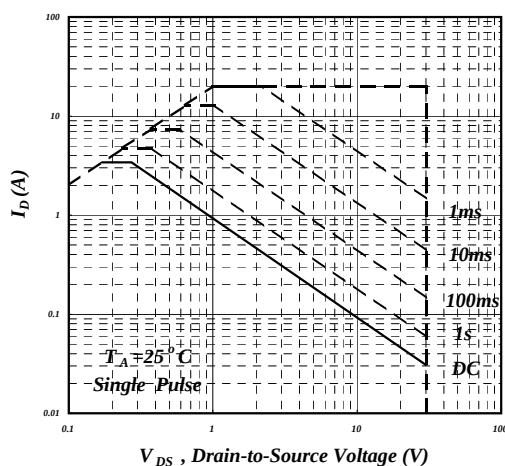


Fig 9. Maximum Safe Operating Area

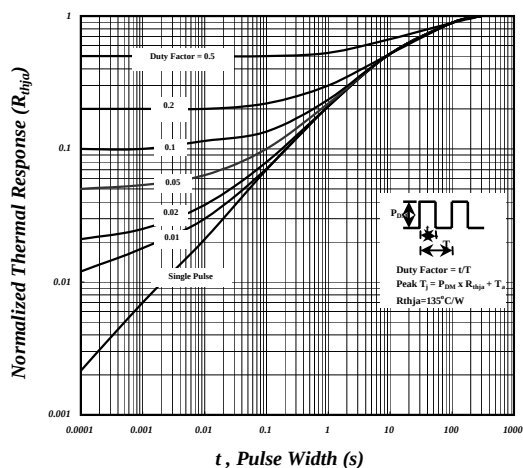


Fig10. Effective Transient Thermal Impedance

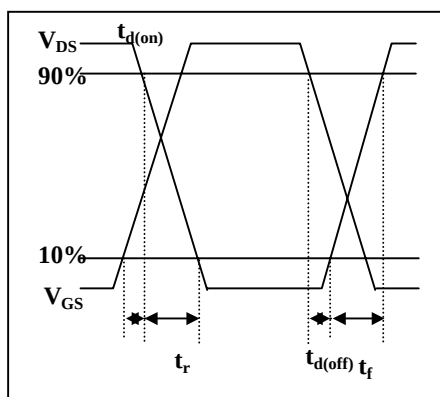


Fig 11. Switching Time Waveform

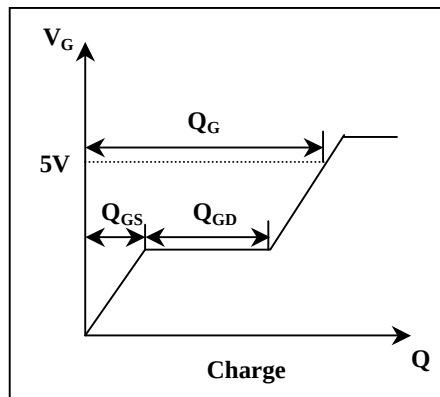
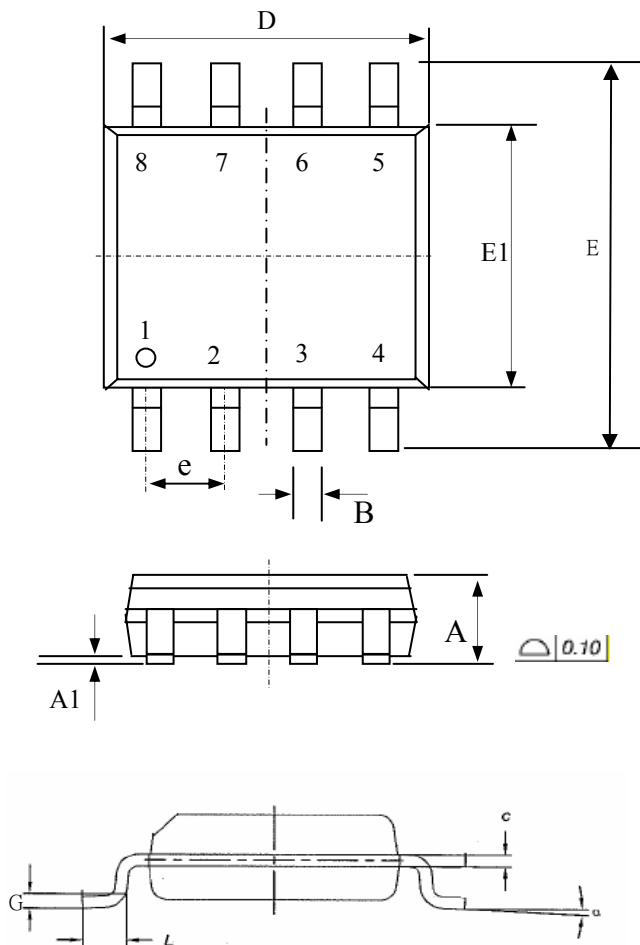


Fig 12. Gate Charge Waveform



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

