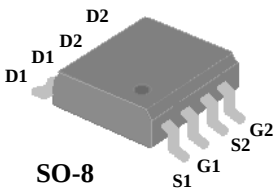
AP9936GM

RoHS-compliant Product

Advanced Power Electronics Corp.

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

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

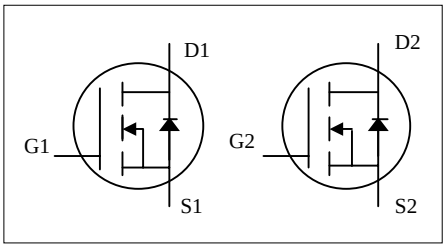


SO-8

BV_{DSS}	30V
$R_{DS(ON)}$	50mΩ
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℃	Continuous Drain Current[3]	5	A
I_D@T_A=70℃	Continuous Drain Current[3]	4	A
I_{DM}	Pulsed Drain Current[1]	20	A
P_D@T_A=25℃	Total Power Dissipation	2	W
	Linear Derating Factor	0.016	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-a	Maximum Thermal Resistance, Junction-ambient[3]	62.5	℃/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	30	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25℃, I_D=1mA	-	0.037	-	V/℃
$R_{DS(ON)}$	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℃, 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 in^2 copper pad of FR4 board ; 135℃/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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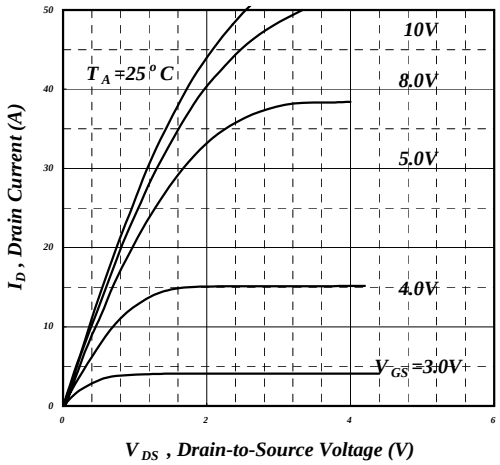


Fig 1. Typical Output Characteristics

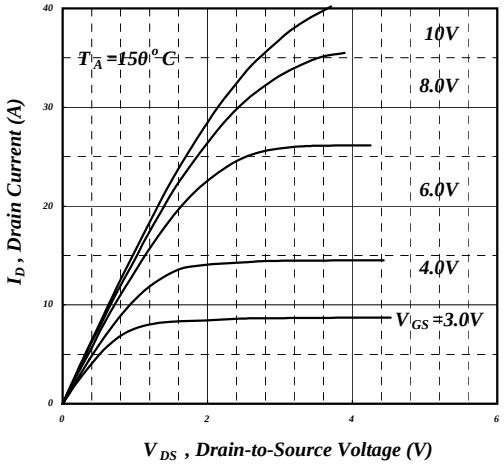


Fig 2. Typical Output Characteristics

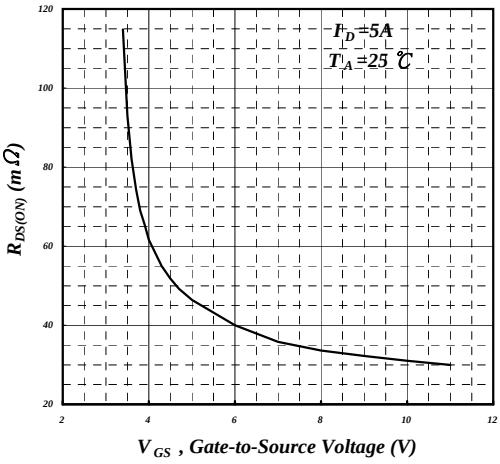


Fig 3. On-Resistance v.s. Gate Voltage

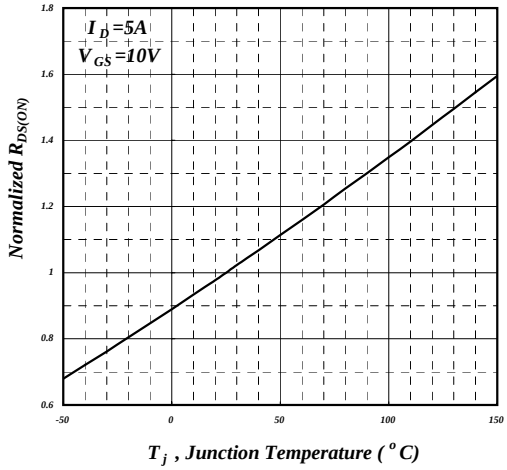


Fig 4. Normalized On-Resistance v.s. Junction Temperature

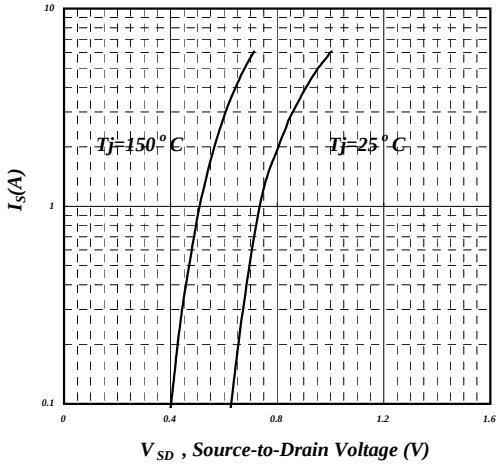


Fig 5. Forward Characteristic of Reverse Diode

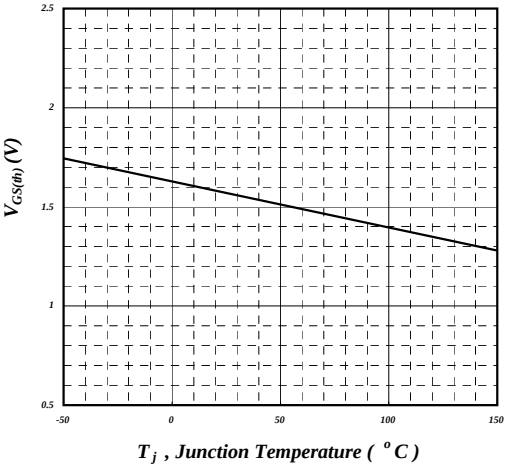


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

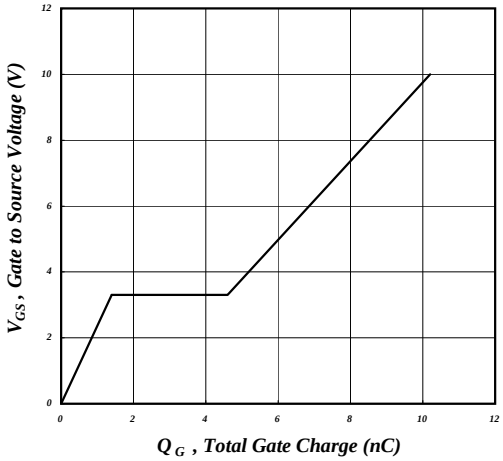


Fig7. Gate Charge Characteristics

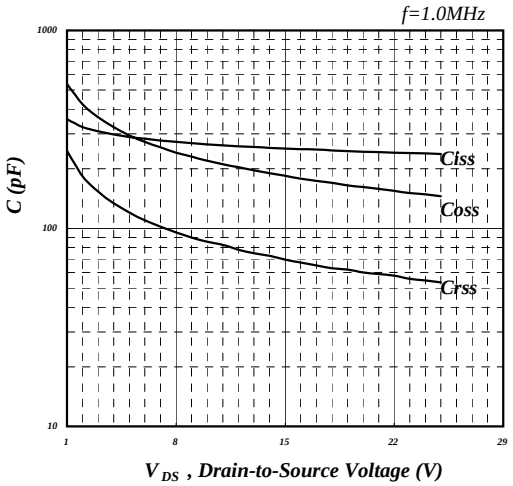


Fig 8 . Typical Capacitance Characteristics

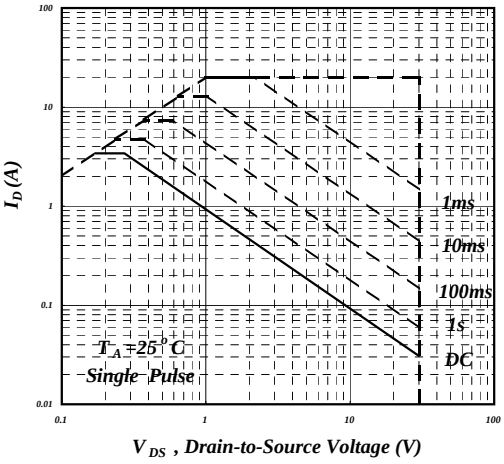


Fig 9. Maximum Safe Operating Area

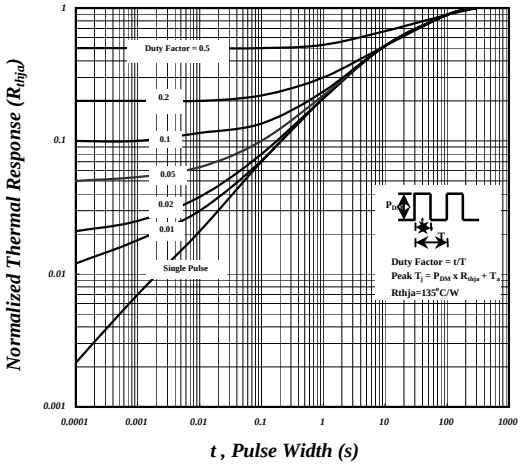


Fig10. Effective Transient Thermal Impedance

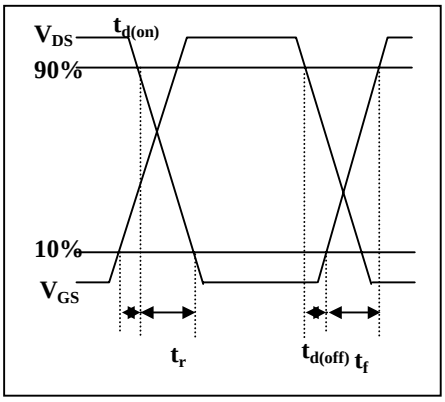


Fig 11. Switching Time Waveform

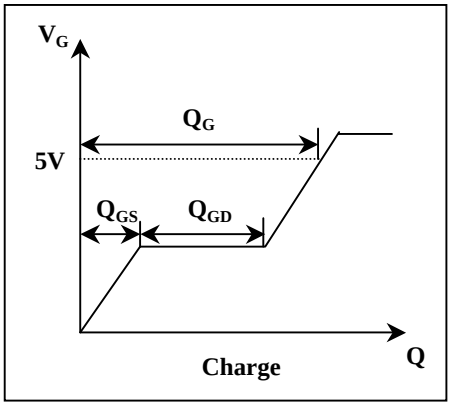
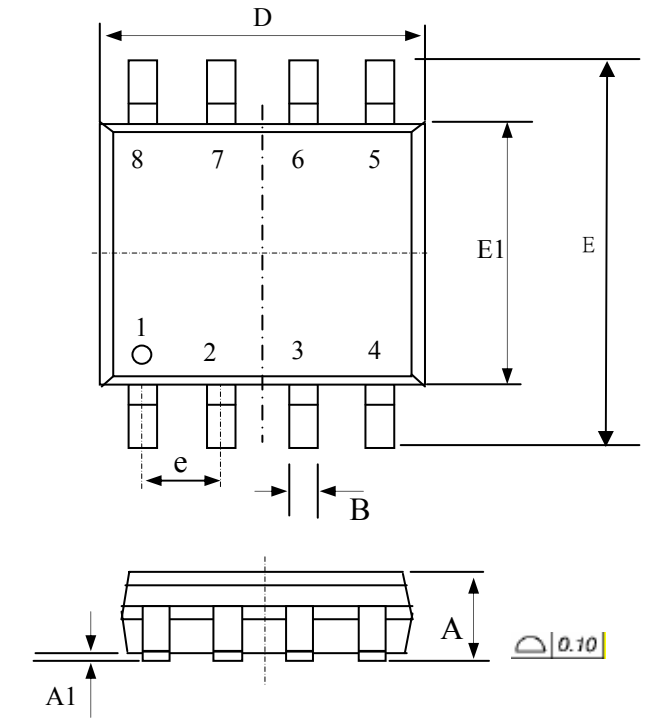


Fig 12. Gate Charge Waveform

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

