



**Advanced Power
Electronics Corp.**

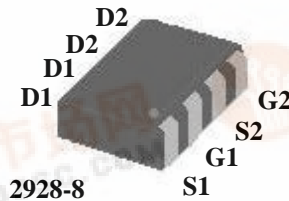
AP2422GY

Pb Free Plating Product

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

- ▼ Capable of 2.5V gate drive
- ▼ Lower on-resistance
- ▼ Surface mount package
- ▼ RoHS compliant

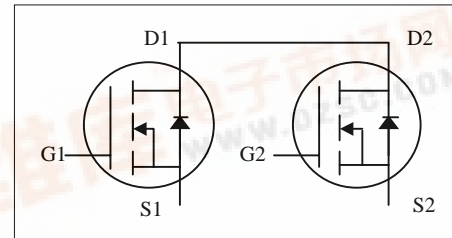


BV_{DSS}	30V
$R_{DS(ON)}$	40mΩ
I_D	4.8A

Description

Advanced Power MOSFETs utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device.

The 2928-8 J-lead package provides good on-resistance performance and space saving like TSOP-6.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±12	V
$I_D @ T_A=25^\circ C$	Continuous Drain Current ³	4.8	A
$I_D @ T_A=70^\circ C$	Continuous Drain Current ³	3.8	A
I_{DM}	Pulsed Drain Current ¹	20	A
$P_D @ T_A=25^\circ C$	Total Power Dissipation	1.39	W
	Linear Derating Factor	0.01	W/°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Value	Unit
R_{thj-a}	Thermal Resistance Junction-ambient ³	Max. 90	°C/W



AP2422GY

Electrical Characteristics @ $T_j=25^{\circ}\text{C}$ (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to $25^{\circ}\text{C}, I_D=1\text{mA}$	-	0.02	-	$V/^{\circ}\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=5A$	-	-	32	$\text{m}\Omega$
		$V_{GS}=4.5V, I_D=4A$	-	-	40	$\text{m}\Omega$
		$V_{GS}=2.5V, I_D=2A$	-	-	60	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	-	1.2	V
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=4A$	-	9	-	S
I_{DSS}	Drain-Source Leakage Current ($T_j=25^{\circ}\text{C}$)	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
	Drain-Source Leakage Current ($T_j=70^{\circ}\text{C}$)	$V_{DS}=24V, V_{GS}=0V$	-	-	10	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}=\pm 12V$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_D=4A$	-	3	5	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=25V$	-	1.3	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=4.5V$	-	4	-	nC
$t_{d(on)}$	Turn-on Delay Time ²	$V_{DS}=15V$	-	10	-	ns
t_r	Rise Time	$I_D=1A$	-	11	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=3.3\Omega, V_{GS}=5V$	-	17	-	ns
t_f	Fall Time	$R_D=15\Omega$	-	5	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V$	-	480	770	pF
C_{oss}	Output Capacitance	$V_{DS}=25V$	-	90	-	pF
C_{riss}	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	70	-	pF
R_g	Gate Resistance	$f=1.0\text{MHz}$	-	1.5	2.3	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage ²	$I_S=1.1A, V_{GS}=0V$	-	-	1.3	V
t_{rr}	Reverse Recovery Time	$I_S=4A, V_{GS}=0V,$	-	18	-	ns
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s$	-	10	-	nC

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Surface mounted on 1 in² copper pad of FR4 board, $t \leq 5\text{sec}$; $155^{\circ}\text{C}/\text{W}$ at steady state.

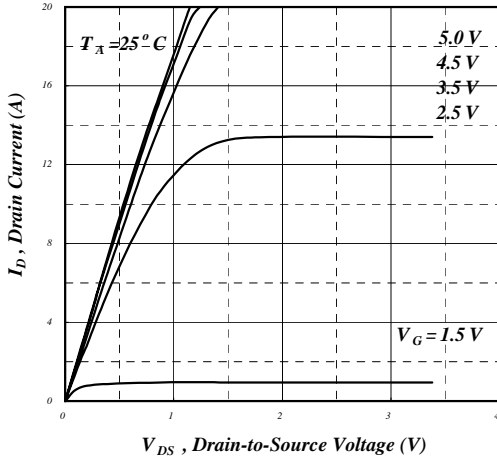


Fig 1. Typical Output Characteristics

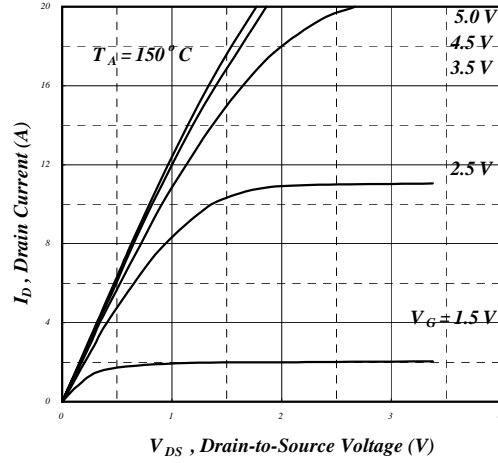


Fig 2. Typical Output Characteristics

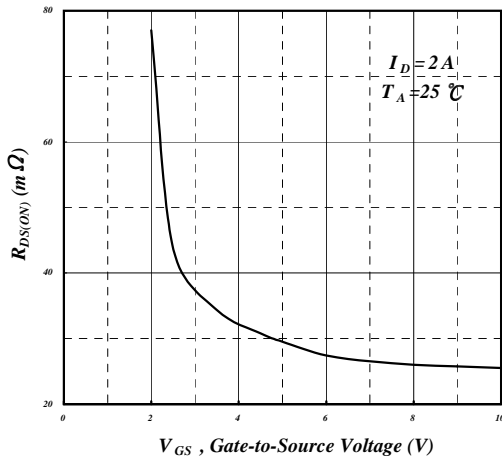


Fig 3. On-Resistance v.s. Gate Voltage

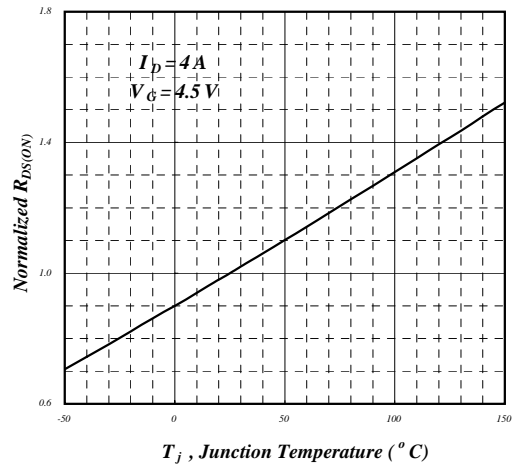


Fig 4. Normalized On-Resistance v.s. Junction Temperature

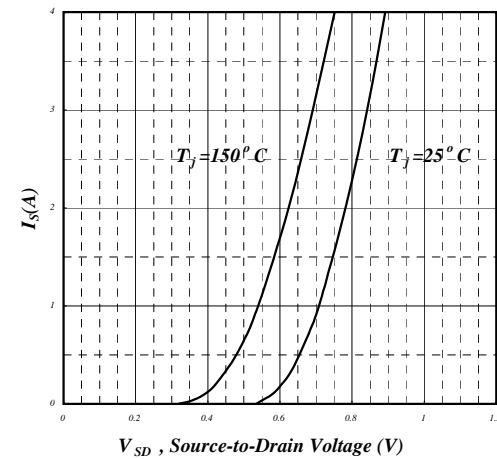


Fig 5. Forward Characteristic of Reverse Diode

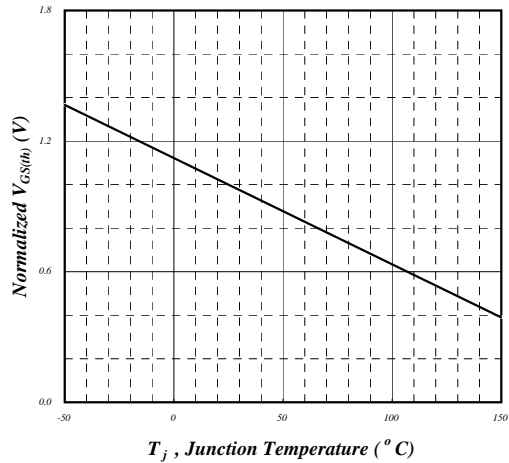


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

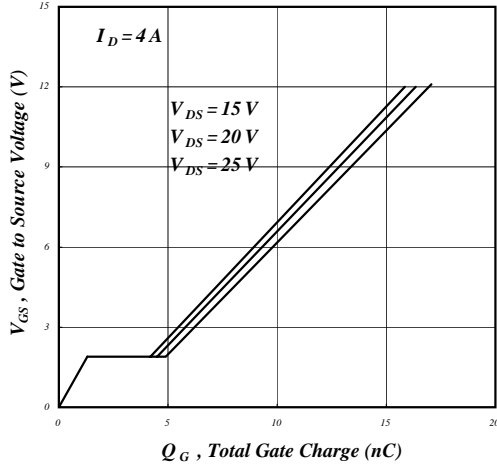


Fig 7. Gate Charge Characteristics

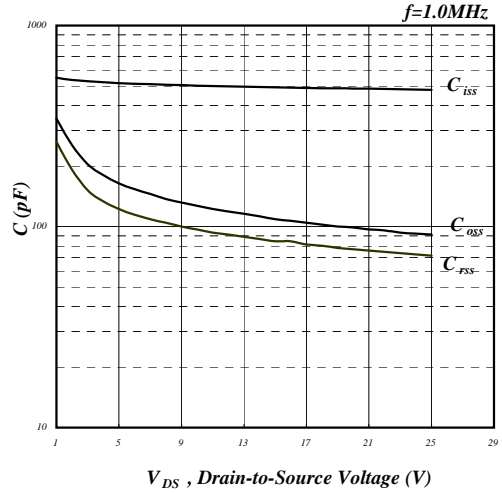


Fig 8. Typical Capacitance Characteristics

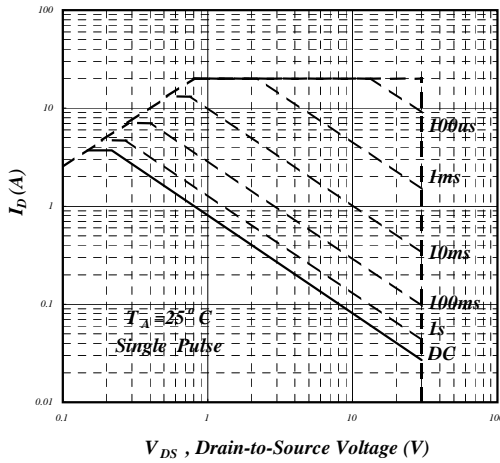


Fig 9. Maximum Safe Operating Area

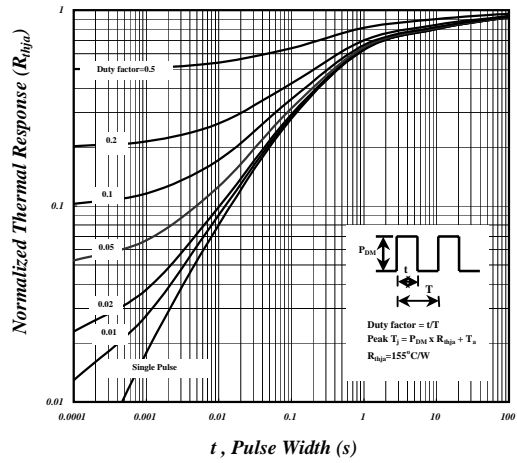


Fig 10. Effective Transient Thermal Impedance

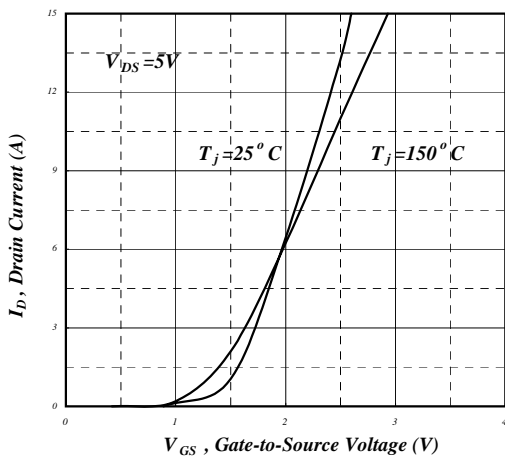


Fig 11. Transfer Characteristics

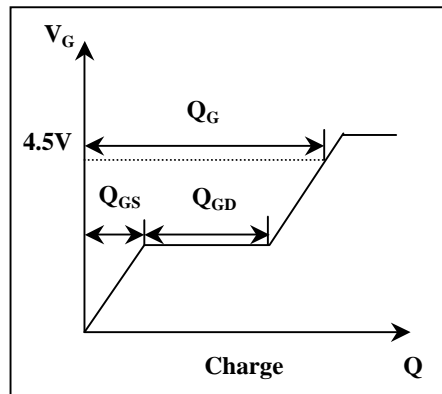


Fig 12. Gate Charge Waveform