AP1010W

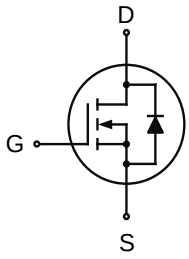
N-Channel Enhancement Mosfet

ALLPOWER

DATA SHEET

Features

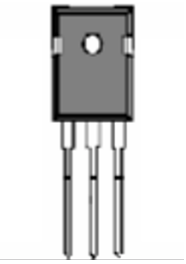
- 60V,100A
  $R_{DS(ON)}$ <8mΩ @V_{GS}=10V TYP:7 mΩ
- Low gate charge
- Fast switching
- 100% avalanche tested
- RoHS product



Schematic Diagram

Applications

- High efficiency switch mode power supplies
- UPS Power



TO-247

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
1010W	AP1010W	TO-247	-	-	600

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_C =25℃)	I_D	100	A
Continuous Drain Current (T_C=100℃)	I_D	80	A
Avalanche Current	I_{AR}	80	A
Pulsed Drain Current	I_{DM}	440	A
Drain Power Dissipation	P_D	300	W
Single Pulsed Avalanche Energy	E_{AS}	2970	mJ
Repetitive Avalanche Energy	E_{AR}	20	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0	-	4.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =80A	-	7	8	mΩ
Forward transconductance	gfs	V_{DS} =10V, I_D =80A	-	43	-	S
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =25V, V_{GS} =0V, f =1.0MHz	-	2750	-	pF
Output Capacitance	C_{oss}		-	749	-	
Reverse Transfer Capacitance	C_{rss}		-	197	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=28V, I_D=60A, R_G=25Ω, V_G=10V	-	17	-	ns
Turn-on rise time	t_r		-	122	-	
Turn-off delay time	$t_{d(off)}$		-	57	-	
Turn-off fall time	t_f		-	72	-	
Total Gate Charge	Qg	V_{DS}=48V, I_D=60A, V_{GS}=10V	-	78	-	nC
Gate-Source Charge	Qgs		-	13.2	-	
Gate-Drain Charge	Qgd		-	37.8	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	T_C=25℃, V_{GS} =0V, I_S=20A	-	-	1.3	V
Diode Forward current	I_S	T_C=25℃	-	-	100	A
Body Diode Reverse Recovery Time	trr	T_C=25℃，IF=20A,di/dt=100A/us		63		ns
Body Diode Reverse Recovery Charge	Qrr	T_C=25℃，IF=20A,di/dt=100A/us		63		uc

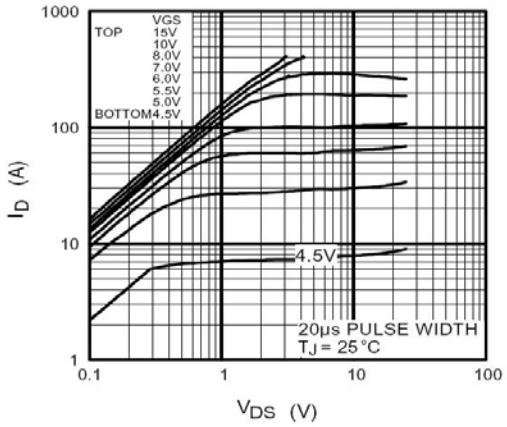
Notes:

a) Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

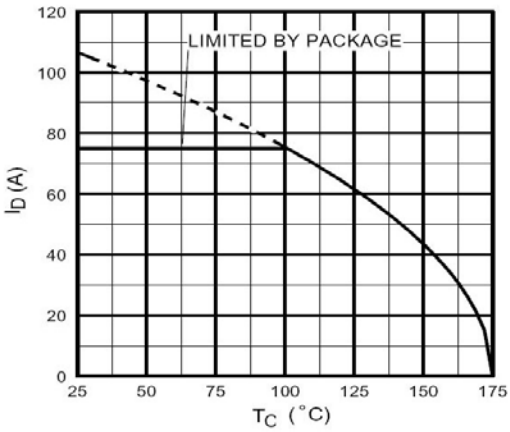
b) Guaranteed by design, not subject to production testing

Typical Performance Characteristics

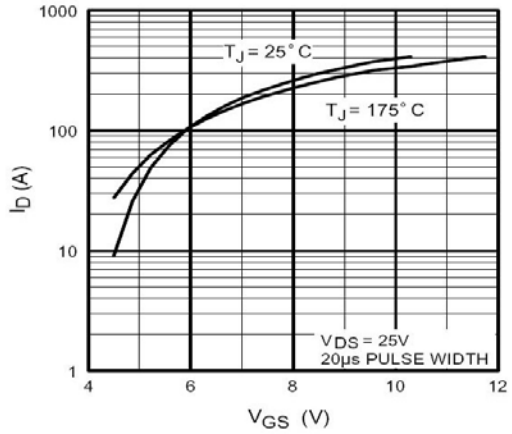
I_D — V_{DS}



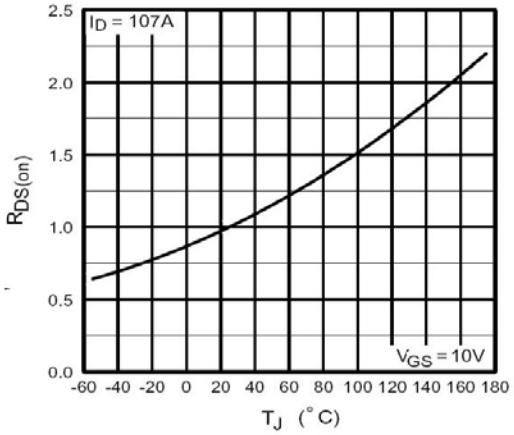
I_D — T_C



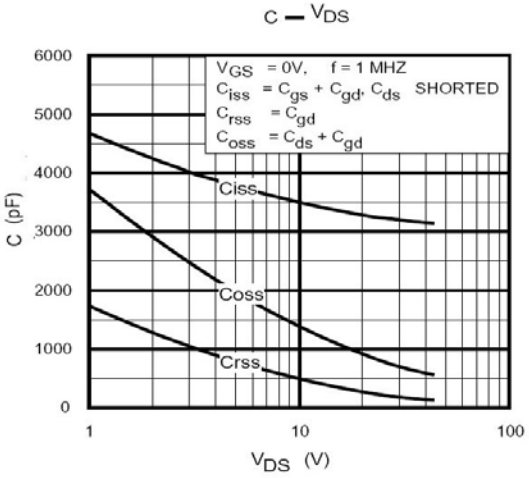
I_D — V_{GS}



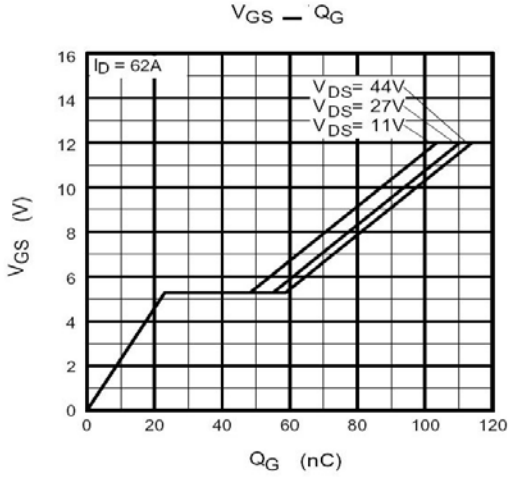
$R_{DS(on)}$ — T_J



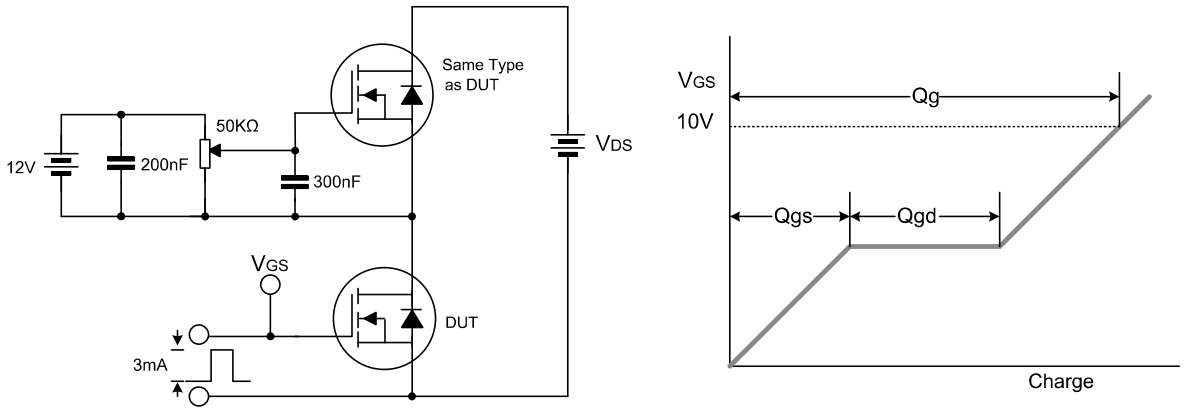
C — V_{DS}



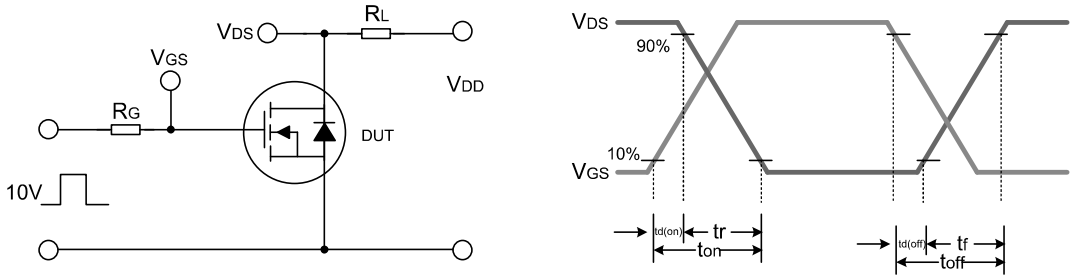
V_{GS} — Q_G



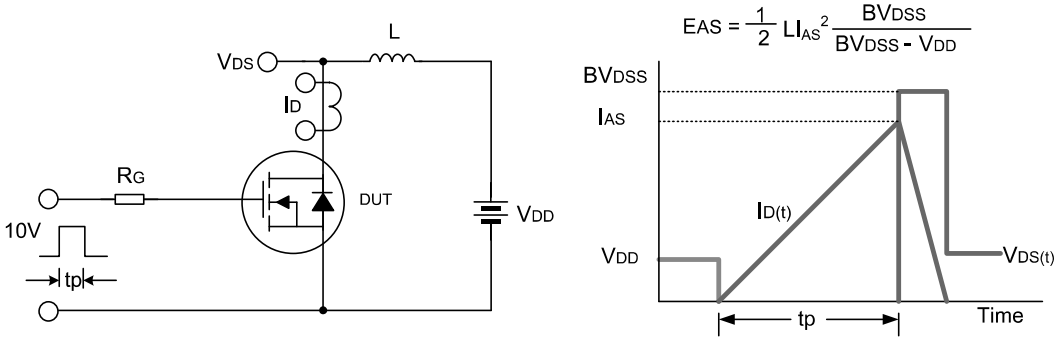
Test Circuit



Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform



EAS Test Circuit & Waveform

TO-247 Package Information

Dimensions in (mm)