ASDM100R520PKQ

-100V P-Channel MOSFET

Features

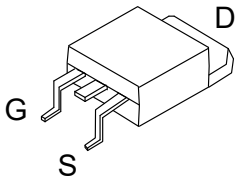
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

- Load Switch
- PWM Application
- Power management

Product Summary

V_{DS}	-100	V
$R_{DS(on),Typ}$@ V_{GS}=-10 V	40	mΩ
I_D	-35	A



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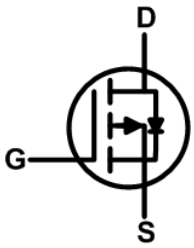


P-channel

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-100	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	-35	A
		T_C = 100℃	-23	A
I_{DM}	Pulsed Drain Current note1		-140	A
E_{AS}	Single Pulsed Avalanche Energy note2		87	mJ
P_D	Power Dissipation	T_C = 25℃	140	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.1	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	-100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-100V, V_{GS}=0V,	-	-	-1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-1.0	-1.6	-2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS}=-10V, I_D=-20A	-	40	52	mΩ
		V_{GS}=-4.5V, I_D=-10A	-	44	62	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-50V, V_{GS}=0V, f=1.0MHz	-	2120	-	pF
C_{oss}	Output Capacitance		-	194	-	pF
C_{rss}	Reverse Transfer Capacitance		-	13	-	pF
Q_g	Total Gate Charge	V_{DS}=-50V, I_D=-5A, V_{GS}=-10V	-	40	-	nC
Q_{gs}	Gate-Source Charge		-	7.8	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	8.6	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=-50V, I_D=-5A, R_G=6Ω, V_{GS}=-10V	-	13	-	ns
t_r	Turn-on Rise Time		-	39	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	100.1	-	ns
t_f	Turn-off Fall Time		-	105.3	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-35	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-140	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=-30A	-	-	-1.2	V
t_{rr}	Body Diode Reverse Recovery Time	T_J=25℃, I_F=-5A,dI/dt=100A/μs	-	104	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	280	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25℃, V_{DD}=-50V, V_G=-10V, R_G=25Ω, L=0.5mH, I_{AS}=-18.7A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

Figure1: Output Characteristics

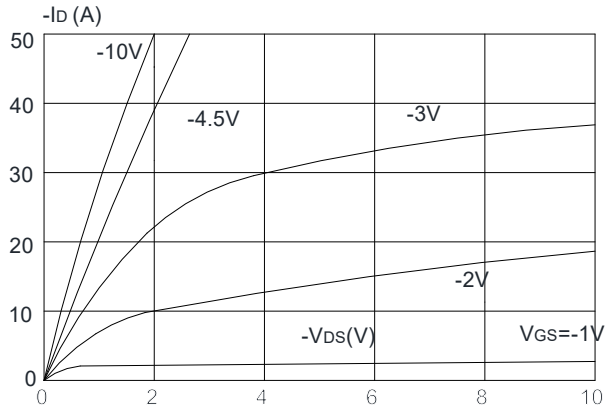


Figure 2: Typical Transfer Characteristics

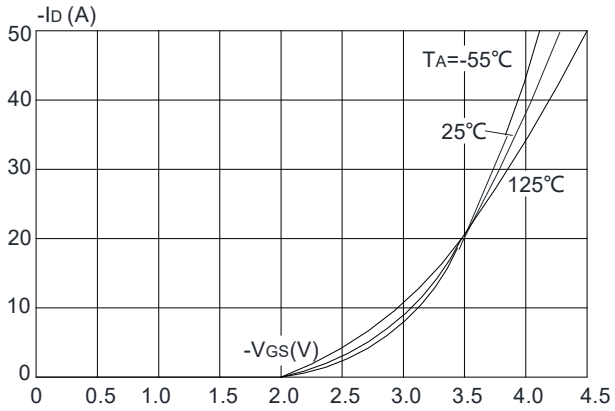


Figure 3: On-resistance vs. Drain Current

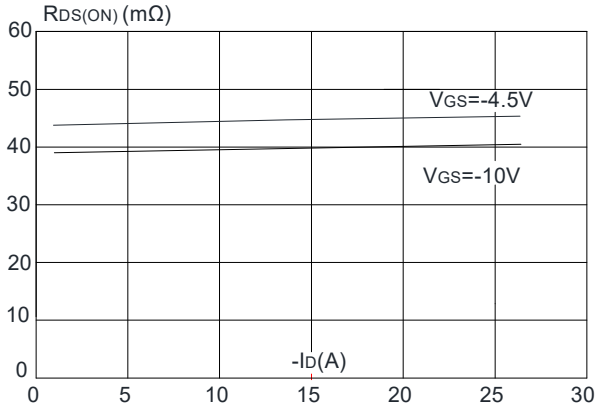


Figure 4: Body Diode Characteristics

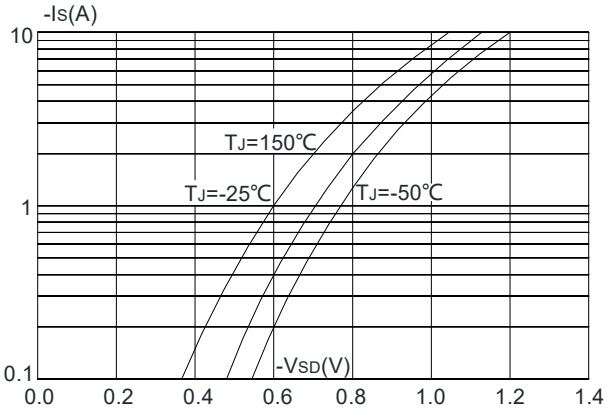


Figure 5: Gate Charge Characteristics

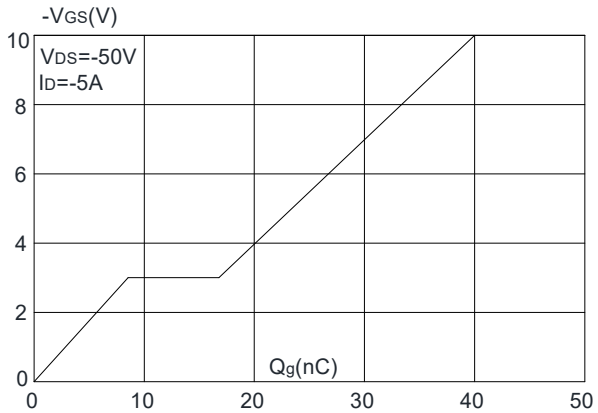


Figure 6: Capacitance Characteristics

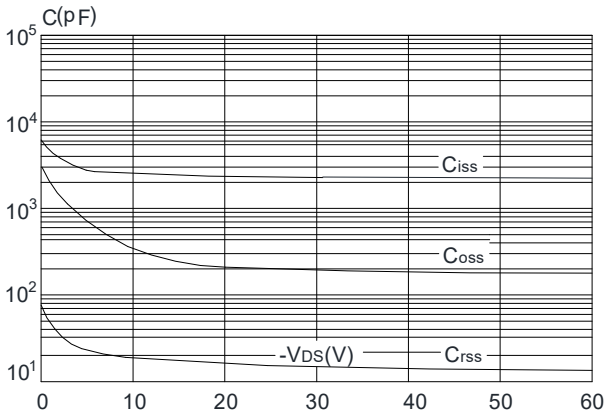


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

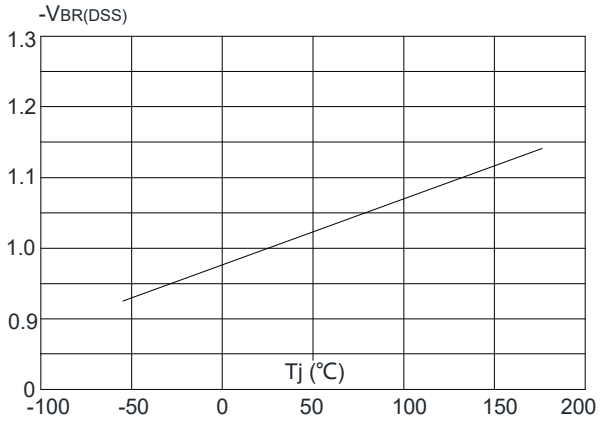


Figure 8: Normalized on Resistance vs. Junction Temperature

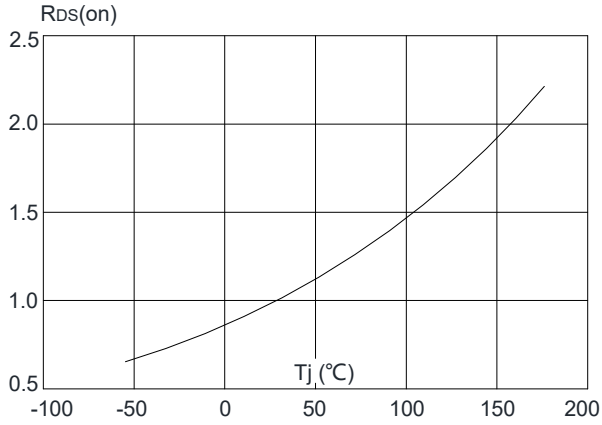


Figure 9: Maximum Safe Operating Area

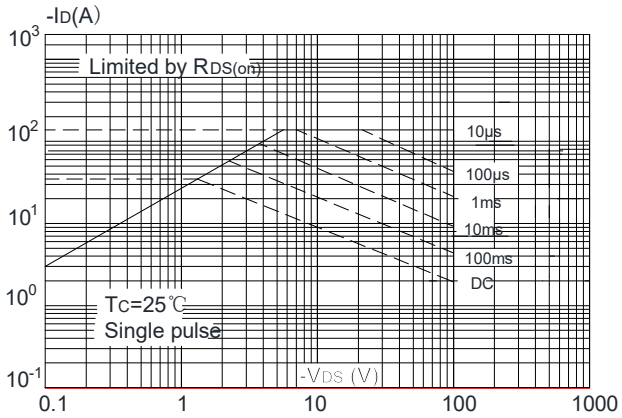


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

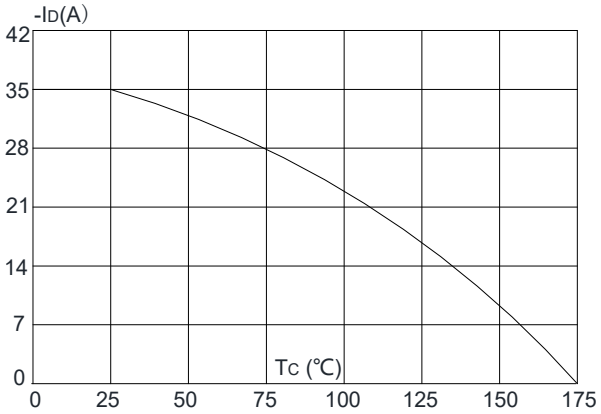
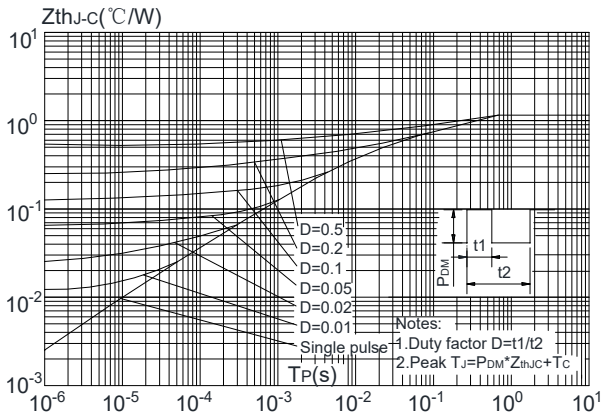


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

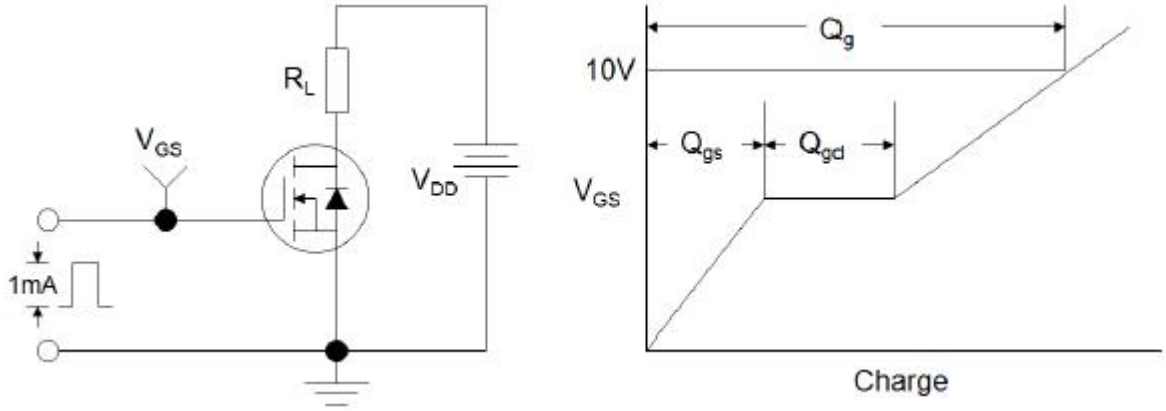


Figure1:Gate Charge Test Circuit & Waveform

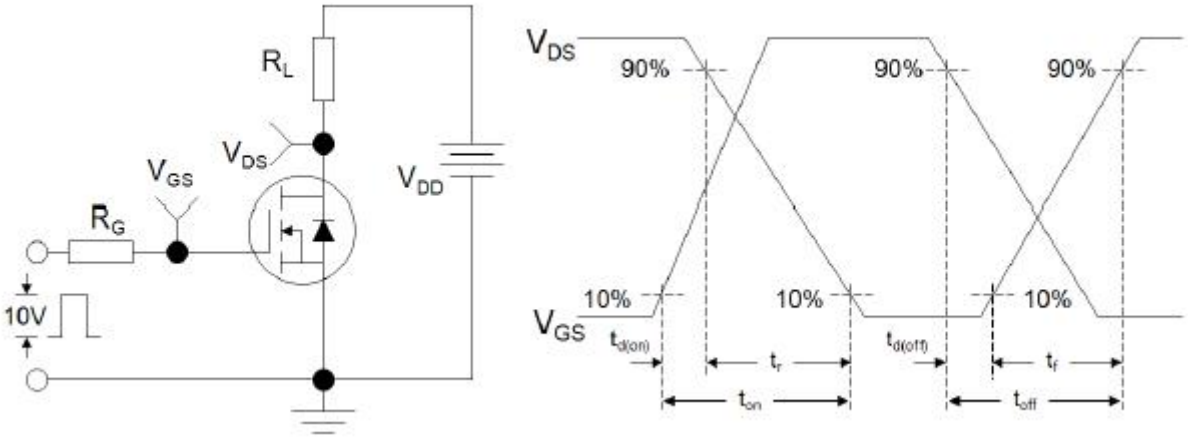


Figure 2: Resistive Switching Test Circuit & Waveforms

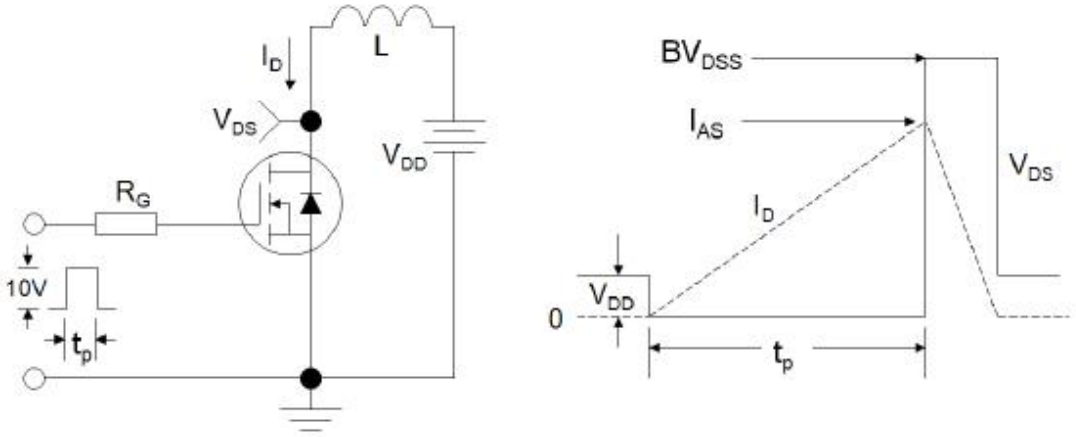
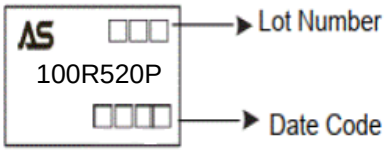


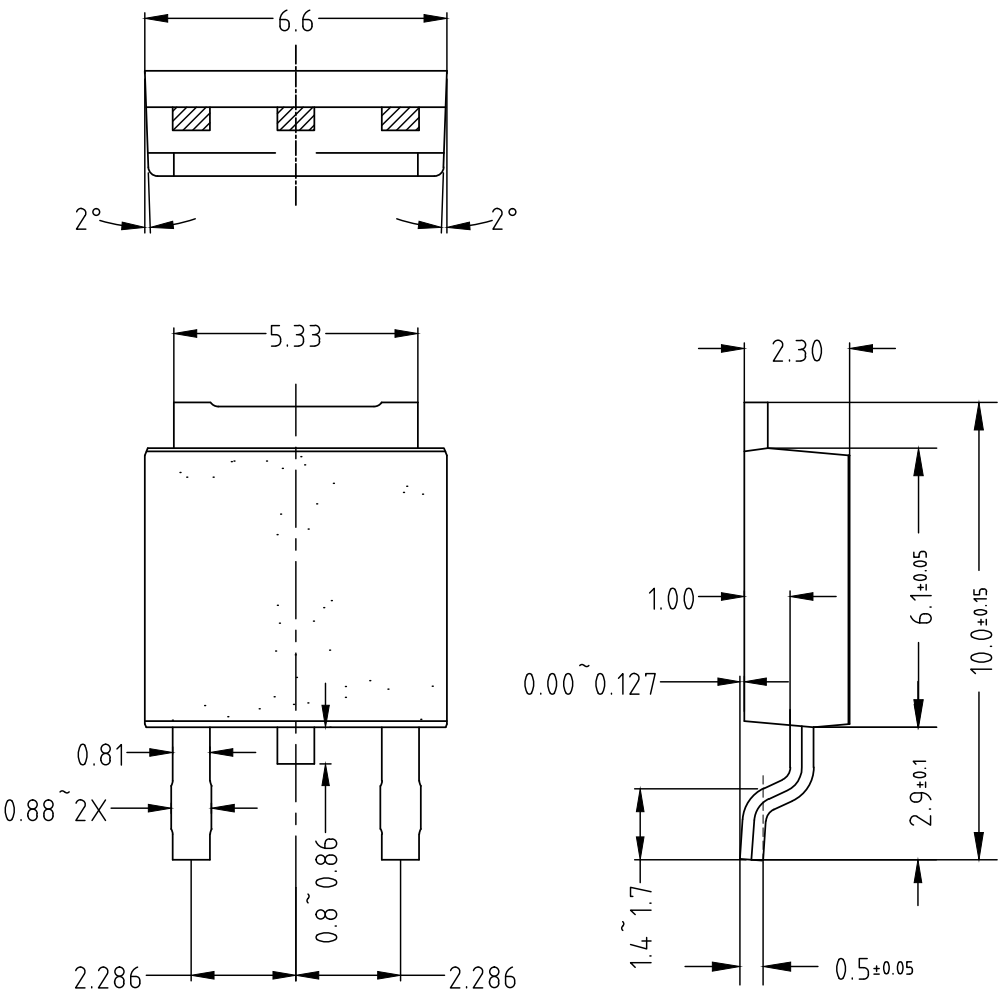
Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM100R520PKQ-R	100R520P	TO-252	Tape&Reel	2500/Reel

PACKAGE	MARKING
TO-252	

TO-252


6.6
2°
2°
5.33
0.81
0.88~2X
0.8~0.86
2.286
2.286
2.30
1.00
0.00~0.127
6.1±0.05
10.0±0.15
2.9±0.1
1.4~1.7
0.5±0.05

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