



General Features

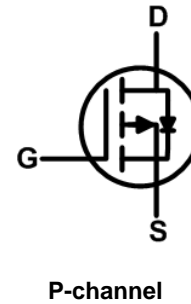
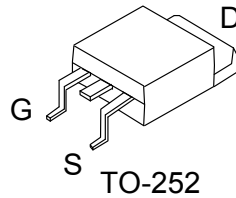
- Super Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trenchtechnology
- Halongen Free

Applications

- DC-DC priary bridge
- DC-DC Synchronous rectification

Product Summary

V _{DS}	-60	V
R _{DS(on),Max@ V_{GS}=-10 V}	20	mΩ
I _D	-50	A



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	-60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current, V _{GS} @ -10V ¹	-50	A
I _D @T _C =100°C	Continuous Drain Current, V _{GS} @ -10V ¹	-28	A
I _D @T _A =25°C	Continuous Drain Current, V _{GS} @ -10V ¹	-24.3	A
I _D @T _A =70°C	Continuous Drain Current, V _{GS} @ -10V ¹	-23.5	A
I _{DM}	Pulsed Drain Current ²	-200	A
EAS	Single Pulse Avalanche Energy ³	115	mJ
I _{AS}	Avalanche Current	-45	A
P _D @T _C =25°C	Total Power Dissipation ⁴	52	W
P _D @T _A =25°C	Total Power Dissipation ⁴	2	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-Ambient ¹	---	62	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹	---	3.6	°C/W

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-60		---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =-1mA	---	-0.03	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-10A	---	---	20	mΩ
		V _{GS} =-4.5V, I _D =-5A	---	---	30	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.0	-1.7	-2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	4.56	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-60V, V _{GS} =0V, T _J =25°C	---	---	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-12A	---	15.4	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	13.5	---	Ω
Q _g	Total Gate Charge (-4.5V)	V _{DS} =-48V, V _{GS} =-4.5V, I _D =-10A	---	26	---	nC
Q _{gs}	Gate-Source Charge		---	3.08	---	
Q _{gd}	Gate-Drain Charge		---	2.95	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, V _{GS} =-10V, R _G =3.3Ω, I _D =-1A	---	28.8	---	ns
T _r	Rise Time		---	19.8	---	
T _{d(off)}	Turn-Off Delay Time		---	60.8	---	
T _f	Fall Time		---	7.2	---	
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	4025	---	pF
C _{oss}	Output Capacitance		---	260	---	
C _{rss}	Reverse Transfer Capacitance		---	163	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V, Force Current	---	---	-50	A
I _{SM}	Pulsed Source Current ^{2,5}		---	---	-200	A
V _{SD}	Diode Forward Voltage ²	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.
- 2.The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%
- 3.The EAS data shows Max. rating. The test condition is V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-25.1A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

Typical Characteristics

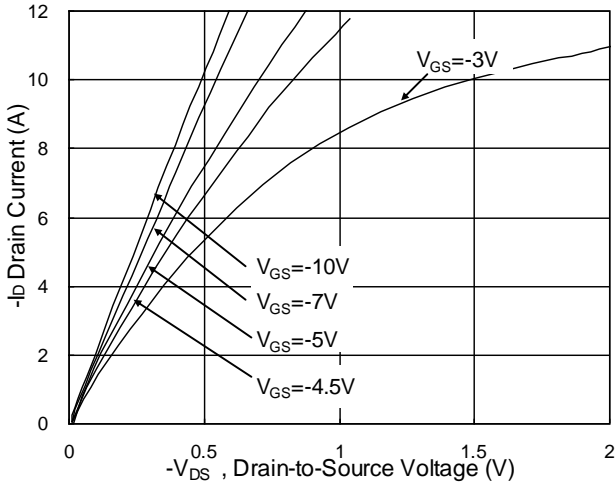


Fig.1 Typical Output Characteristics

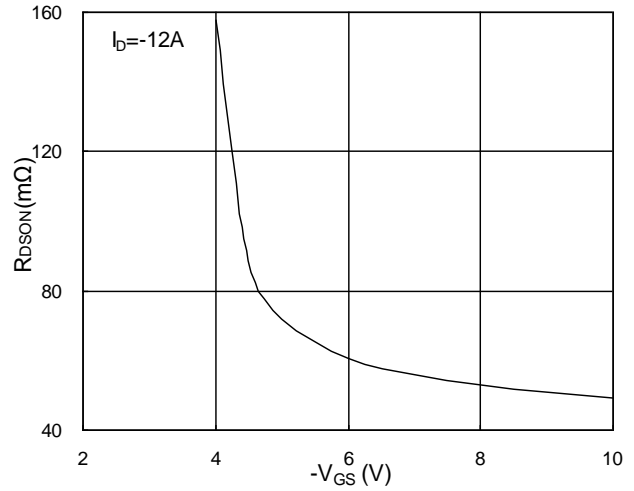


Fig.2 On-Resistance v.s Gate-Source

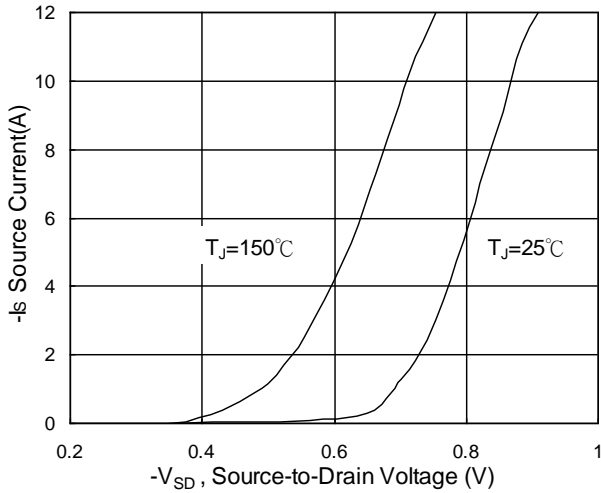


Fig.3 Forward Characteristics of Reverse

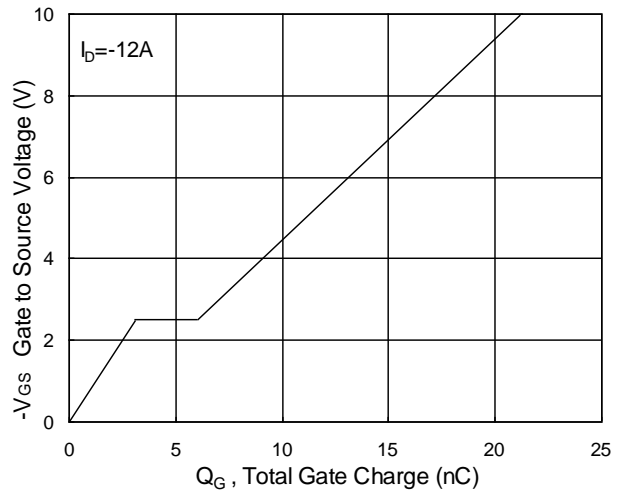


Fig.4 Gate-Charge Characteristics

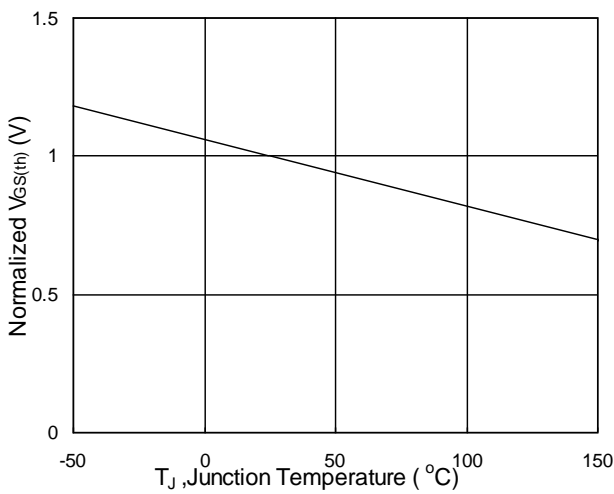


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

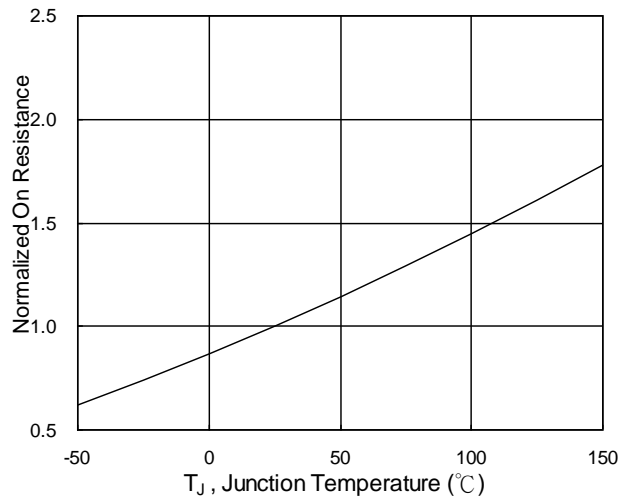


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

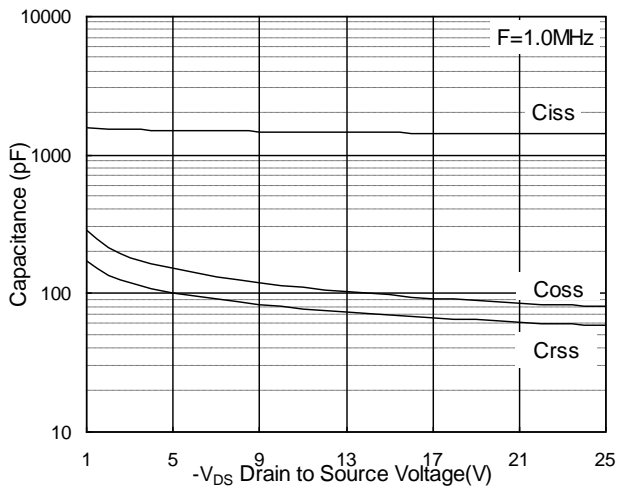


Fig.7 Capacitance

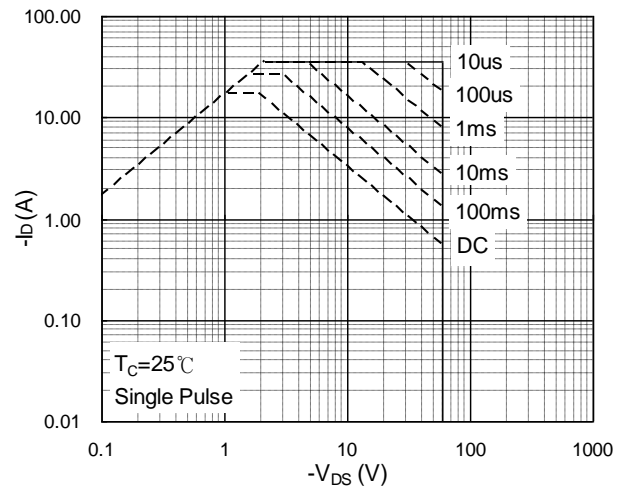


Fig.8 Safe Operating Area

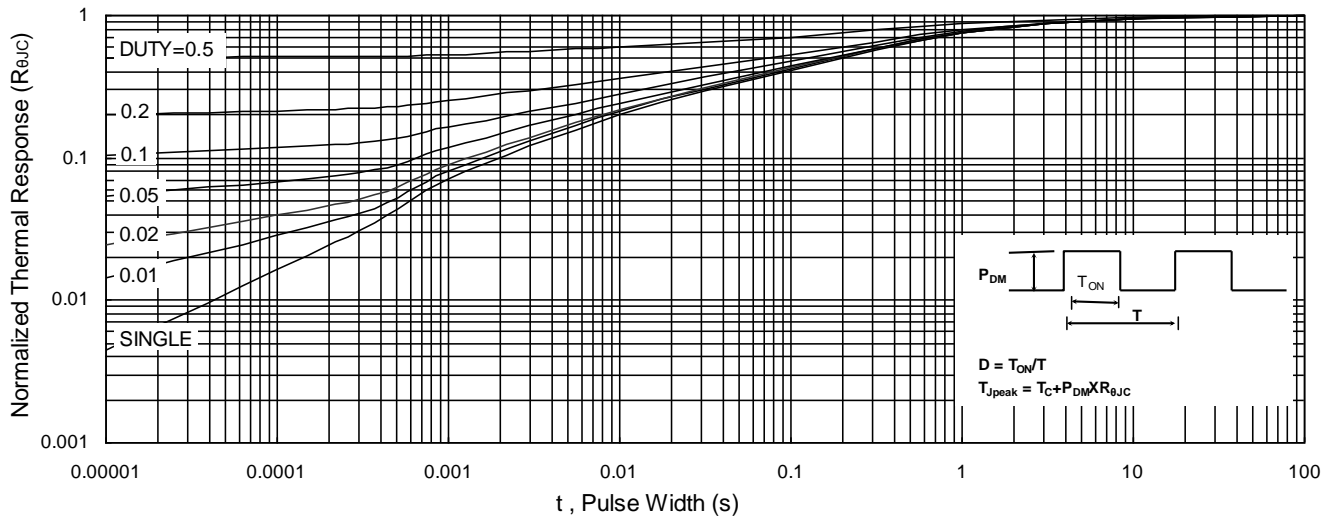


Fig.9 Normalized Maximum Transient Thermal Impedance

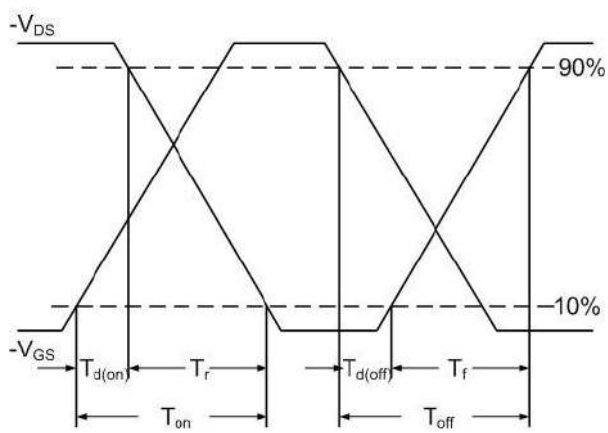


Fig.10 Switching Time Waveform

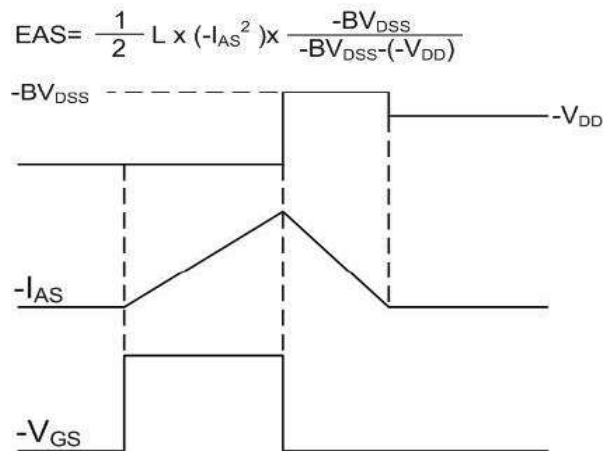
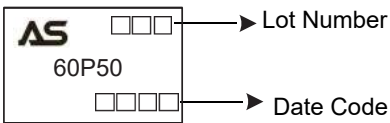


Fig.11 Unclamped Inductive Waveform

Ordering and Marking Information

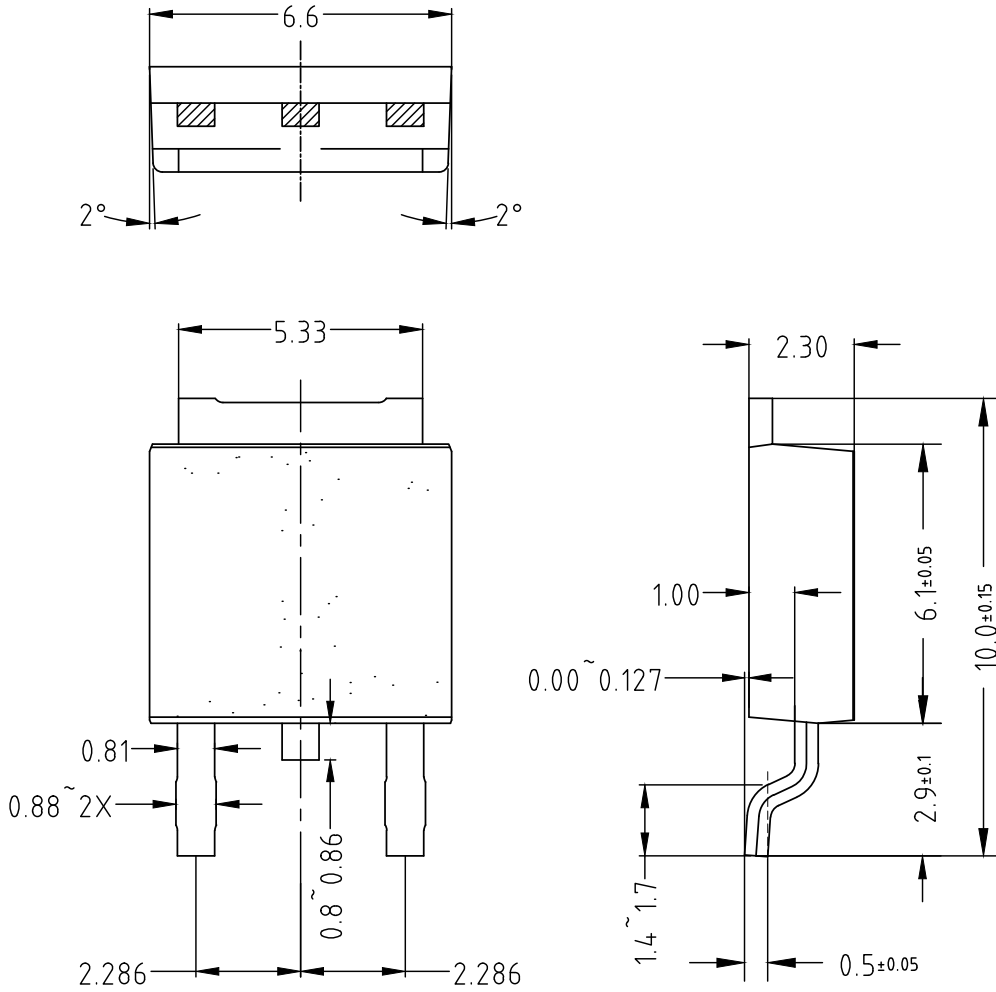
Device	Marking	Package	Packaging	Quantity
ASDM60P50	60P50	TO-252	Tape&Reel	2500/Reel

PACKAGE	MARKING
TO-252	

Ordering Device No: ASDM60P50-KQ-R

- 1、AS--ASCENDSEMI; Device Logo
- 2、DM--Stand Device, MOSFET
- 3、60P50--Spec
- 4、KQ--Package Type, TO-252
- 5、T or R--Packing Type, Tube or Reel/Tape

TO-252



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