

Features

- Advanced Trench Technology
- Provide Excellent RDS(ON) and Low Gate Charge
- Lead free product is acquired

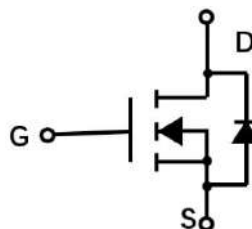
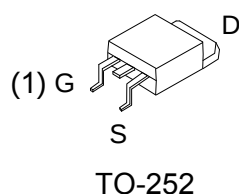
Application

- Load Switch
- PWM Application
- Power management



Product Summary

V_{DS}	100	V
$R_{DS(on), Typ@ V_{GS}=10 V}$	92	mΩ
I_D	15	A



Absolute Maximum Ratings (T_C=25°C 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°C	15	A
		T _C = 100°C	6.5	A
I_{DM}	Pulsed Drain Current ^{note1}		60	A
EAS	Single Pulsed Avalanche Energy ^{note2}		6	mJ
P_D	Power Dissipation	T _C = 25°C	44	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		3.4	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range		-55 to +175	°C

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ 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	1.5	2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance note3	V _{GS} =10V, I _D =5A	-	92	110	mΩ
		V _{GS} =4.5V, I _D =3A	-	95	114	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	744	-	pF
C _{oss}	Output Capacitance		-	35	-	pF
C _{rss}	Reverse Transfer Capacitance		-	11	-	pF
Q _g	Total Gate Charge	V _{DS} =50V, I _D =2A, V _{GS} =10V	-	20	-	nC
Q _{gs}	Gate-Source Charge		-	2.8	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	4	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =50V, I _D =3A, R _G =1.8Ω, V _{GS} =10V	-	6	-	ns
t _r	Turn-on Rise Time		-	7	-	ns
t _{d(off)}	Turn-off Delay Time		-	21	-	ns
t _f	Turn-off Fall Time		-	3	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	15	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	60	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =10A	-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F =10A, dI/dt=100A/μs	-	22	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	29	-	nC

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

2. EAS condition : $T_J=25^{\circ}\text{C}, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25\Omega, I_{AS}=5A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Performance Characteristics

Figure1: Output Characteristics

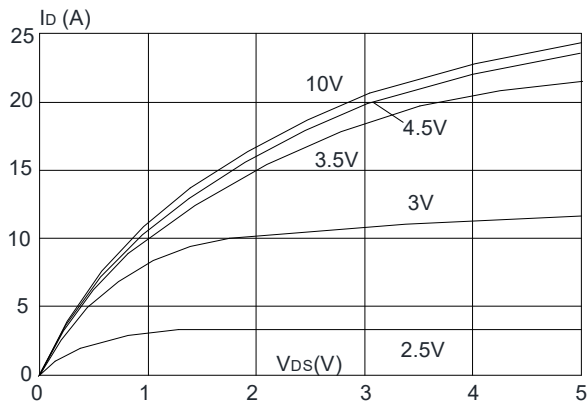


Figure 2: Typical Transfer Characteristics

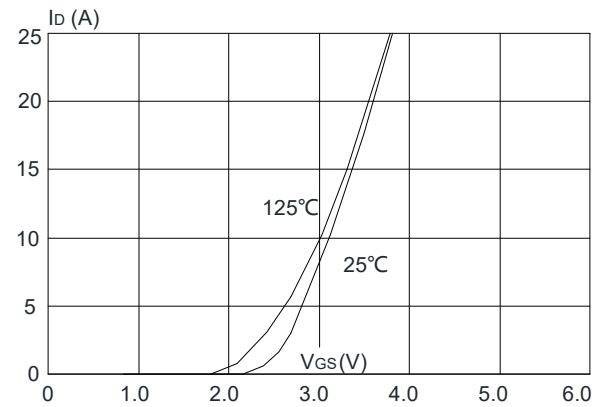


Figure 3: On-resistance vs. Drain Current

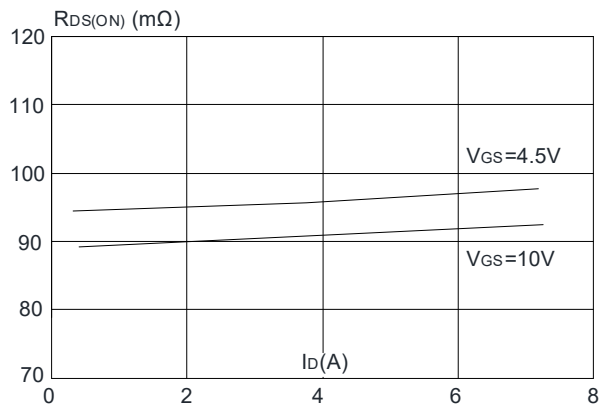


Figure 4: Body Diode Characteristics

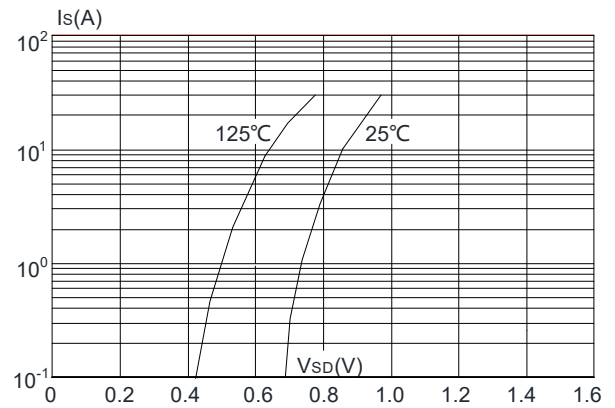


Figure 5: Gate Charge Characteristics

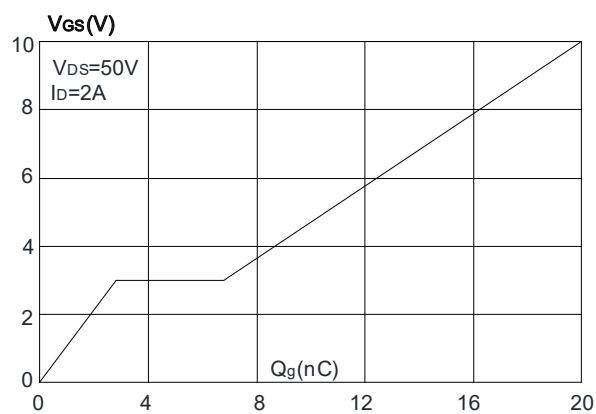


Figure 6: Capacitance Characteristics

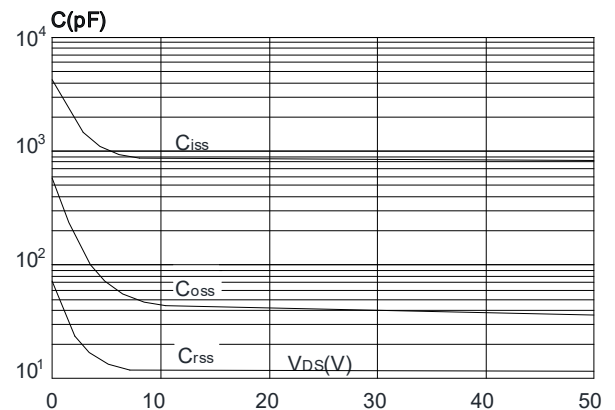


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

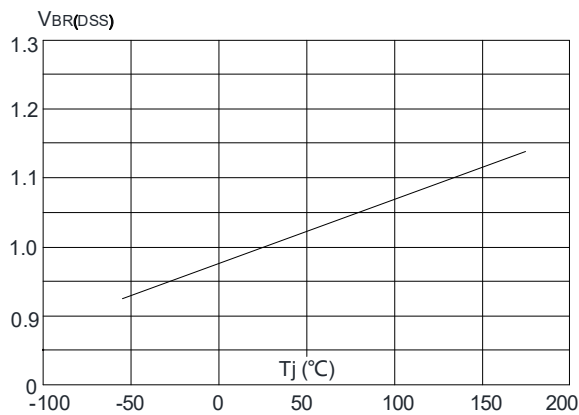


Figure 8: Normalized on Resistance vs. Junction Temperature

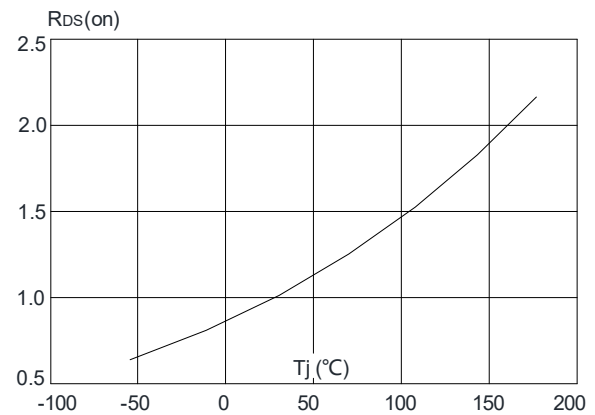


Figure 9: Maximum Safe Operating Area

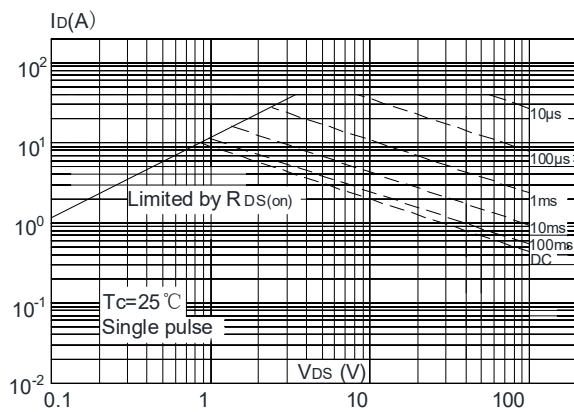


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

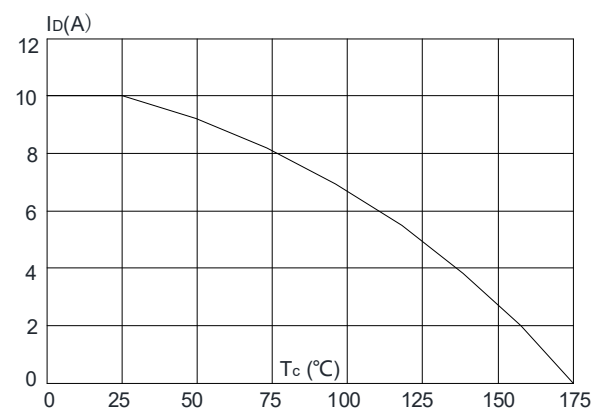
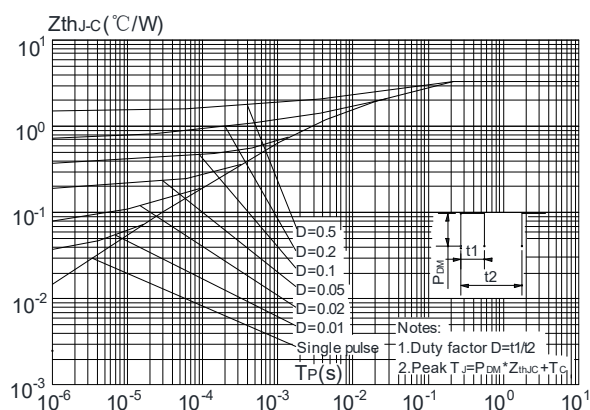


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

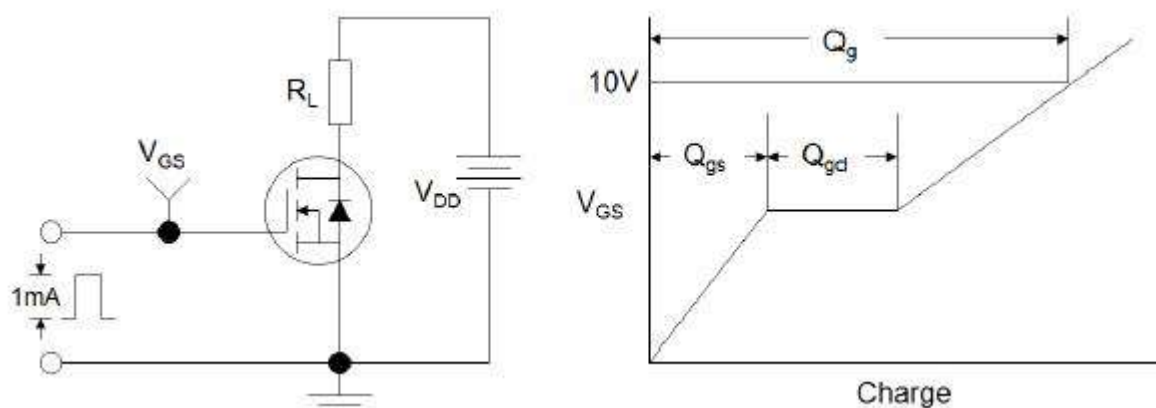


Figure1:Gate Charge Test Circuit & Waveform

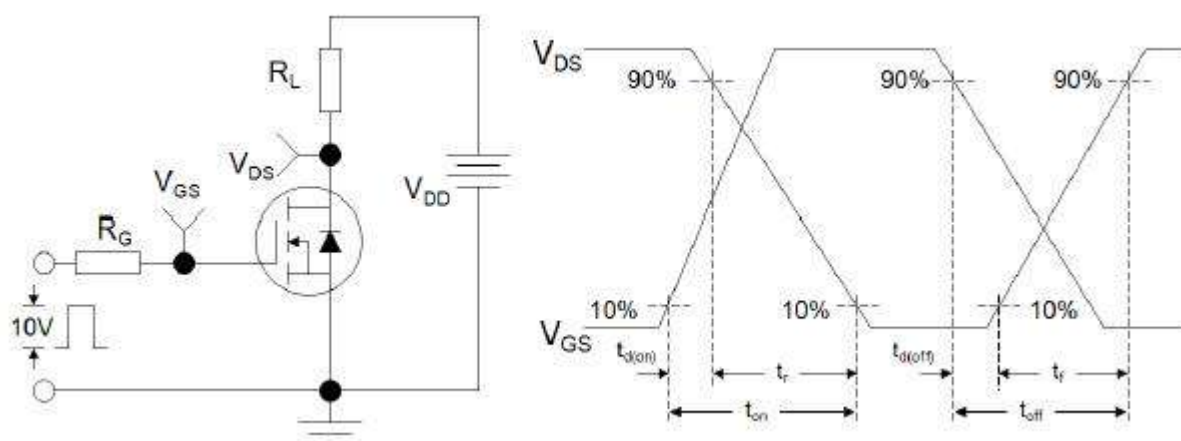


Figure 2: Resistive Switching Test Circuit & Waveforms

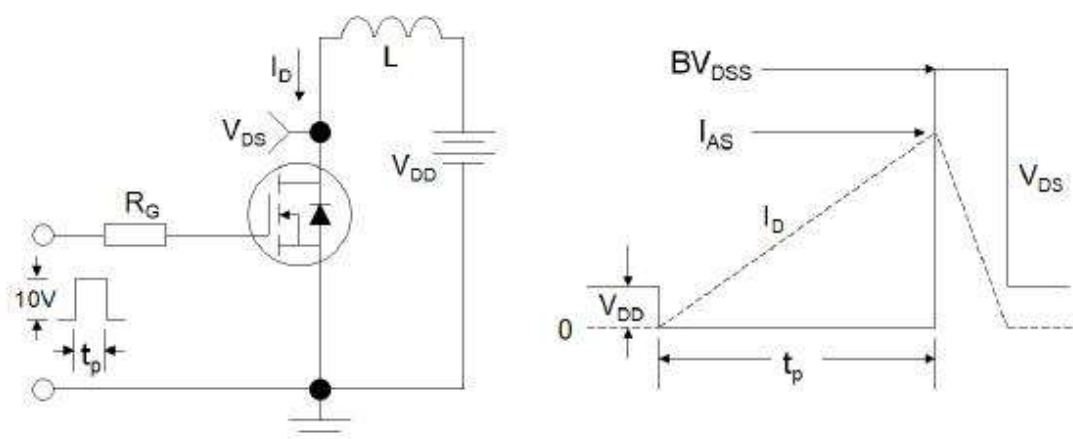
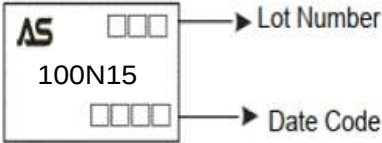


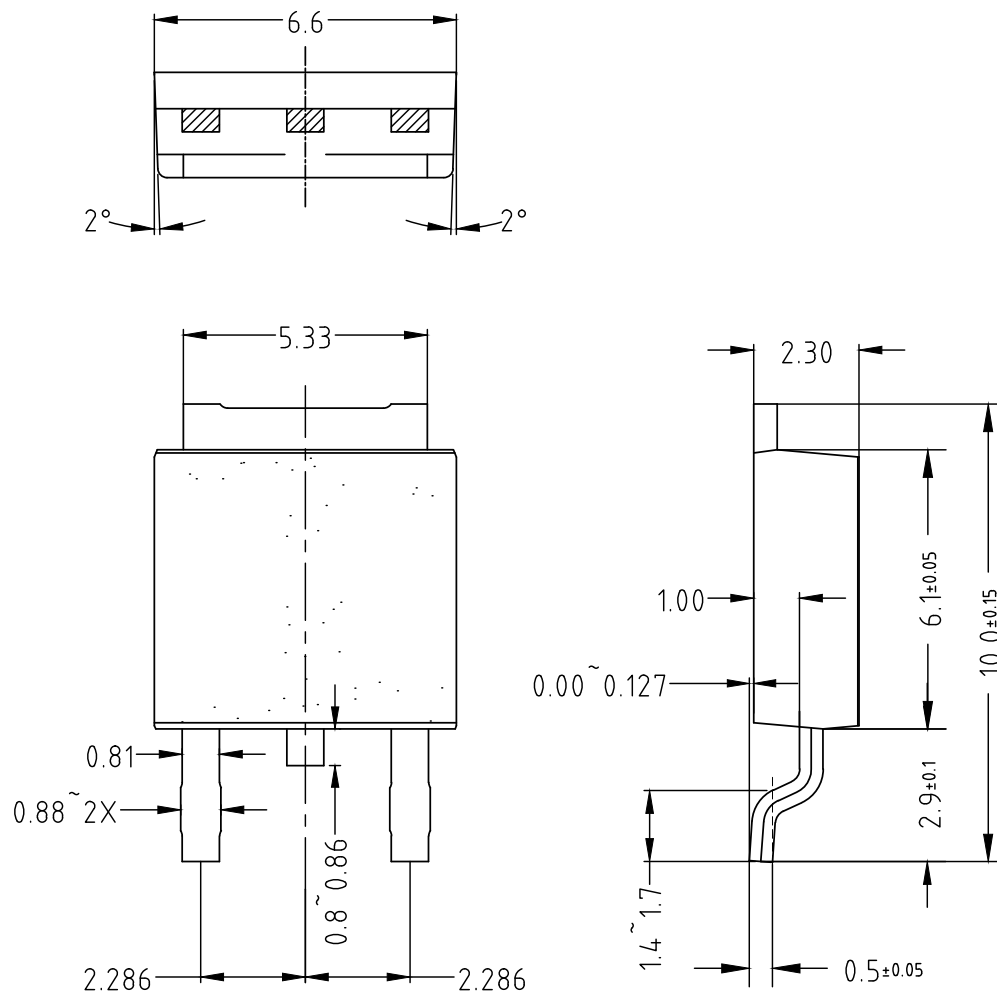
Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM100N15KQ-R	100N15	TO-252	Tape&Reel	2500/Reel

PACKAGE	MARKING
TO-252	 The diagram shows a TO-252 package with the following markings: - Top left: AS (ASDsemi logo) - Top right: (Lot Number) - Middle: 100N15 - Bottom right: (Date Code)

TO-252



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