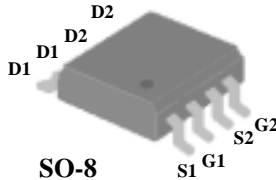# AP4228GM

Advanced Power Electronics Corp.

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

▼ **Low On-Resistance**
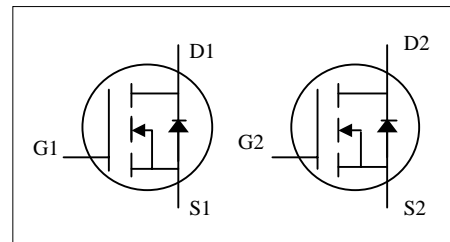
▼ **Simple Drive Requirement**

▼ **Dual N MOSFET Package**

SO-8

BV_{DSS}	30V
$R_{DS(ON)}$	26mΩ
I_D	6.8A

Description

The Advanced Power MOSFETs from APEC provide the designer with the best combination of fast switching, ruggedized device design, lower 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]	6.8	A
I_D@T_A=70℃	Continuous Drain Current[3]	5.5	A
I_{DM}	Pulsed Drain Current[1]	40	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-amb	Thermal Resistance Junction-ambient[3]	Max.	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	-	0.03	-	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=6A	-	-	26	mΩ
		V_{GS}=4.5V, I_D=4A	-	-	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=6A	-	15	-	S
I_{DSS}	Drain-Source Leakage Current (T_j=25°C)	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	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=6.8A	-	9	15	nC
Q_{gs}	Gate-Source Charge	V_{DS}=24V	-	2	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	6	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=15V	-	10	-	ns
t_r	Rise Time	I_D=1A	-	9	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=10V	-	18	-	ns
t_f	Fall Time	R_D=15Ω	-	6	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	580	930	pF
C_{oss}	Output Capacitance	V_{DS}=25V	-	150	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	108	-	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	-	-	1.3	V
t_{rr}	Reverse Recovery Time	I_S=6.8A, V_{GS}=0V,	-	15	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/µs	-	9	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse width ≤300us , duty cycle ≤2%.

3.Surface mounted on 1 in^2 copper pad of FR4 board ; 135℃/W when mounted on Min. copper pad.
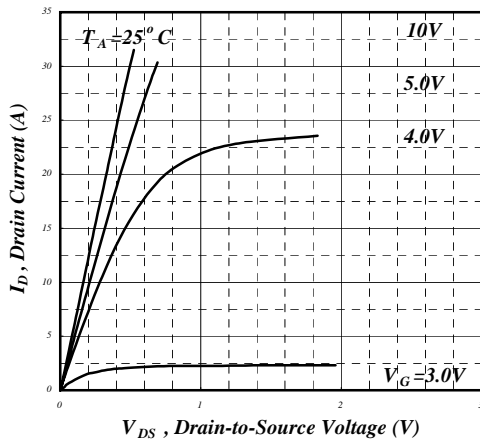
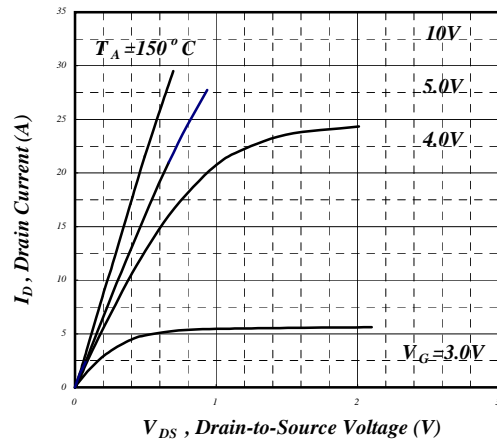Fig 1. Typical Output Characteristics

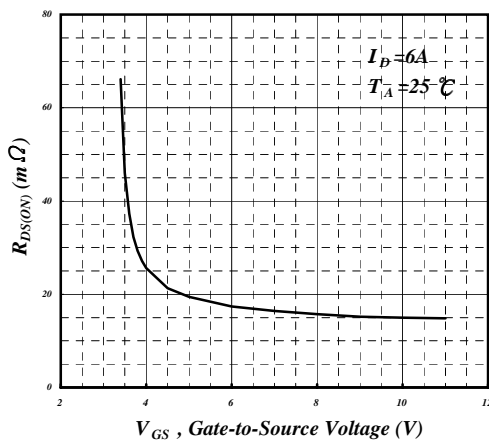Fig 2. Typical Output Characteristics
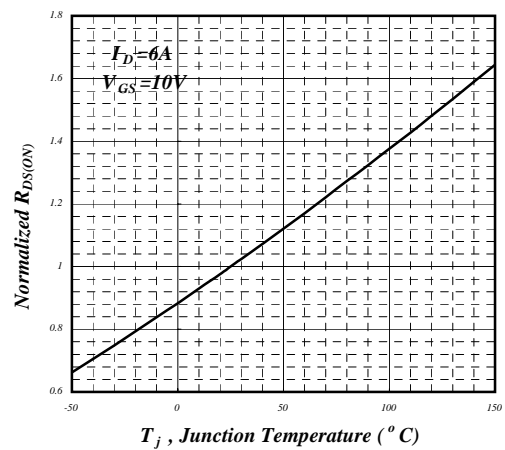
Fig 3. On-Resistance v.s. Gate Voltage
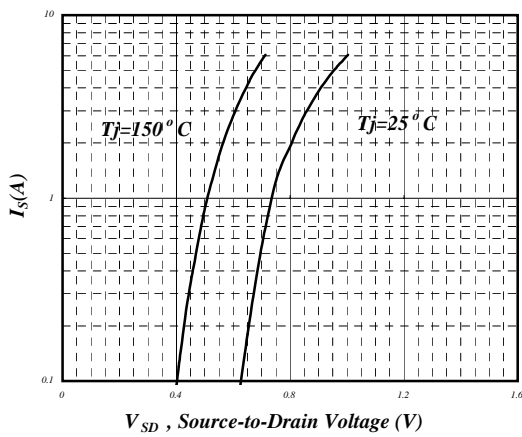
Fig 4. Normalized On-Resistance
v.s. Junction Temperature
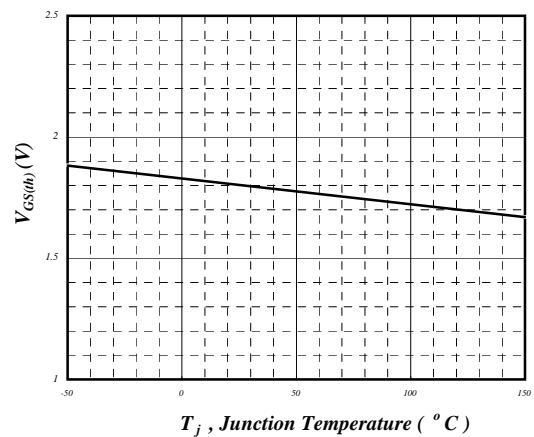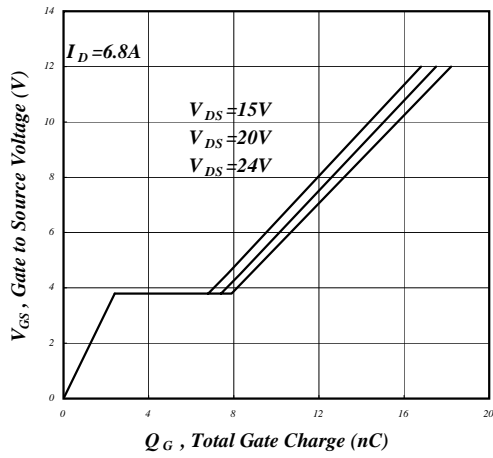
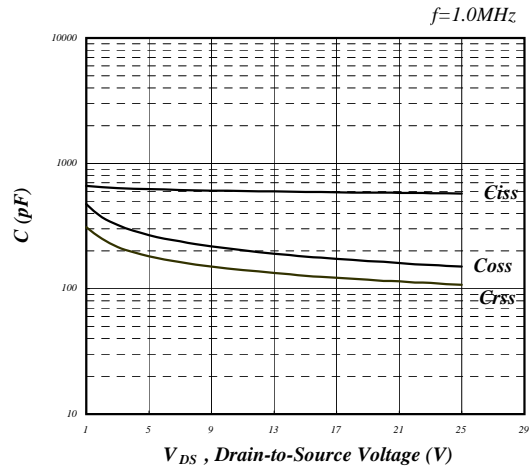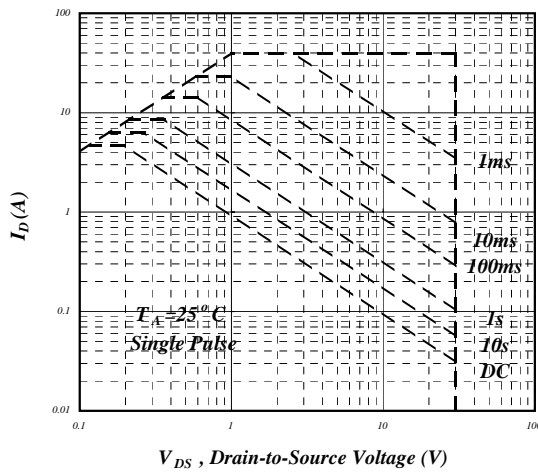Fig 5. Forward Characteristic of
Reverse Diode

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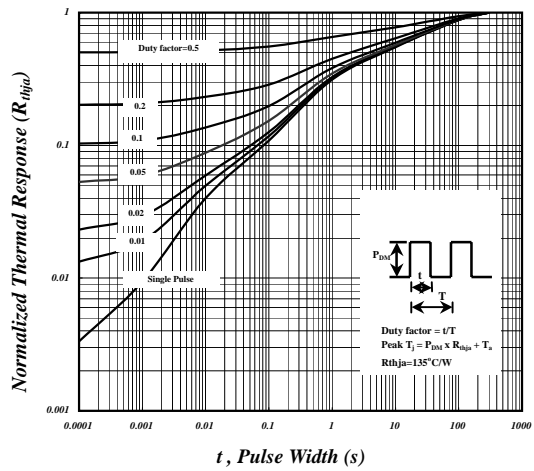Junction Temperature

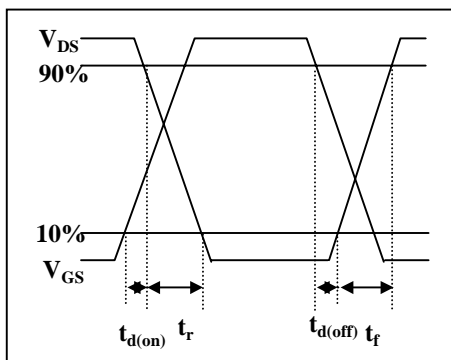**Fig 7. Gate Charge Characteristics**

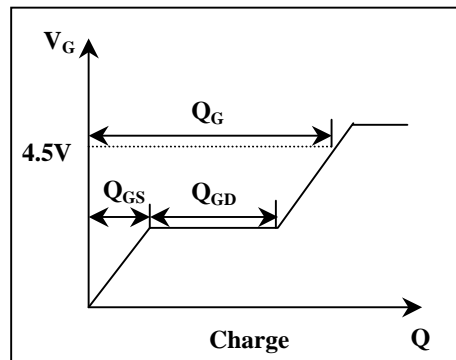**Fig 8. Typical Capacitance Characteristics**

Fig 9. Maximum Safe Operating Area

Fig 10. Effective Transient Thermal Impedance

Fig 11. Switching Time Waveform

Fig 12. Gate Charge Waveform