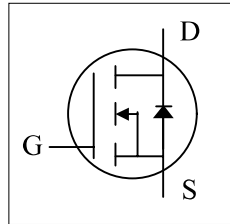


AP0903G

N-Channel Power MOSFET

- ▼ Simple Drive Requirement
- ▼ Good Thermal Dissipation
- ▼ Low On-resistance
- ▼ RoHS Compliant & Halogen-Free

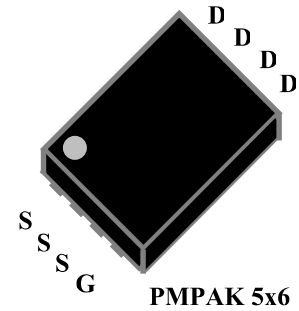


BV_{DSS}	30V
$R_{DS(ON)}$	10mΩ
I_D	20A

Description

Advanced Power MOSFETs from AP provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The PMPAK[®] 5 x 6 package is special for DC-DC converters application and lower 1.0mm profile with backside heat sink.



Absolute Maximum Ratings@T_J=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_A=25^\circ C$	Drain Current ³ , V_{GS} @ 10V	20	A
$I_D@T_A=70^\circ C$	Drain Current ³ , V_{GS} @ 10V	14.1	A
I_{DM}	Pulsed Drain Current ¹	75	A
E_{AS}	Single Pulse Avalanche Energy ⁴	65	mJ
$P_D@T_A=25^\circ C$	Total Power Dissipation	30	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Value	Units
Rthj-a	Maximum Thermal Resistance, Junction-ambient ³	4.2	°C/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	-	-	10	mΩ
		V _{GS} =4.5V, I _D =8A	-	-	16	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 =10A	-	24	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V	-	-	10	uA
	Drain-Source Leakage Current (T _j =70°C)	V _{DS} =24V, V _{GS} =0V	-	-	250	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =10A	-	13	22	nC
Q _{gs}	Gate-Source Charge	V _{DS} =15V	-	4.4	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	5	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =15V	-	10	-	ns
t _r	Rise Time	I _D =1A	-	7	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =6Ω	-	24	-	ns
t _f	Fall Time	V _{GS} =10V	-	8	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	790	1280	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	225	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	160	-	pF
R _g	Gate Resistance	f=1.0MHz	-	1.8	-	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =2.9A, V _{GS} =0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time ²	I _S =10A, V _{GS} =0V,	-	27	-	ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs	-	20	-	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 ≤10sec
- 4.Starting T_j=25°C , V_{DD}=15V , L=0.5mH , R_G=25Ω

N-Channel Power MOSFET

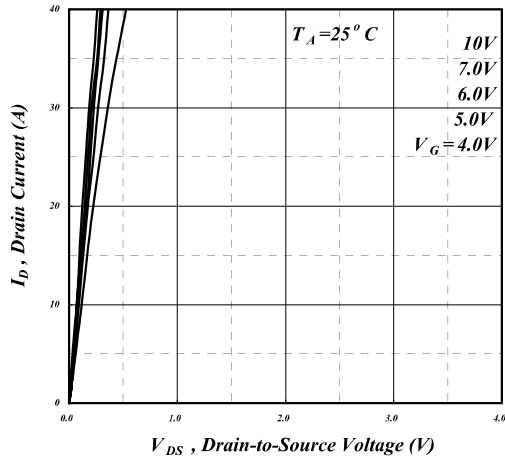


Fig 1. Typical Output Characteristics

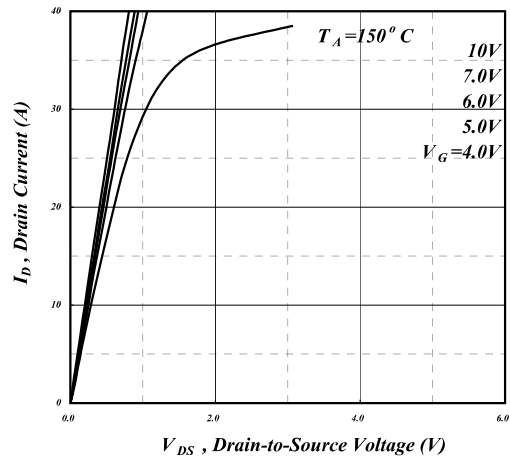


Fig 2. Typical Output Characteristics

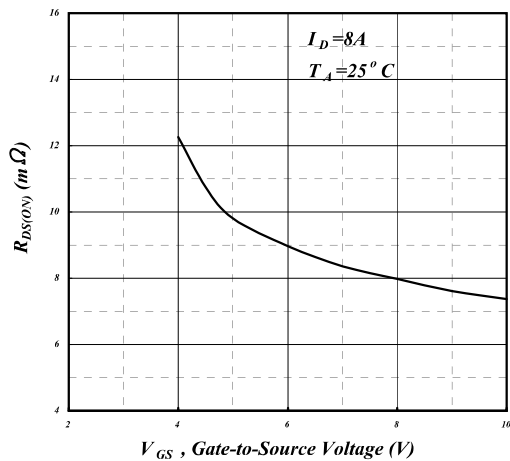


Fig 3. On-Resistance v.s. Gate Voltage

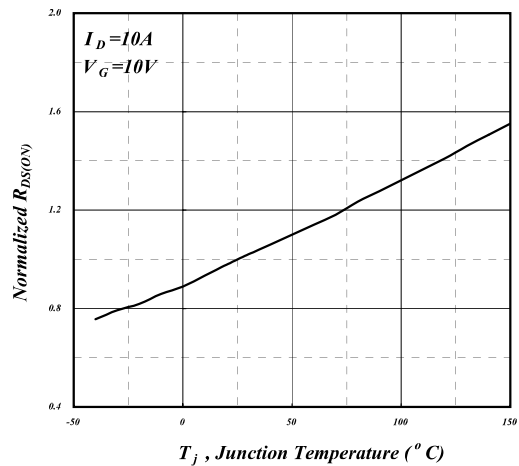


Fig 4. Normalized On-Resistance v.s. Junction Temperature

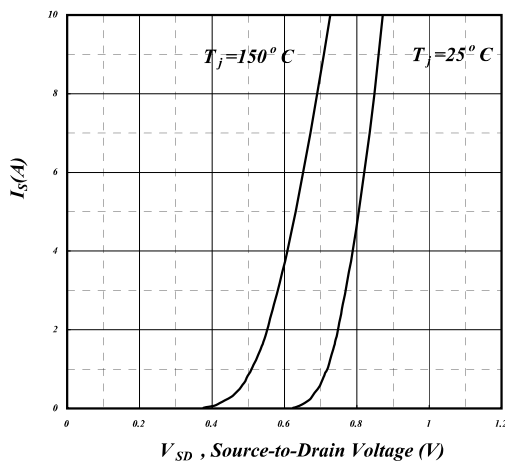


Fig 5. Forward Characteristic of Reverse Diode

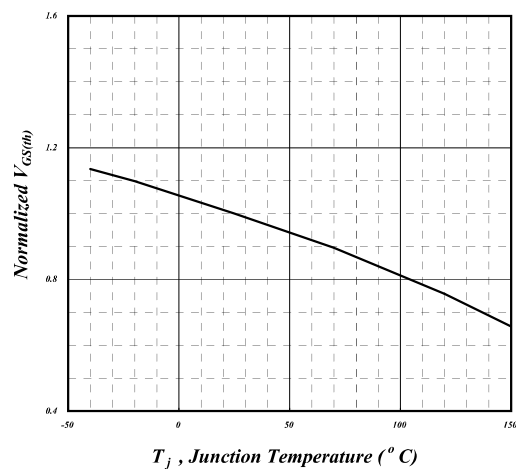


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

N-Channel Power MOSFET

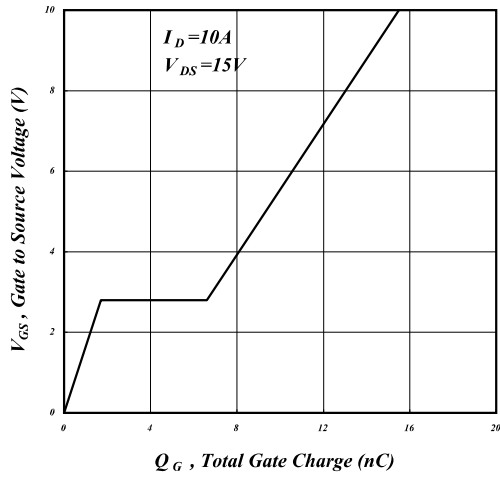


Fig 7. Gate Charge Characteristics

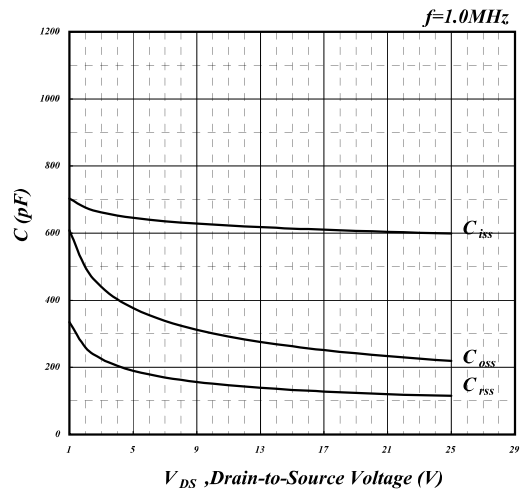


Fig 8. Typical Capacitance Characteristics

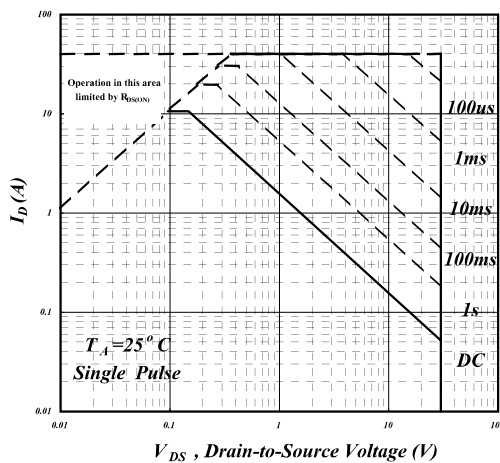


Fig 9. Maximum Safe Operating Area

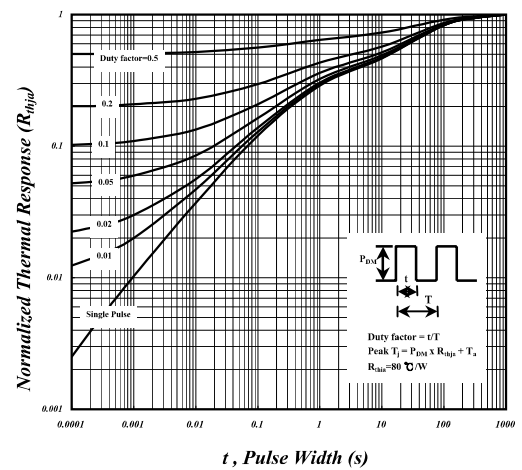


Fig 10. Effective Transient Thermal Impedance

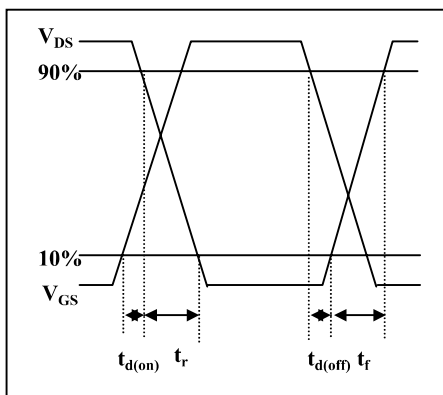


Fig 11. Switching Time Waveform

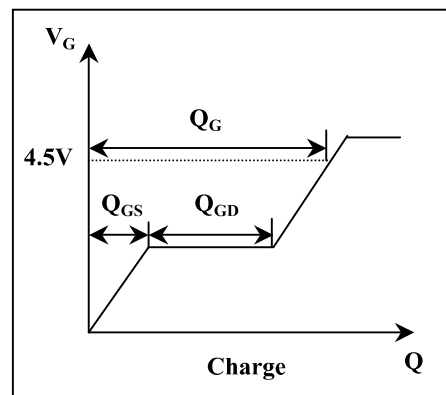
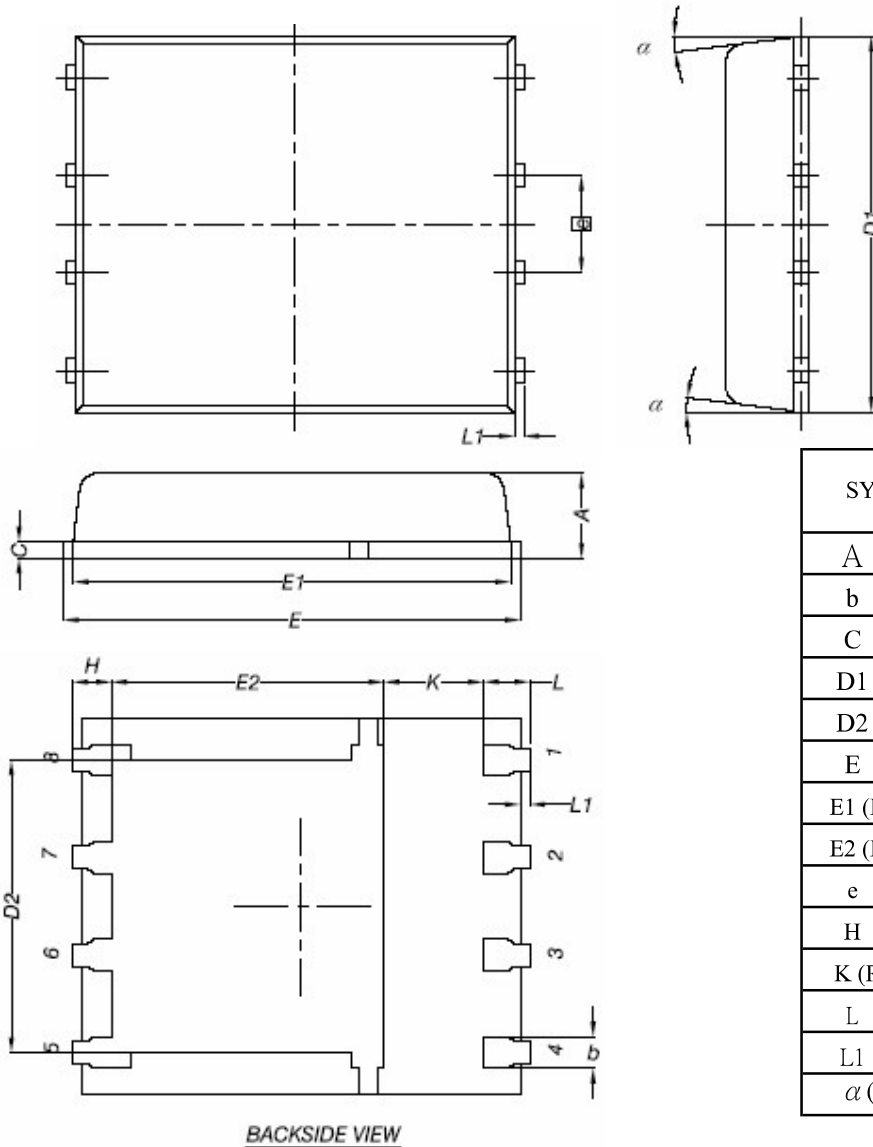


Fig 12. Gate Charge Waveform

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N-Channel Power MOSFET

Package Outline : PMPAK 5x6



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	0.90	1.00	1.10
b	0.33	0.41	0.51
C	0.20	-	-
D1	4.80	4.90	5.10
D2	-	-	4.20
E	5.90	6.00	6.10
E1 (Reference)	5.70	5.75	5.80
E2 (Reference)	3.38	3.58	3.78
e	1.27 BSC		
H	-	-	0.62
K (Reference)	0.70	-	-
L	0.51	0.61	0.71
L1	-	-	0.20
α (Reference)	0°	-	12°

- 1.All Dimension Are In Millimeters.
- 2.Dimension Does Not Include Mold Protrusions.