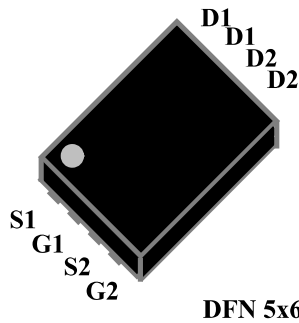


AP0903GD

N-Channel Power MOSFET

- ▼ Simple Drive Requirement
- ▼ Low On-resistance
- ▼ Fast Switching Performance
- ▼ RoHS Compliant & Halogen-Free

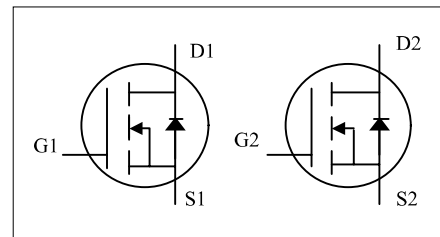


DFN 5x6

BV_{DSS}	30V
$R_{DS(ON)}$	9m Ω
I_D	20A

Description

AP0903GD series are from All Power innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.



Absolute Maximum Ratings@ $T_j=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^\circ\text{C}$	Drain Current, $V_{GS} @ 10V^3$	20	A
$I_D@T_A=70^\circ\text{C}$	Drain Current, $V_{GS} @ 10V^3$	14.1	A
I_{DM}	Pulsed Drain Current ¹	75	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation	30	W
E_{AS}	Single Pulse Avalanche Energy ⁴	65	mJ
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
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	4.2	$^\circ\text{C}/\text{W}$

N-Channel Power MOSFET

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
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =10A	-	9	11.5	mΩ
		V _{GS} =4.5V, I _D =5A	-	-	18	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =1mA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =10A	-	40	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =24V, V _{GS} =0V	-	-	10	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge	I _D =5A	-	14	22.4	nC
Q _{gs}	Gate-Source Charge	V _{DS} =15V	-	4.4	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	5.4	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V	-	9	-	ns
t _r	Rise Time	I _D =1A	-	8	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	29	-	ns
t _f	Fall Time	V _{GS} =10V	-	9	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	790	1280	pF
C _{oss}	Output Capacitance	V _{DS} =15V	-	225	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	160	-	pF
R _g	Gate Resistance	f=1.0MHz	-	2.5	5	Ω

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	I _S =10A, V _{GS} =0V,	-	11	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	4	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board, t_{sec} ≤10sec ; 135 °C/W when mounted on Min. copper pad.
- 4.Starting T_j=25°C , V_{DD}=30V , L=0.5mH , R_G=25Ω

N-Channel Power MOSFET

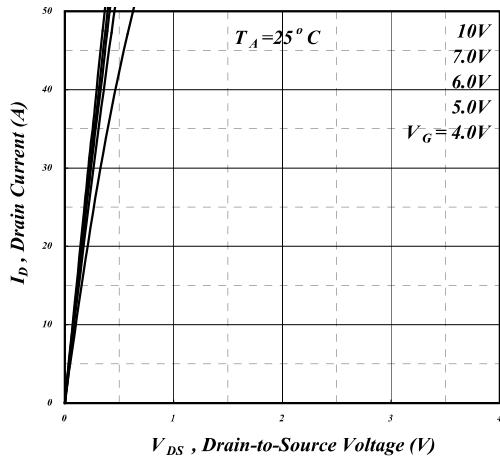


Fig 1. Typical Output Characteristics

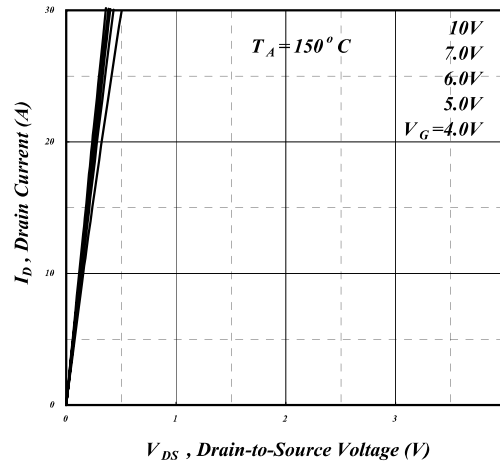


Fig 2. Typical Output Characteristics

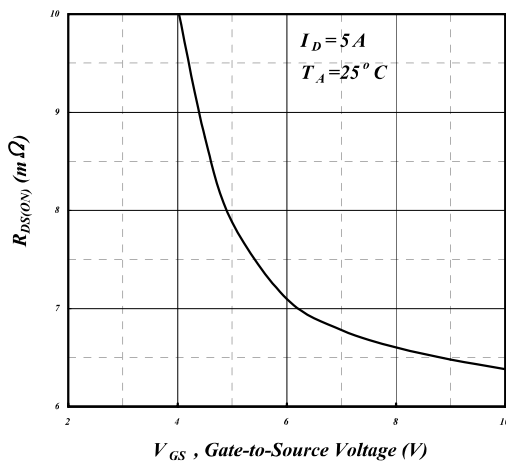


Fig 3. On-Resistance v.s. Gate Voltage

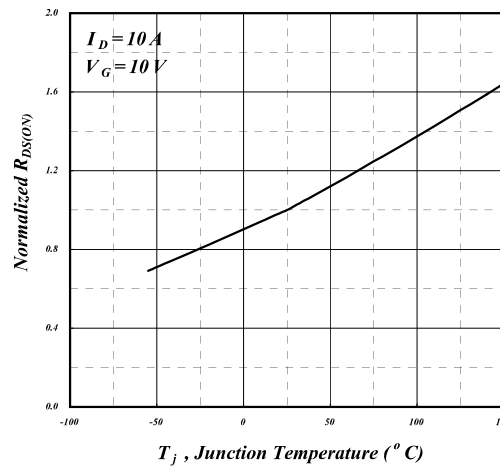


Fig 4. Normalized On-Resistance v.s. Junction Temperature

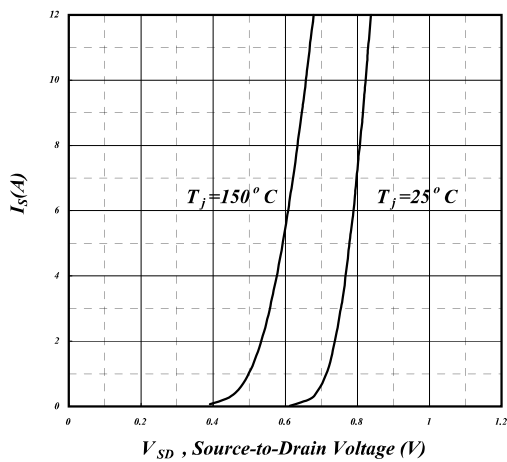


Fig 5. Forward Characteristic of Reverse Diode

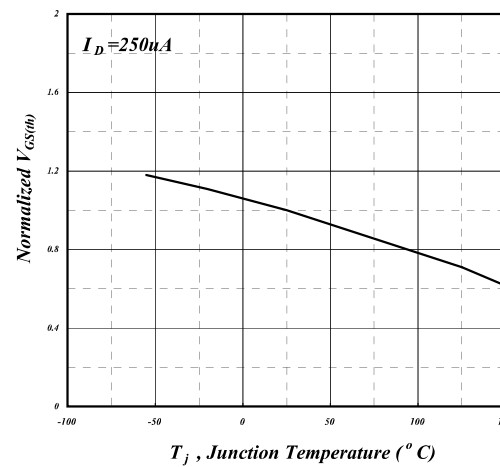


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

AP0903GD
N-Channel Power MOSFET

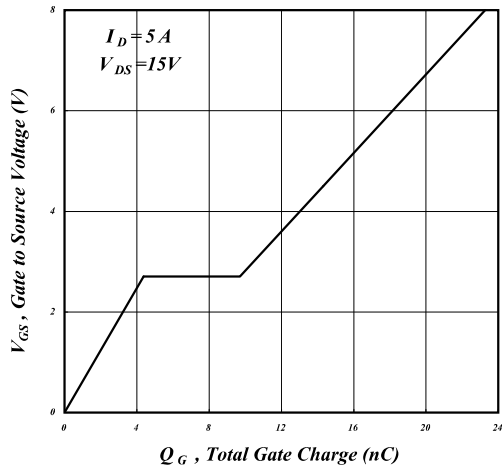


Fig 7. Gate Charge Characteristics

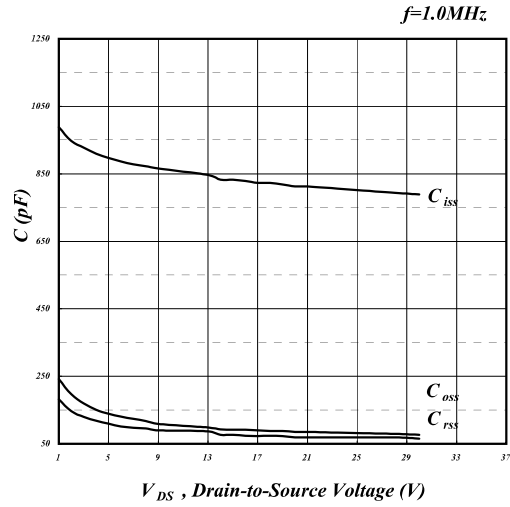


Fig 8. Typical Capacitance Characteristics

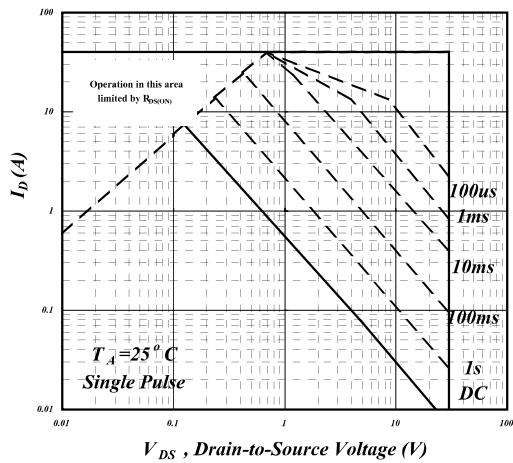


Fig 9. Maximum Safe Operating Area

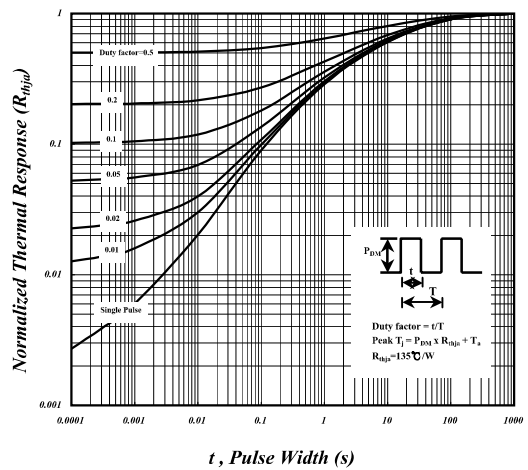


Fig 10. Effective Transient Thermal Impedance

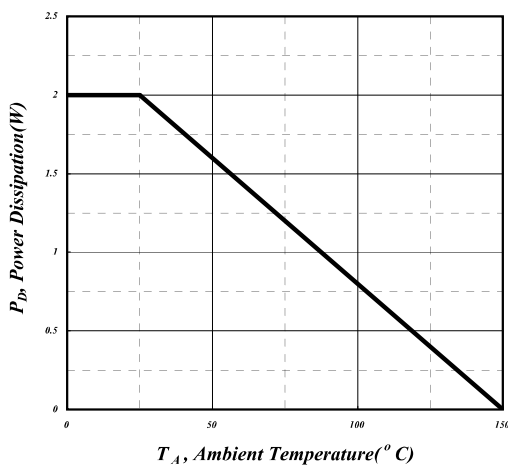


Fig 11. Total Power Dissipation

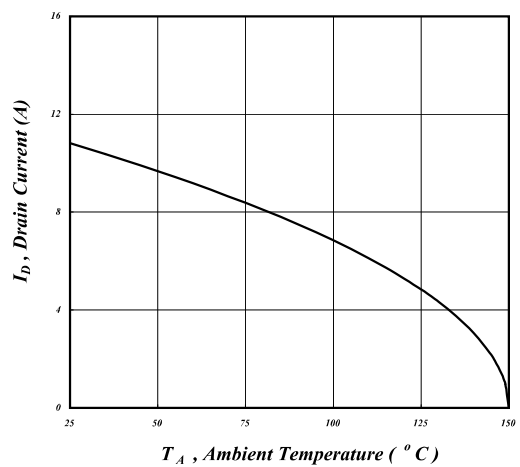
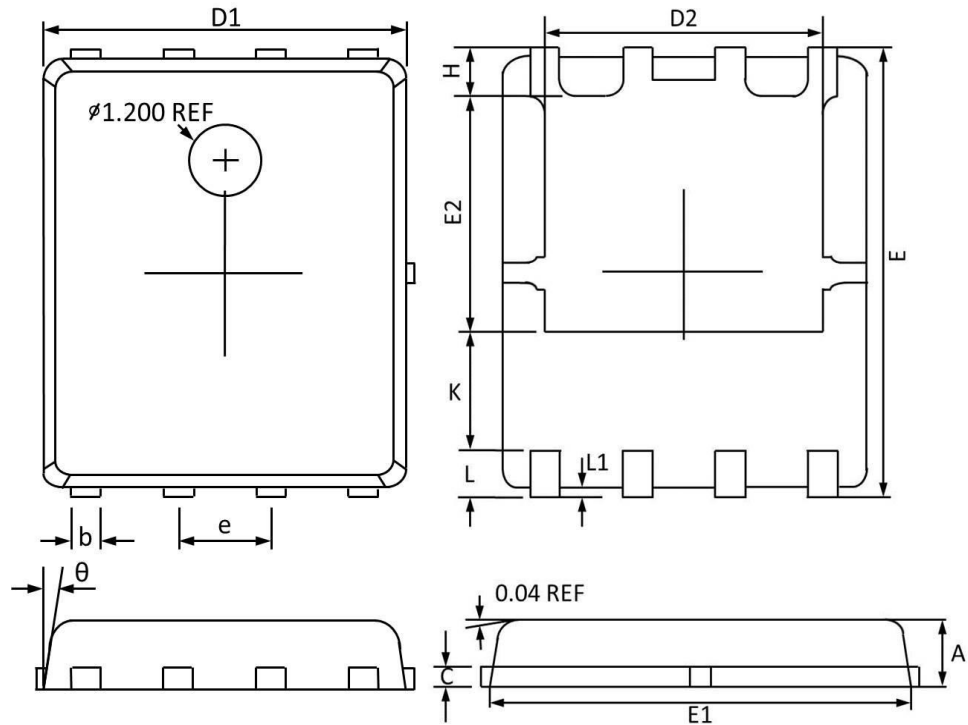


Fig 12. Drain Current v.s. Ambient Temperature

PPAK5x6 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.100	0.800	0.043	0.031
b	0.510	0.330	0.020	0.013
C	0.300	0.200	0.012	0.008
D1	5.100	4.800	0.201	0.189
D2	4.100	3.610	0.161	0.142
E	6.200	5.900	0.244	0.232
E1	5.900	5.700	0.232	0.224
E2	3.780	3.350	0.149	0.132
e	1.27BSC		0.05BSC	
H	0.700	0.410	0.028	0.016
K	1.500	1.100	0.059	0.043
L	0.710	0.510	0.028	0.020
L1	0.200	0.060	0.008	0.002
θ	12°	0°	12°	0°

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[DMN2990UFB-7B](#) [SSM3K35CT,L3F](#) [IPLK60R1K0PFD7ATMA1](#) [2N7002W-G](#) [MCAC30N06Y-TP](#) [IPWS65R035CFD7AXKSA1](#)
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