

Dual N-CH60V Fast Switching MOSFETs

❖ GENERAL DESCRIPTION

The AMS6204 is the high cell density trench N-ch MOSFETs, which provide excellent R_{DS(on)} and gate charge for most of the synchronous buck converter applications.

The AMS6204 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

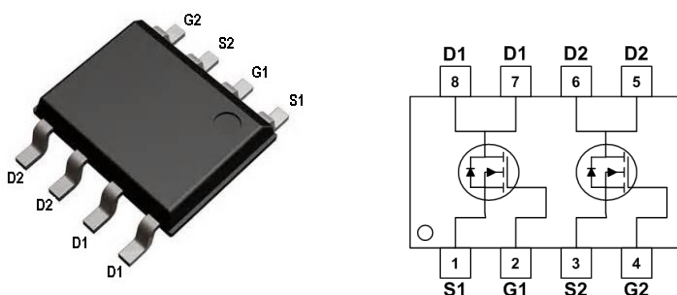
❖ FEATURES

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

Product Summary

BVDSS	R _{DS(on)}	I _D
60V	30mΩ	4.8A

Dual SOP8 Pin configuration



❖ ELECTRICAL CHARACTERISTICS

 (T_J=25 °C, unless otherwise noted)

Characteristics	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	60	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA	-	0.063	-	V/°C
Static Drain-Source On-Resistance (Note 2)	R _{DS(ON)}	V _{GS} =10V, I _D =4A	-	25	30	mΩ
		V _{GS} =4.5V, I _D =2A	-	30	38	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.2	-	2.5	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		-	-5.24	-	mV/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =48V, V _{GS} =0V, T _J =25°C	-	-	1	uA
		V _{DS} =48V, V _{GS} =0V, T _J =55°C	-	-	5	
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =4A	-	21	---	S
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	-	3.2	6.4	Ω
Total Gate Charge (4.5V)	Q _g	V _{DS} =48V, V _{GS} =4.5V, I _D =4A	-	12.6	-	nC
Gate-Source Charge	Q _{gs}		-	3.2	-	
Gate-Drain Charge	Q _{gd}		-	6.3	-	
Turn-On Delay Time	T _{d(on)}	V _{DD} =30V, V _{GS} =10V, R _G =3.3Ω, I _D =4A	-	8	-	ns
Rise Time	T _r		-	14.2	-	
Turn-Off Delay Time	T _{d(off)}		-	24.4	-	
Fall Time	T _f		-	4.6	-	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	1378	-	pF
Output Capacitance	C _{oss}		-	86	-	
Reverse Transfer Capacitance	C _{rss}		-	64	-	
Guaranteed Avalanche Characteristics						
Single Pulse Avalanche Energy (Note 5)	EAS	V _{DD} =25V, L=0.1mH, I _{AS} =15A	15.2	-	-	mJ
Diode Characteristics						
Continuous Source Current (Note 1, 6)	I _S	V _G =V _D =0V, Force Current	-	-	4.8	A
Pulsed Source Current (Note 2, 6)	I _{SM}		-	-	9.6	A
Diode Forward Voltage (Note 2)	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C	-	-	1.2	V

 Note 1: The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.

Note 2: The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%

 Note 3: The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=22.6A

Note 4: The power dissipation is limited by 150°C junction temperature

Note 5: The Min. value is 100% EAS tested guarantee.

 Note 6: The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

❖ TYPICAL CHARACTERISTICS

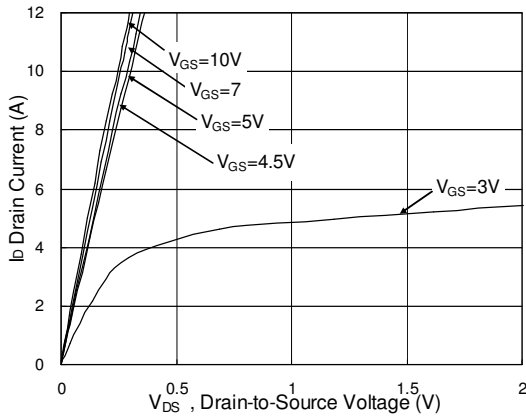


Fig.1 Typical Output Characteristics

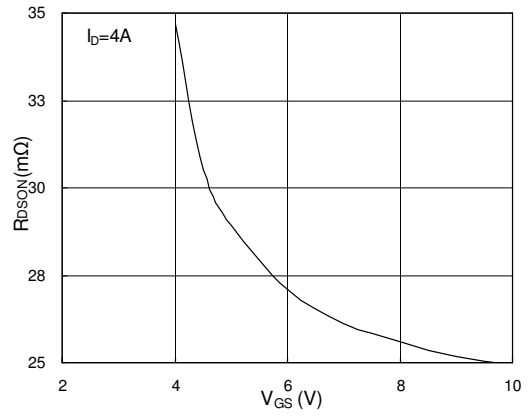


Fig.2 On-Resistance v.s Gate-Source

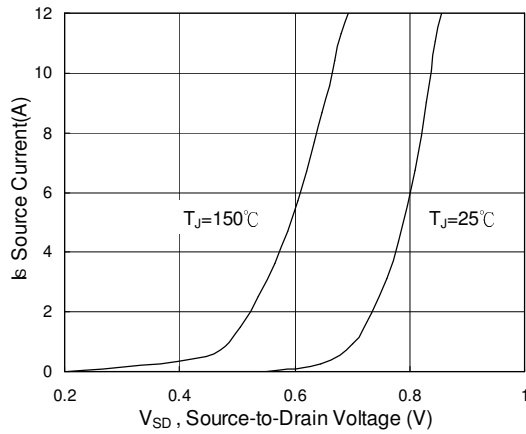


Fig.3 Forward Characteristics of Reverse

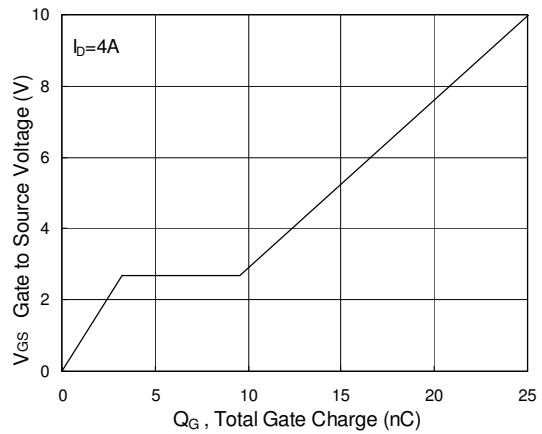


Fig.4 Gate-Charge Characteristics

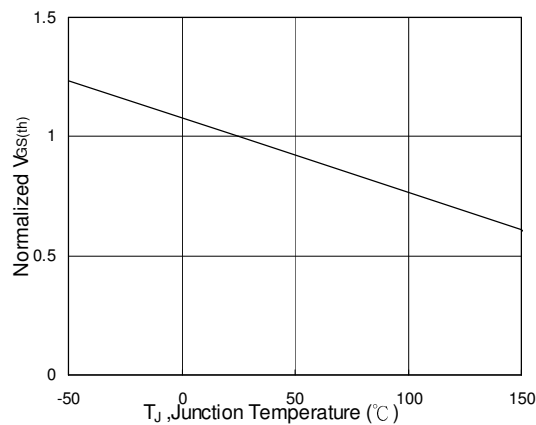


Fig.5 Normalized V_{GS(th)} vs. T_J

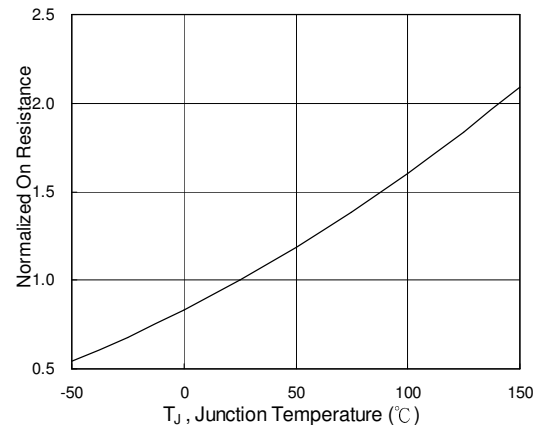


Fig.6 Normalized R_{DS(on)} vs. T_J

❖ TYPICAL CHARACTERISTICS (COUNTINOUS)

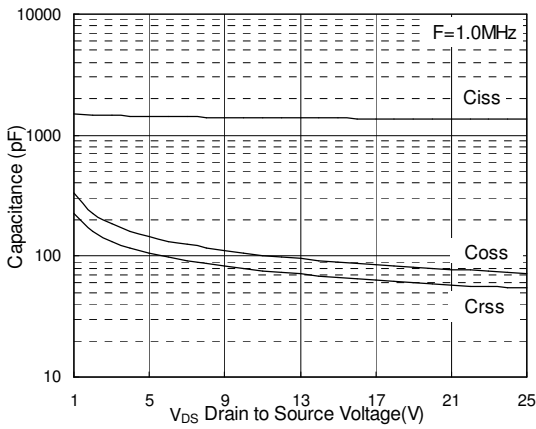


Fig.7 Capacitance

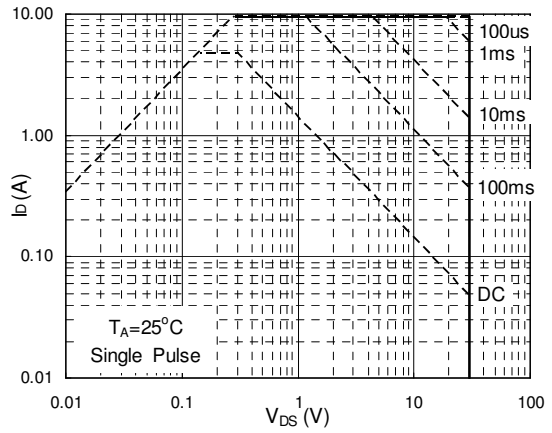


Fig.8 Safe Operating Area

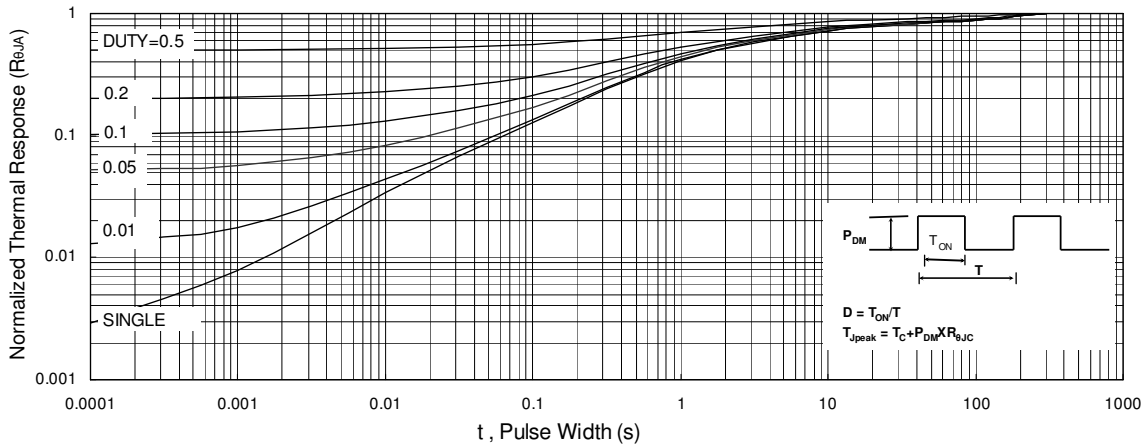


Fig.9 Normalized Maximum Transient Thermal Impedance

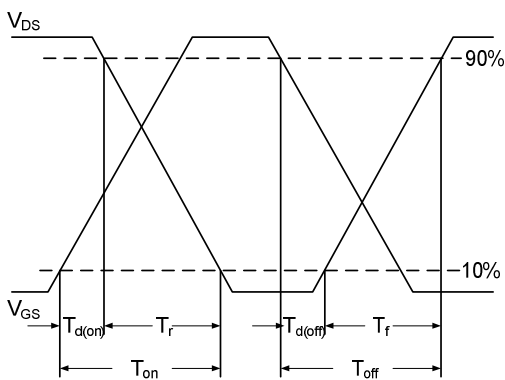


Fig.10 Switching Time Waveform

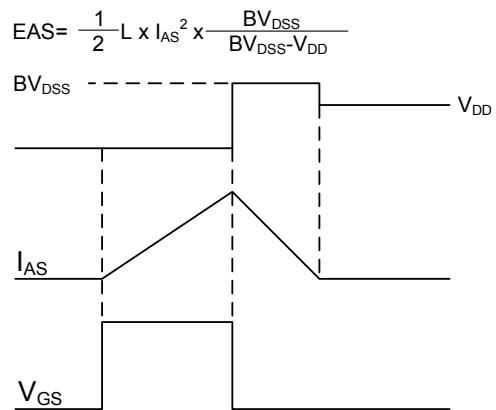


Fig.11 Unclamped Inductive Waveform