

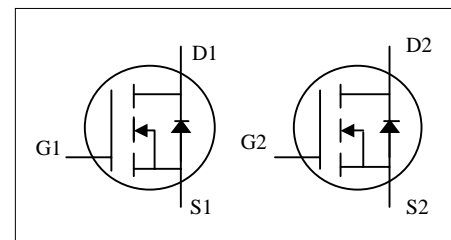
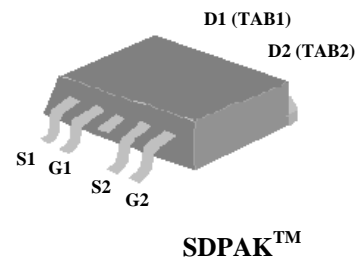
- ▼ Simple Drive Requirement
- ▼ Fast Switching Performance
- ▼ Two Independent Device
- ▼ Halogen Free & RoHS Compliant Product

$BV_{DSS}$	30V
$R_{DS(ON)}$	18m $\Omega$
$I_D$	22A

**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.

SDPAK™ used APEC innovated package and provides two independent device that is suitable and optimum for DC/DC power application.



**Absolute Maximum Ratings**

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	+20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	22	A
$I_D@T_A=25^\circ C$	Continuous Drain Current <sup>3</sup>	10.6	A
$I_D@T_A=70^\circ C$	Continuous Drain Current <sup>3</sup>	8.5	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	50	A
$P_D@T_A=25^\circ C$	Total Power Dissipation	3	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	Unit
Rthj-c	Maximum Thermal Resistance, Junction-case	10.0	°C/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient <sup>3</sup>	42	°C/W



# AP6904GH-HF

## Electrical Characteristics @T<sub>j</sub>=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30	-	-	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =9A	-	-	18	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =6A	-	-	38	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1	-	3	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =9A	-	12	-	S
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	-	-	10	uA
I <sub>GSS</sub>	Gate-Source Leakage	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
Q <sub>g</sub>	Total Gate Charge <sup>2</sup>	I <sub>D</sub> =9A	-	8.7	14	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =24V	-	2	-	nC
Q <sub>gd</sub>	Gate-Drain ("Miller") Charge	V <sub>GS</sub> =4.5V	-	6	-	nC
t <sub>d(on)</sub>	Turn-on Delay Time <sup>2</sup>	V <sub>DS</sub> =15V	-	6	-	ns
t <sub>r</sub>	Rise Time	I <sub>D</sub> =9A	-	24	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time	R <sub>G</sub> =3.3Ω, V <sub>GS</sub> =10V	-	15	-	ns
t <sub>f</sub>	Fall Time	R <sub>D</sub> =1.67Ω	-	6	-	ns
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V	-	445	710	pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> =25V	-	110	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance	f=1.0MHz	-	95	-	pF
R <sub>g</sub>	Gate Resistance	f=1.0MHz	-	1.5	2.4	Ω

## Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V <sub>SD</sub>	Forward On Voltage <sup>2</sup>	I <sub>S</sub> =2.5A, V <sub>GS</sub> =0V	-	-	1.2	V
t <sub>rr</sub>	Reverse Recovery Time <sup>2</sup>	I <sub>S</sub> =9A, V <sub>GS</sub> =0V,	-	20	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge	dI/dt=100A/μs	-	8	-	nC

### Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.R<sub>thja</sub> is determined with the device, mounted on 2oz FR4 board t ≤ 10s.

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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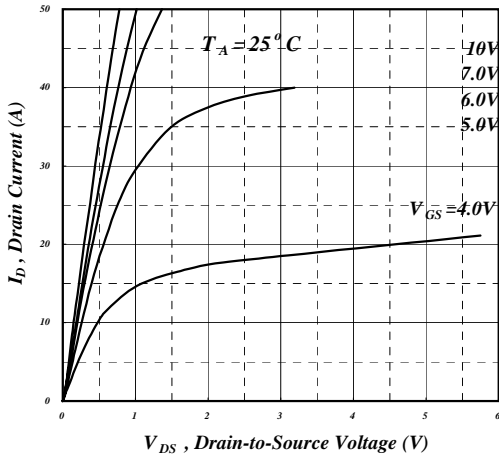


Fig 1. Typical Output Characteristics

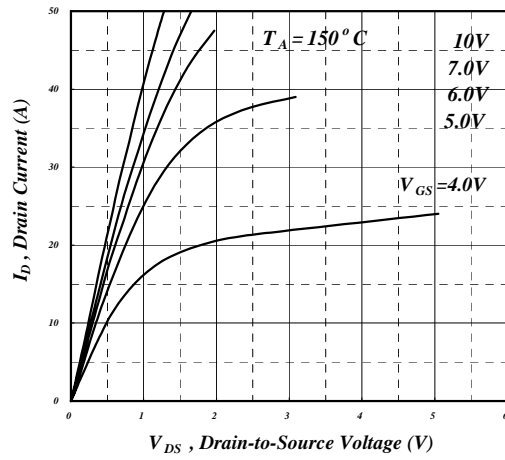


Fig 2. Typical Output Characteristics

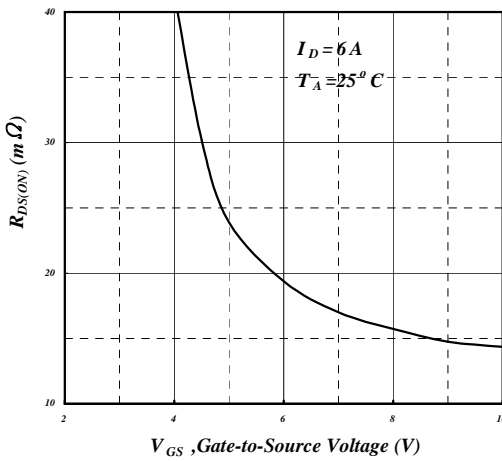


Fig 3. On-Resistance v.s. Gate Voltage

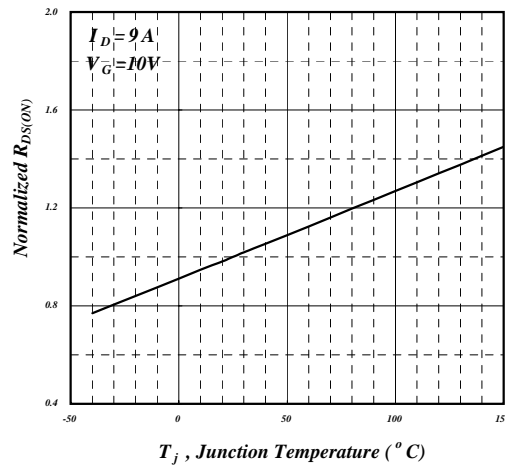


Fig 4. Normalized On-Resistance v.s. Junction Temperature

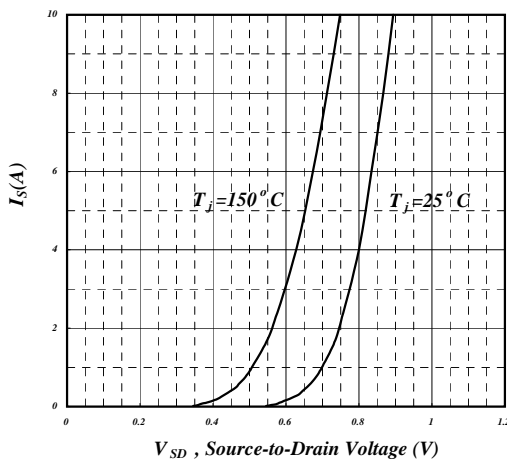


Fig 5. Forward Characteristic of Reverse Diode

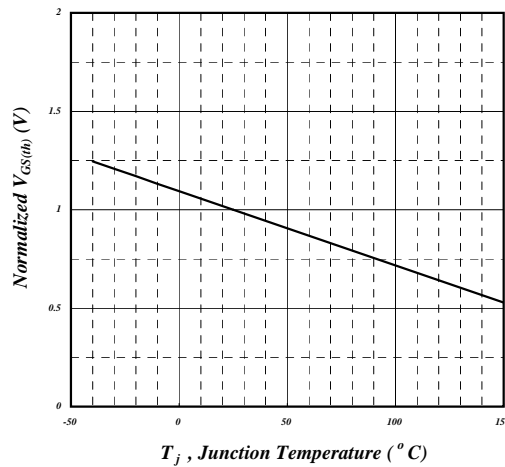


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

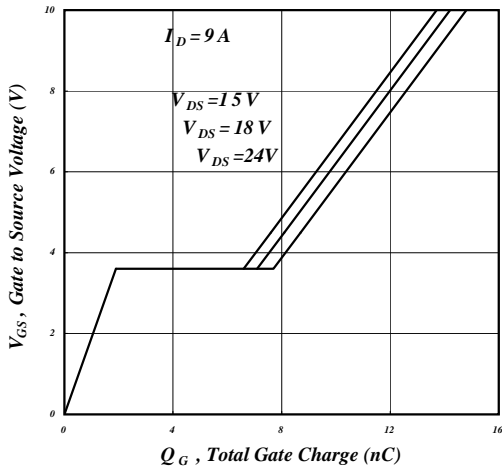


Fig 7. Gate Charge Characteristics

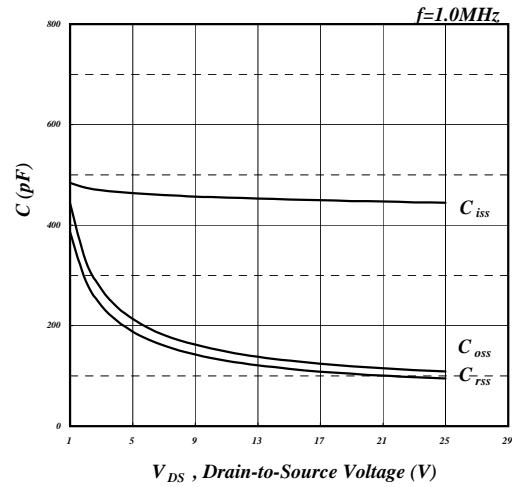


Fig 8. Typical Capacitance Characteristics

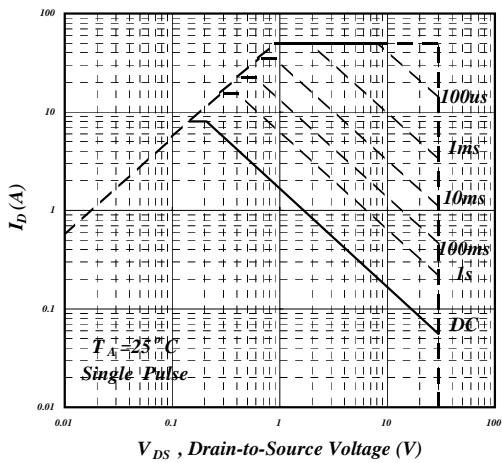


Fig 9. Maximum Safe Operating Area

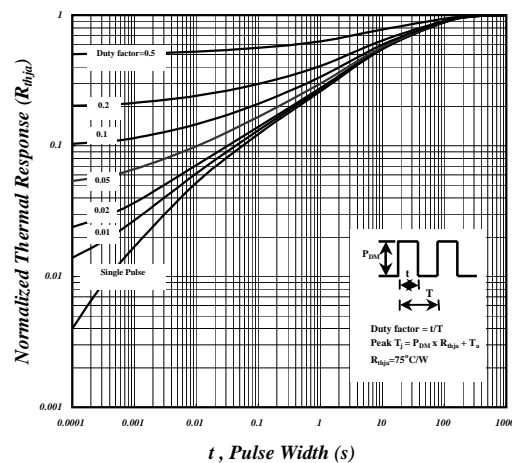


Fig 10. Effective Transient Thermal Impedance

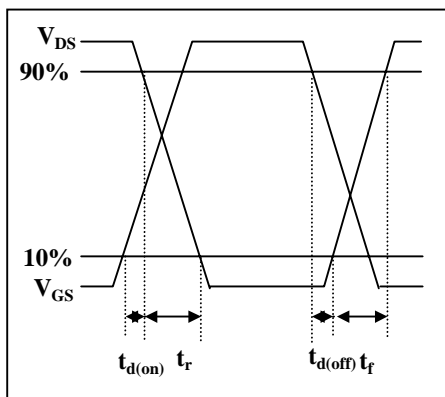


Fig 11. Switching Time Waveform

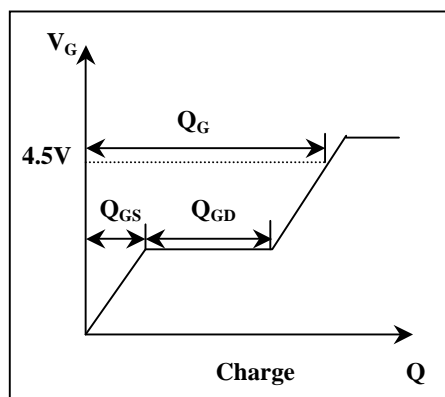


Fig 12. Gate Charge Waveform